

The Cybernetics of Language

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THE CYBERNETICS OF LANGUAGE

As a complement to the philosophy of language, the cybernetics of language is to synthesise a picture of language as a whole; and runs into (descriptive) difficulties where (at any one time) we can only speak about bounded portions of the world (Wittgenstein).

This same difficulty permeates the short history of cybernetics in the concern for wholistic representation, and thus the concern of the cybernetics of language leads to (or arises in) the concern for the language of cybernetics. It becomes resolvable in the context of second order cybernetics (i.e. the cybernetics of describing as well as described systems (von Foerster)).

The difficulty and the possibility of its resolution are introduced in terms of differences between Russell and Wittgenstein; in terms of the second order cybernetic discussions of the black box (seen as capturing Wittgenstein's silence and, in general, interpretation) and distinctions (G.S. Brown); and in terms of the distinction between natural and artificial languages and the problem of describing description (self-reference). Here the cybernetics of language concerns the nature of inquiry into our descriptive abilities and activities, and determines what we can and what we cannot (objectively) speak about.

The notions of 'the function of language' and 'the existence of language' (presupposed in a first order description) are shown to be mutually interdependent, giving rise to a paradox of means (and giving rise to the question of the 'origin of language'). This paradox is resolved where a language is seen as constructed (for a particular purpose), and thus the circularity is unfolded, considering that

(i) in terms of a constructive function of language, there is no language (something is in the process of being constructed);

(ii) in terms of a communicative function of language, such a construction is in the process of being accepted (something is being negotiated);

(iii) in terms of an argumentative function of language, a language (accepted, eg. having been negotiated) is used to negotiate things distinct from this language.

Language is seen as comprising the interaction between these activities.

The cybernetics of language is developed in terms of the requirements for an observer to construct, communicate and argue: a language is constructed for the description of these processes in terms of the complementarity between description and interpretation (underlying the process of construction) and the complementarity between saying and doing (enabling an observer to explore, eg. question, test and explain his construction and distinguish another observer; and enabling two or more observers to negotiate and accept relations and argue by distinguishing both a language and the things this is used to describe).

The text comprises three main parts, which can, but need not, be read in the order in which they occur. Of similar significance, consider "The "I" of Language", the first, second or third part; "About and Beyond", the first or second part; and "What we can speak about" (a second or third part of "About and Beyond", or) the second or third part.

Note: Only even page numbers appear. Odd page numbers refer to the top half of page.

Parts, 'Chapters' and 'Sections' are separated by "\$", which vary in number showing a relation between the parts they separate. (One interpretation of these "\$" may be as the "."'s in the well known numbering of sections eg.

1. : \$  
1.1. : \$ \$  
1.1.1. : \$ \$ \$ , etc.)

Notes to the text are marked by the underlined first letter of a keyword in the text, and appear in alphabetical order of their keywords at the end of the texts.

Reference to the context in which this could be written is made in the notes to the text.

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## ABOUT and BEYOND

"What we cannot speak about,  
we must pass over in silence."

There appear to be no bounds to the things we can speak about. We can speak about the weather, a tree, and a cloud, in much the same way as we can speak about unicorns, the law of gravity, and quarks. We can speak about "what we cannot speak about" in much the same way as we can make observations about the unobservable, conceive of the inconceivable, and know that we do not know.

The world of things we can speak about is bounded by what we cannot speak about, just as the world of things we can observe is bounded by what we cannot observe, that of what we can conceive of by what we cannot conceive of, and that of what we can know by what we cannot know. But in that we can speak about this boundary, it appears within the world it bounds, and in so doing, it becomes subject to our curiosity. We can in turn speak about our curiosity, and wonder about the object of our curiosity. Naturally, we begin to speak about this object, and in so doing, bring it inside the world of things we can speak about.

The world of things we can speak about, appears to be an ever-growing world, which immediately finds a way of including within, anything which appears outside it.

We are all too familiar with the unsatisfiability of our curiosity and the ever-changing nature of the things we wonder about. Life would be of little interest if it was not for the "BEYOND" which we seek to bring within. Nevertheless, there is a difficulty in grasping the notion of an ever-growing world and the notion of a boundary which is transcended as soon as it is perceived. (This difficulty is reflected in the tendency not to perceive Wittgenstein as speaking about "what we cannot speak about". In the tendency, not to think of knowing that we do not know as knowing something about the unknown.)

There is an incongruity between experiencing an ever-growing world in pursuing a curiosity and the difficulty in speaking about or conceiving of such a world (or boundary). It is a difficulty in rendering explicit what is intuitively obvious. As such it arises in the nature of speaking about a thing. The issue is not one of limits to the things which can be spoken about, but rather a question of how something is changed (or transformed) in being spoken about.

The nature of this change can be compared to that involved in becoming aware of one's happiness: before I notice that I am happy, I am simply happy; having noticed my happiness, I may wonder about it, and may try to explain its cause or try to do something with it (eg. visit a friend). Whatever I do, - I cannot recover the unreflecting happiness I had. Similarly, in



speaking about an thing we change its nature and our relation to IT. The change is reflected the circumstance that we have to speak about an IT.

As a result of this change (or transformation) we speak ABOUT a thing; we deliniate an object of attention and, in so doing, reify what we speak about. We create an IT. In speaking about a thing we distinguish it from ourselves as describers, conceivers, or knowers, of it. We distinguish it from the means by which we speak about it (and as a result we use one thing to speak about another).

Prior to this change, what we do not speak about (or the input to this transformation) lies BEYOND speaking. It lies beyond doubt and beyond description.

Where Wittgenstein's observation concerns this change, we need to remain silent to grasp the qualities which are lost in speaking. We need to remain silent to grasp (the qualities which lie beyond description and beyond doubt). Rather than suggesting a limit to the things we can speak about, Wittgenstein can be seen as acknowledging an activity complementary to speaking.

My curiosity lies in the nature of the change involved in speaking; in how what lies beyond is transformed in being spoken about. To pursue this curiosity, I need to consider both what is beyond being spoken about and what is spoken about. I need to speak about both. With anything I need to say about what lies beyond being spoken about, I need to break the silence.

It is this difficulty which underlies the difficulty in speaking about ever-growing worlds. It is not that the notion of such growth in itself lies beyond what we can speak about. It is rather that the dynamics of the ever-growing world of things we can speak about arises in the complementarity between what is spoken about and what, in so doing, must be passed over in silence.

The notion of an ever-growing universe needs to be considered in a process of pursuing a curiosity between these two complementary activities. Any attempt to only contemplate speaking is bound to run into problems.

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## LORD RUSSELL AND MR. WITTGENSTEIN

The curiosity in the change involved in speaking about a thing leads to a predicament similar to that which left Russell with "a certain sense of intellectual discomfort" with Wittgenstein's Tractatus: "...what causes hesitation is the fact that after all Mr. Wittgenstein manages to say a good deal about what cannot be said...". Russell's discomfort arises with what he assumes to be Wittgenstein's explanation of this predicament, i.e. that what cannot be said can be shown.

I might similarly do no more than draw attention to what is beyond being spoken about, and accept to give rise to a similar hesitation. But, what allows Wittgenstein to say a good deal about what cannot be said, is what renders the world of things we can speak about ever-growing. What Russell objects to is just what gives rise to our curiosity.

Where Russell continues, "...thus suggesting to the skeptical reader that possibly there may be some loophole through a hierarchy of languages, or by some other exit.", the suggestion arises that the pursuit of our curiosities provides just such a "loophole"; suggesting that it is in pursuing our curiosities that we give rise to a hierarchy of languages.

Russell's notion of a "loophole" arises in too narrow an interpretation of Wittgenstein's silence. Where hierarchies of languages can only arise in the pursuit of some curiosity or other, it is possible to speak about how, what lies beyond, is changed in being spoken about, in a process of pursuing this particular curiosity (rather than speaking about curiosity per se).

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### RUSSELL'S "LOOPHOLE" AND WITTGENSTEIN'S BOUNDARY

Russell's discomfort with Wittgenstein's suggestion that, what cannot be said can nevertheless be shown, arises with Wittgenstein's notion of a boundary. Russell describes Wittgenstein's boundary as a "...limitation of logic to the things within the world as opposed to the world as a whole". This is a generalisation from what he earlier describes as the "...fundamental instance of Wittgenstein's thesis", i.e. "that it is impossible to say anything about the world as a whole, and that whatever can be said has to be said about bounded portions of the world."

These two formulations differ substantially in conception. The latter (Russell's initial) formulation suggests no particular boundary. It is compatible with the notion of the ever-growing world of things we can speak about. The former (Russell's later generalisation) is not. It

suggests that there are given limitations of logic. The notion of given limitations appears to underly Russell's talk of a "loophole" (through which an "exit" might be found). His discomfort arises in taking Wittgenstein to assert, and nevertheless transcend, such limitations.

In terms of the earlier formulation (which I take to be closer to Wittgenstein's view), it is more difficult, if not impossible, to conceive of a "loophole". In this conception, cause for hesitation would arise if Wittgenstein were speaking about an un-bounded portion of the world. Russell makes no attempt to show such a difficulty. Instead, the phrase "a good deal", suggests that Russell has in mind particular, and hence bounded, things Wittgenstein manages to say.

The notion of a (two-sided) boundary, reflected in Russell's notion of an "exit", is in direct contrast with Russell's own rendering of Wittgenstein's 'boundary': "Our world may be bounded for some superior being who can survey it from above, but for us, however finite it may be, it cannot have a boundary, since it has nothing outside it... and in like manner our logical world has no logical boundary because our logic knows of nothing outside it." It is difficult to see how in the absence of a boundary (in the ordinary sense) there can be a "loophole", or an "exit", through it!

In contrast to Russell's two sided boundary, Wittgenstein appears to speak about a one-sided boundary. This suggestion arises in his observation, that to conceive of the limitations of thought, we would have to be able to conceive of what we cannot conceive of, i.e. conceive of what would be beyond such limitations. This he persists we cannot do.

In terms of this difference in the conception of a boundary, it can be shown, that what Russell perceives as a contradiction, is in fact a complementarity.

\* \* \*

#### RUSSELL'S SELF IMPOSED "LIMITATIONS" AND HIERARCHIES OF LANGUAGES

The fact that Wittgenstein manages to say a good deal about what cannot be spoken about, can only be established by considering both Wittgenstein and the act in which he speaks. Russell, however, deems the act of speaking, and the person performing this act, irrelevant to logic as "facts on their own account".

The boundedness of what we can speak about can be relativised and transcended in the activity of speaking. In the act of speaking, and speaking about one thing at a time, the complementarity between what we speak about and what we pass over in silence is generative (rather than exclusive). Thus, it is in pre-empting what may or may not be relevant to the language Wittgenstein has in mind, that Russell, himself, imposes the limitations he takes

Wittgenstein as asserting!

Russell devotes a good deal of his introduction to the discussion of what is and is not relevant to logic. Propositional attitudes of the sort 'A believes that P', he suggests can be abstracted as "fictions" relevant only to a "psychological relation of intention or association or what not." No doubt they can be thus excluded. But it is in then turning his attention to what he has deemed irrelevant to logic (to one language), that he finds it necessary to introduce another language. It is in pursuing and changing his curiosity that he actually begins to generate another language. It is in skeptically considering what he previously deemed irrelevant, that he perceives the possibility of a hierarchy of such languages. It is in transcending the limitations he imposes on himself, that he perceives the possibility of a "loophole".

\* \* \*

#### AN ENDLESS HIERACHY OF LANGUAGES

The notion of "limitations" arises in Russell's generalisation of the notion that whatever can be said, has to be said about (particular) bounded portions of the world. Russell's notion of a hierarchy of languages arises in connection with his discussion of "...the totality of things in the world and thus involves the attempt to conceive of the world as a whole." The problem arises in that Russell's generalisation excludes the agent who is assumed to conceive of the world as a whole. The notion of the totality of possible propositions relies on overlooking the speaker who actually proposes these. Russell proceeds: "These difficulties suggest to my mind some such possibility as this: that every language has, as Mr. Wittgenstein says, a structure concerning which, IN THE LANGUAGE, nothing can be said, but that there may be another language dealing with the structure of the first language and having itself a new structure, and that to this hierarchy of languages there may be no limit." The notion of an unlimited hierarchy of languages can only arise in considering the possibility of going on and on pursuing a curiosity. It cannot arise in the actuality of our pursuits. In terms of such a hierarchy, what we do speak about, we speak about on a particular level.

It is in contemplating generalisations and possibilities that the reification involved in speaking leads to pitfalls. Only with regard to the possible, can Russell speak of "every language". Only with regard to the possible, can he suggest "that there may BE another language..". Only in such generalisation, can he consider the existence of such a thing as a language. In the actual pursuit of a curiosity, there may, at any one time, be a language. In actually pursuing a curiosity the language is continuously changing. There is a world of difference between an ever-changing language and a hierarchy of languages.

Only in assuming the existence of a

language, can Russell speak of its "structure". To speak of a "structure" as Russell does, is to presuppose some such thing as a system of rules for speaking that language (eg. a syntax and a semantics). It is to presuppose that such things can in turn be spoken about. It is to presuppose a hierarchy of languages in the first place.

In contrast, Wittgenstein's notion of "structure" concerns what is beyond being spoken about. It concerns the act of speaking and the impossibility of overcoming the structure of speaking. The structure in which we can only speak about bounded portions of the world. The structure in which Russell is caught in speaking about a language. The structure (or form, as I shall call it) in which we are bound to assert the existence of a language in speaking about it. The structure in which we are bound to assert the boundedness of a language, imposing limitations on it, so as to be able to speak about it. In the process, the 'language' we speak about becomes a static and bounded portion of language. The possibility of speaking about "the structure" of a language arises only with regard to such a bounded portion of language.

There is a world of difference between speaking of the structure of language (or the form of speaking as Wittgenstein does) and speaking of the structure of a language (as Russell does).

In speaking about a language, its existence is presupposed. But the fact that we can use a language to speak about itself, does not touch upon the structure Wittgenstein is concerned with. There is a world of difference between the syntactic and semantic structure of a language, and the structure of speaking; the structure by which we are bound to speak of bounded portions of the world, rather than being able to speak of the world as a whole. This difference in the notion of "structure", leaves Wittgenstein's thesis unaffected by Russell's suggested "totality".

Russell continues: "Mr Wittgenstein would of course reply that his whole theory is applicable unchanged to the totality of such languages." Wittgenstein's structure cannot be captured in Russell's hierarchy of languages. The hierarchy is generated by speaking about languages. To speak about languages, is to use the structure of speaking.

\* \* \*

#### WITTGENSTEIN'S LANGUAGE

Wittgenstein's suggested reply that what he says about language also applies to a limitless hierarchy of languages, suggests that, concerning the things he speaks about, there is no distinction between the language and a hierarchy of languages. This corresponds to the observation that natural language is its own meta-language, and suggests that Wittgenstein is speaking

about natural language; that his observations concern natural language and apply to any narrower sense of a language, because they concern natural language.

Wittgenstein's discussion of logic overshadows this suggestion. But a logic is constructed by someone using his natural language abilities. A logic is a construction within natural language. Where Wittgenstein is concerned with the construction of logical systems, he is thus, concerned with the natural (language) ability (to construct artificial languages).

In terms of this suggestion, the fact that Wittgenstein manages to say a good deal about what cannot be said, reflects the difference between natural and artificial languages. Limitations are introduced in constructing an artificial language; they distinguish artificial languages from natural language. We introduce limitations in the act of speaking about a thing. We overcome limitations in pursuing and changing our curiosities.

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THE LANGUAGE OF CYBERNETICS  
AND  
THE CYBERNETICS OF LANGUAGE

To speak about a thing, is to distinguish it. In speaking we are bound to limit what we speak about. While such limitations allow for the construction of artificial languages, they appear to render a description of natural language impossible. In enabling us to pursue our curiosities natural language cannot be bounded. Where we can speak only of bounded portions of the world, natural language cannot be spoken about.

What is beyond being spoken about, not lending itself to being bounded, can only be captured as a whole. The difficulties in speaking about what is beyond being spoken about, lead to the concern with the whole. It is this concern, based on the observation that the whole is greater than the sum of the parts, which underlies cybernetic pursuits over the last half century (just the period since the differences between Russell and Wittgenstein). The difference between a philosophic and a cybernetic approach to language, concerns these difficulties: notionally, language is analysed and spoken about in the Philosophy of Language, while the Cybernetics of Language is to synthesise a picture of language as a whole.

The appeal of such a simple distinction is superficial and the difficulties of either approach are reflected in the other. But, as a rough characterisation, it captures a substantial difference in intention in contemplating language. In the complementary aspects of the difficulty in speaking about language, the caricature "philosopher" is limited to speak only about bounded portions of language and the caricature "cybernetician" is silence bound from the outset!

SILENCE BOUND FROM THE OUTSET

'Silence bound from the outset', is not unfair a characterisation of cybernetics. Taking Wittgenstein seriously (as most cyberneticians would) this predicament arises with the very concern with the whole. Cybernetics, and General Systems Theory, have from the outset been concerned with wholistic forms of representation, without which, the concern for the whole must be doomed to failure or silence.

Where the difficulties of developing wholistic forms of representation were by-passed, in an attempt to show results in this initially very promising new concern, such a failure was indeed registered. When it became apparent that anything could be called a system and that little or nothing need be achieved in doing so, disillusion took the place of promise. Disrepute may have been (and in some cases still is) deserved. What may not have been so apparent, to either the systems consultant or his client, was that the wholeness of the system remained in the eye of the beholder. That the wholeness of the system, as system (rather than in the organisation of its component parts), had to be passed over in silence. Seeing a system as a whole, a systems consultant may have been able to make suggestions concerning its improvement, and these may have proved successful. But, without a means to speak about his insight, he was bound to appear as a visionary magician, transparently disguised as pseudo-scientist, or as a craftsman, in the best sense of the word.

Craft or art is compatible with Wittgenstein's silence. It is perhaps the only, perhaps the most common, expression of this silence. Why then did the concern with the whole not settle as a craft, an art, acknowledging the limitations of science, bound to representations and hence to bounded portions of the world?

Paradoxes have an unsettling and unresting influence. They cannot simply be dismissed. While giving the appearance of craftsmen, cyberneticians (or at least those who did not leave the development of wholistic representations to others) have remained pre-occupied with their paradoxical predicament, being silence bound from the outset. A coffee-table definition of cybernetics in the mid seventies reflects this preoccupation: "Cybernetics is philosophy with your feet on the ground!", acknowledging the craft of this art, while nevertheless claiming an intersubjectivity so clearly beyond, if not bound to defeat, such craft. It shows the cybernetician torn between sharpening his tools as a artisan (doer) or pursuing his faith that his insights could be expressed; the faith in the possibility of a language of cybernetics which could transcend the limitations of science and logic, transcending the limitations of speaking, as, for instance, Russell had perceived them.

However, such perplexity can only have been an apparent one. Silence bound, the



cybernetician may have been a coffee-table loser; or confuser if pressed to break his silence. His pains must have been those of seeing the beauty of silence contrasting with the coffee-table embarrassment over silences. Silence bound, he may have been unable to resolve one in the other. But, with in the recent advent of a "language of cybernetics" (or something I suggest deserves this description) many a cybernetician's apparent silence reveals an expression of his wholistic concern. So many in fact that the advent of this language might not be considered so recent after all; the silence appears to have been deceptive.

Only a decade ago there appeared to be no such thing as a language of cybernetics. Often, what was (and in many cases still is) paraded as "cybernetics", had all the appearances of a craftsman's "bag of tools" or a magician's "bag of tricks". For a people concerned with the whole, it seemed odd to make do with a bag of parts. Some carried their bags, shamefully, closed very tight. Others sought the protection of more reputable disciplines.

But, others protested that familiar forms taken lightly should be taken rather more seriously. They turned their concern with the whole to their bag of parts and considered the "Cybernetics of Cybernetics". Whether they applied their silence to their silence or in silence could see the point of their silence, what sprang from it, sprang from it so obviously that it could only have been there, silently, all along. What sprang from applying cybernetics to cybernetics (an undertaking, perhaps paradoxically called "second order cybernetics") was the form of applying a thing to itself (self-reference). What sprang from applying silence to silence was the unpartiality and wholeness, of silence (closure). Silence bound from the outset, they had arrived, before they had begun: the form of wholistic representation lay in the form of their silence.

They had arrived before they had begun, by being silence bound, for the form of silence can hold a whole. This is just what Wittgenstein observed. Knowing the form of the silence, this form, rather than the silence itself, can be used to represent wholes. Surprisingly, or perhaps not surprisingly at all, such forms of representation have always been used.

They had arrived before they had begun since the form which can hold a whole lay in their silence. For something to be partial (made up of parts), we must be able to distinguish it, as well as its parts. While we may distinguish silence from speaking, we cannot distinguish parts of a silence (without thereby breaking the silence). We cannot distinguish one silence from another silence (except on grounds external to the silence). If, for example, I try to apply being silent to being silent, I remain silent. But what, while being obvious, deserves discovery, is that while I may initially think that I apply one silence to another, I cannot keep the two apart. If I try, I start speaking, at least to myself! The form of the silence is

that of: what, applied to itself, is itself. This form can hold a whole, precisely because it makes no sense to say this is one and this is another silence.

They had arrived before they began, as the form for the representation of wholes, lay, silently, in the form of their paradox (silence bound from the outset). The form is well known, but had been recognised only in examples which lead to problems, i.e. paradoxes. Where there is only one, where two are truly one, they cannot be distinguished. Where the two remain in the one, instead, we (can be lead to) see the one and the two warring within it.

Where two things are one, we tend to perceive an ambiguity. We perceive it in asking which of the two it is now. But, ambiguity is not of the silence. Ambiguity comes about in beginning here or there, where there can be no beginning or end. Where two things are one, one whole, there is only one, there is no ambiguity. It is in speaking, that ambiguity arises.

The concern with (and the problems of) the representation of wholes, leads naturally to the cybernetics of language. It does so in terms of the cyberneticians predicament of being silence bound from the outset. Rather, than applying one thing to another (eg. cybernetic thinking to language), the cybernetics of language coincides with the concern to develop a language of cybernetics. The problems resolved in the "discovery" of a language of cybernetics, could only be resolved in a quest concerning the cybernetics of language.

However, the cybernetics of language cannot be an analysis (!) of language using an outmoded cybernetic "bag of tools", such as information theory, feed-back systems, flow charts, production systems, transition networks and the like. It has nothing to do with such first order attempts to apply (!) cybernetics to language, as pervade computational and mathematical linguistics or the notion of an information theoretical study of natural language, the notion of machine translation or the cybernetic/systemic inspiration underlying Chomsky's work. In such first order terms, the very notion of a 'cybernetics of natural language' is contradictory. Any attempt to analyse language in terms of, or to 'apply' such cybernetic notions to natural language is doomed to contradictory entanglements. Such attempts are constrained to limited portions of language, i.e. to artificial languages.

Instead, the cybernetics of language arises in the concern with wholistic forms of representation, recognising and exploring the necessary partiality of speaking. Cyberneticians must have been exploring the cybernetics of language (not for the sake of exploring language, but) simply in the attempt to overcome being silence bound. In the process of transcending limitations of expression (in Russell's sense), they must have explored the cybernetics of language, exploring Wittgenstein's silence (even if, or perhaps precisely because, they did not write great volumes on the cybernetics of language).

What, if not a silent exploration of Wittgenstein's silence, is the cybernetics of language? How, but by breaking the silence, can 'second order' cybernetics give it expression? Applying cybernetics to cybernetics, applying silence to silence, the cybernetics of language finds its expression in the application of language to language.

This is not unfamiliar. Logicians have long observed that natural language is its own meta-language, and hence the cybernetics of language amounts to the exploration of what logicians call natural language. But, any linguist would take the application of language to language as a home truth; as his inevitable predicament. Where, he may wonder, lies the novelty in exploring this predicament?

In this simple characterisation, the logician and the linguist coincide in their recognition of the inevitability of applying natural language to itself. They differ, however, in how they view the consequences of this observation. The logician concludes that he is silence-bound concerning natural language (his way of saying so, is to say that natural language has no describable semantics). The linguist, instead, proceeds to describe natural language, its syntax, its semantics and its pragmatics. Where both are quite respectable, the contrast is somewhat puzzling, and it may be in the resolution of this puzzle, that the value of the cybernetics of language lies.

Concerned with artificial languages, the logician recognises that he uses one language to describe another. Confounded with the a situation of using one language to describe itself, he recognises the limitation of his approach (assuming that, to a logician 'describing' a language means describing it in a language other than the language he is describing). The linguist never has the option of distinguishing the describing language from the described language. He has no doubts about what his language can and cannot describe. Evidently he uses it to describe everything around him. In turning his curiosity to the language itself, he overlooks that he can only speak about bounded portions of the world. In using natural language to describe 'natural language', he restricts his description of natural language to a bounded portion of natural language.

In either case the application of language to language, leads to a pair of languages (the object- and meta-language). The two, war within the one (more or less paradoxically). Where the language is the meta-language, the logician is in the predicament of being silence bound from the outset. Where the language is the meta-language, the linguist in the predicament of the craftsman. In their differences, the logician and the linguist, thus share the predicament of early cybernetics. Where this predicament is beginning to be resolved in the language of cybernetics (in second order cybernetics), the cybernetics of language provides the possibility of resolving these

difficulties.

In exploring this possibility, I am aware that I am merely giving expression to thoughts and experiments concerning the possibility of expressing the whole as a whole, which have, more or less silently, pervaded cybernetic thought throughout its brief history. It is to this enterprise and the perseverance of those who remained committed to its resolution, that I am indebted. I hope perhaps to throw some light on some of their silences.

BLACK BOXES  
OR  
WITTGENSTEIN'S SILENCE IN THE BLACK BOX

I have considered cybernetics in terms of Wittgenstein's silence, and used it to show why I shall mostly be concerned with second order cybernetics. I now turn to consider how Wittgenstein's silence may find an expression in the transition from first to second order cybernetics.

If there is one familiar cybernetic notion which carries over from first to second order cybernetics, it is that of the black box. In the first order sense, we can describe ourselves as using watches, pocket calculators, telephones, bus systems, and the like, as black boxes. We can use a thing and know how it behaves, without knowing how it works.

To ask how it is that we can do so, to wonder how it is that we can use a thing without knowing how it works, is to ask a second order question. But here our ability to use things without knowing how they work, cannot be explained without considering what we do with a particular thing. In the second order sense, the black box device cannot be separated from what we do with it. In using a thing as a black box (eg a pocket calculator) we are involved as intentional and selecting beings. We ignore features (eg. its internal workings) which are irrelevant to what we want to do with thing we treat as a black box. To deny such involvement, would be to deny the essential perceptual mechanisms which allow us to live in a complex world.

But, if our ability to use things as black boxes arises in such perceptual mechanisms, we cannot escape using these same mechanisms to look at how it is that we can use things as black boxes. We cannot escape using a black box to study the black box. Inevitably, we assume the workings of the black box in studying how the black box works (we deem the workings of the black box irrelevant in our attempt to study the workings of the black box)!

This difficulty closely resembles Wittgenstein's notion of the structure which cannot itself be said. It cannot itself be said, since whatever can be said, will need to have this same structure. In using a black box, we say that we don't know, and don't care to speak about, what it contains. Thus the black box is also a device for capturing (without in any ordinary sense speaking about) what we cannot speak about.

Russell's hesitation (that Mr. Wittgenstein manages to say a good deal about what cannot be said) becomes apparent in the difficulty in using the conventional black box to discuss the transformation between what is beyond (shown as B) and what we can speak about (shown as A). The attempt to describe this transformation in terms of a black box results in questioning the very device of the black box. Consider B as the input (I) to our transformation (shown as T), and A as the output (O) of a

black box (BB):



In using a black box, we infer its behaviour by comparing (a series of) outputs with their respective inputs. We infer what the black box does, seeing what comes out and knowing what went in, i.e.



Such comparison, however, relies on the comparability of the in- and outputs. To compare how what is beyond is changed in being spoken about, it is necessary to speak about both, what we can speak about, and what is beyond being spoken about. Where what is beyond must be passed over in silence, 'it' cannot be the input to a black box, but is rather part of, or contained in, the black box, i.e.



While this captures Wittgenstein's silence, it results in a black box with nothing but an output! Hence the black box device, in the first order sense, cannot be used to consider how what lies beyond is transformed in being spoken about. (Parallel to Russell's conclusion regarding the limitations of logic, first order cybernetics here runs into the limitations of the black box). The black box cannot be used to capture something which transcends its very structure.

In terms of second order cybernetics, however, the circumstance that what lies beyond being spoken about, must be included within the black box, shows the nature of the black box. The black box is not simply inapplicable to the transformation involved in speaking; the use of the black box itself, involves this transformation.

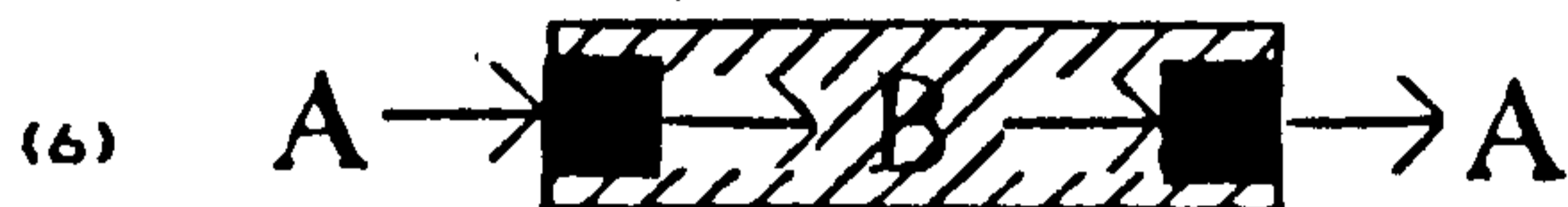
Consider now the interaction between what is spoken about and what is beyond in the pursuit of a curiosity. Clearly, this transformation is not one-directional. The process in which the universe of things we can speak about is ever-growing arises with our curiosity. It arises in that, as soon as we have spoken about a thing, we can raise a doubt about the distinction by which we have distinguished it. Where speaking about a thing is an input to the transformation, something beyond being spoken about can be its "output", i.e.



In isolation, this makes for yet more difficulties with the black box, resulting in a black box without an output:



But, considered in the process of pursuing our curiosities, the failure to capture this transformation in terms of the black box, shows the black box to be what allows us to infer what is beyond being spoken about from what we can speak about. Thus combining (2) and (5), to show a process of switching between speaking and passing over in silence:



The difficulties in trying to apply the black box to this transformation are the difficulties resolved in the transition between first and second order cybernetics, i.e. the difficulties of trying to apply the black box to itself. Where Wittgenstein's silence (what is beyond being spoken about) is contained within the black box, this 'explains' why the black box is black. The correspondance between Wittgenstein's silence and the black box, thus allows for an exploration of how the change involved in speaking about a thing is captured in the device of the black box (and how the black box is captured in this transformation); showing Wittgenstein's silence as a black box.

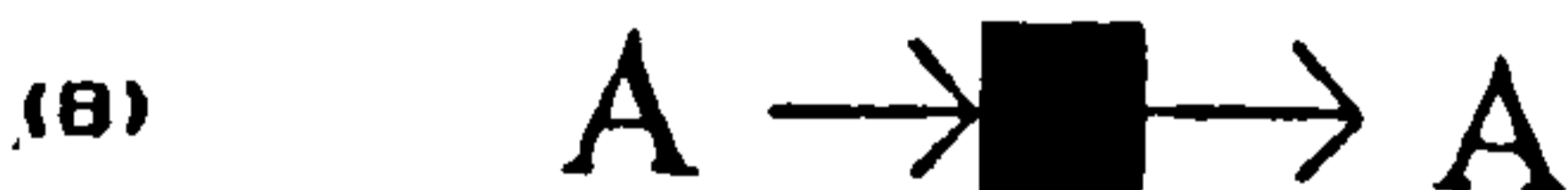
\* \* \*

#### SILENT BLACK BOXES

Where the black box is a device for inferring what is beyond, from what we can speak about, what is inside the black box cannot, and need not, be inferred by comparing the input with the output. In whatever way the input transformation may change what is spoken about, the output transformation will counteract this where what is beyond being spoken about is changed in being spoken about. Any number of such transformations can be embedded within a black box. Any number of "black boxes" can be embedded within a black box, eg.



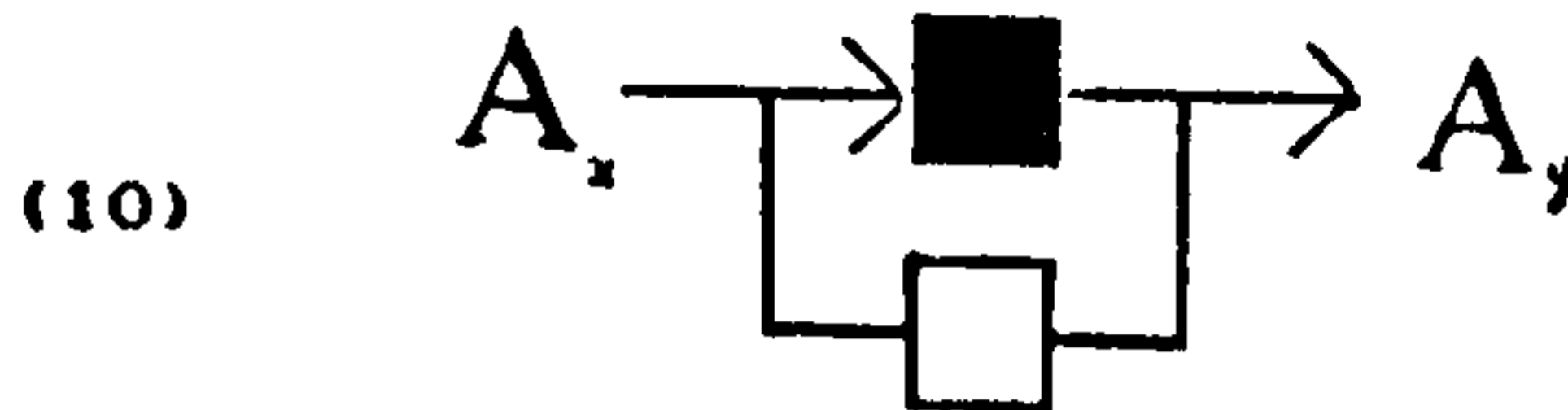
All that can be of concern, all we deem relevant in designating a black box, are the things we DO speak about:



All that can be spoken about, all that can be explained (using a black box), is spoken about or explained:

$$(9) \quad A \rightarrow \left[ \begin{array}{c} \text{---} \text{---} \text{---} \text{---} \\ \rightarrow A \rightarrow \\ \text{---} \text{---} \text{---} \text{---} \end{array} \right] \rightarrow A$$

In using the black box to speak about or explain such things as may have been contained within it, the black box is opened or whitened. Hence, the "description of a black box" (D), which is conventionally shown as a white box,



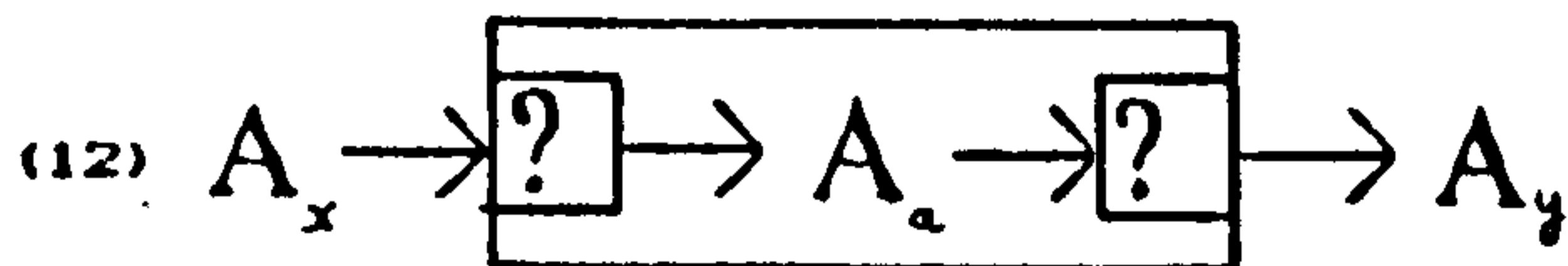
is nothing but a string of things we (can) speak about:

$$(11) \quad A_x \rightarrow A_x \rightarrow A_x \rightarrow A_y$$

Wittgenstein's "What we cannot speak about, we must pass over in silence", is reflected in the impossibility of either a black box without an input (2), or a black box without an output (5). Both (2) and (5) are results of trying to capture the change involved in speaking about a thing statically. The difficulty is resolved where this change is considered over time (in the process of pursuing our curiosity).

Wittgenstein's silence is also reflected in an oddity in this discussion of black boxes. The boxes shown, are all but black. The ideograms show what is inside them, speaking about what the black box contains. The discussion of black boxes, is but a string of things we speak about. In speaking about what a black box can be presumed to contain, i.e. what cannot be brought outside the black box, the black box is whitened, and hence eliminated, qua black box. Where the black box is spoken about, rather than used, this should not be surprising: setting out to explain and hence whiten the black box. Where, the black box is used to speak about the black box, this shows the process involved.

But the black box is white only insofar as it said, or known, to contain what we cannot speak about. It is black in that we cannot speak about, and cannot know, what in particular it may contain on any occasion. Hence the black box is a device for knowing that we don't (as yet) know. It is a device which allows us to pursue our curiosities; a device for finding out by subjecting what we don't (as yet) know, to our curiosity. The black box can thus be thought of as placed to raise a doubt or ask a question. Thus (temporarily substituting a questionmark for its blackness to avoid a reification of the black box), the ideogram



shows an answer to a question shown in the ideogram



$$(13) \quad A_x \rightarrow \boxed{?} \rightarrow A_y$$

Where the black box is thus taken as a place for raising a doubt or asking a question, this shows that any answer, (whitening the black box in a string of things we (can) speak about), can raise more doubts, and lead to more questions, than it answers. This potential (regression) shows why we cannot consider the black box without considering ourselves and what we do with it. If black boxes were placed automatically (if the black box raised questions, rather than being used by us to raise questions), it would be impossible to begin to answer a question!

No such problem arises where our use of a black box, to actually wonder about a thing and pursue a curiosity, is considered. In placing a black box to raise a doubt or ask a question at a particular time (t), an expression stated is changed, showing how we use the black box in changing our curiosity, eg. (returning to show black boxes as black):

(14)

t1	state	$A_x A_y$
t2	ask	$A_x \blacksquare A_y$
t3	answer	$A_x A_a A_y$

resulting in longer and longer descriptions of the relation about which we pursue a curiosity.

Similarly, the opposite process to the pursuit of a curiosity, i.e. the process of accepting relations described, can be shown in terms of the placing of black boxes, again changing relations stated:

(15)

t1	state	$A_x A_y$
t2	accept	$\blacksquare$
t3	state	$\blacksquare A_z$
t4	accept	$\blacksquare$

Placed within a black box, descriptions made, merge in the act of acceptance (a process I will later discuss as the process of construction).

Taking these ideograms to show relations between things we can speak about, the process of pursuing a curiosity can, at each point in time, be paraphrased in a single proposition of the form

"X relates Y to Z"

Instead, a similar paraphrase of the process of accepting runs into difficulties, or is at best cumbersome, eg.

"X relates to Y,  
...all of which relates to Z,  
...all of which relates to S."

While these paraphrases are notional, they show a correlation between the difficulties of showing these processes in terms of the first order black box, and a corresponding difficulty in speaking about them, or expressing them in our day to day language: speaking, and expressing ourselves, 'supports' the process of pursuing of a curiosity and 'supresses' the process of accepting. This correlation reflects on the relation between language and ontology (what we take to be the case). It reflects on the relation between construction and the pursuit of a curiosity, on the nature of these processes, and on their interaction with language: what is accepted is passed over in silence (placed within a black box), while the pursuit of a curiosity arises in speaking (whitening black boxes, giving rise to more black boxes).

Used as such, the black box bears a striking resemblance to Wittgenstein's "Satzzeichen", i.e. that which, being part of a sentence, cannot itself be said. The placing of black boxes, shows why the "Satzzeichen" cannot itself be said. Placing a black box between two expressions, we change our curiosity, and hence bring about a new expression. The distinction between the place-holder "?", showing a place where a doubt can be raised, and the actual placing of a black box (shown as a black square), corresponds to the distinction between the "Satzzeichen" which is not part of the expression (but indicative of a connection (which might be questioned)) and a part of an expression (addressing such a connection). If the "Satzzeichen" were said, the expression would be changed, and the "Satzzeichen" would no longer be a "Satzzeichen". The actual placing of a black box involves a consequent answer. If the "Satzzeichen" could be said (if the placing of black boxes were automatic), an infinite regression would result. Such automatic placing of black boxes, and such a regression, is entailed by the attempt to speak about what we must pass over in silence, eg. in the expression

"A1,A2,A3.",

three things are related together by some unspoken connections, shown by the "Satzzeichen" ",", and "." If these were in turn to be said, shown as "o", i.e.

"A1oA2oA3o",

and if such saying, were in turn to be treated as part of the expression, the connections between the said things "o" and the other things in the expression would eventually need to be considered, i.e.

"A1oooA2ooooA3ooo"  
and so on and on.

Where this regression arises in the nature of speaking, it is only the silence, Wittgenstein postulates, which enables us to speak sensibly (without involving ourselves in regressions of this kind with

every one thing we say). If the point is trivial, it is that in every-day life we are accustomed to pass things over in silence. In its triviality, however, this shows the danger of attempts (eg. semantics) to render our silences explicit. Such attempts mis-take things spoken about for what is beyond being spoken about, and in so doing, explore just such a regression (generating such hierachies as Russell suggested).

In our actual activities, we avoid this regression. We stricke a balance between pursuing our curiosity and constructing on the basis of what we accept; a balance between wondering and accepting; a balance between considering things and forgetting them; a balance between what we question and learn (epistemology) and what we refuse to question and accept as given (ontology).

\* \* \*

### SPEAKING BLACK BOXES

The black box can thus be interpreted as a device for directing, and selecting where to direct, our attention, both in the process of pursuing a curiosity, and the process of construction.

The possibility of placing a black box, raising a doubt, arises in an expression or description we have made. In placing a black box, this expression or description is changed: in directing our attention to a particular relation, we change our curiosity. An expession cannot be made (a relation cannot be stated) and considered (and questioned) in the same instant. The two must be distinct, i.e.

$$(17) \quad \underset{x}{A} \underset{y}{A} \underset{z}{A} \neq \underset{x}{A} \blacksquare \underset{y}{A} \underset{z}{A}$$

Russell's hesitation arises in a failure to distinguish between actual and possible expressions. This failure arises in his, and in any, generalisation.

Similarly an expression or description is changed in placing it (a stated relation) within a black box, (accepting the relation): in turning our attention away from a relation, we change our curiosity. Accepting a relation, placing it within a black box, we prevent ourselves from placing a black box, raising a doubt, on the relation itself. Acceptance merges the things related, for all we care to know about them, into one. An expession cannot be made (by stating, and hence distinguishing, the things related) and accepted (merging, and hence obliterating these distinctions) in the same instant. The two must be distinct, i.e.

$$(18) \quad \underset{x}{A} \underset{y}{A} \underset{z}{A} \neq \blacksquare$$

Placing an expression within a black box, is a forgetting of sorts: we accept, and remember, the whole, without, any longer, distinguishing the parts, in terms of which we accepted it. Whatever is placed within a

black box is passed over in silence.

Both in pursuing a curiosity and in constructing we use the black box to direct attention and to change our curiosity. Once considered, we can accept a relation (placing it within a black box). Once accepted, we can reconsider a relation (re-opening, or unfolding, a black box). Similarly, we can wonder about the relation between what we have accepted and something new, i.e.

(19)

t1 state    ■ A<sub>1</sub>  
t2 ask      ■ ■ A<sub>1</sub>

In so doing, we place a black box between a black box and an expression, "unfolding" the first black box.

In the light of a new expression we can reconsider a number of relations we previously accepted. In thus "unfolding" a black box, we reverse a process of construction, i.e. we reverse the process of accepting relations and "enfolding" them within a black box. This possibility suggests that all that can be unfolded (reconsidered) needs to have been enfolded (considered and accepted) first.

However, in relating a new thing to what we have accepted, the relation "unfolded" need not be one which we earlier "enfolded". The relation unfolded may be new. If nevertheless it is a relation "unfolded" out of a black box (suggesting that it was in the black box), it was presupposed (or enfolded) in the things we did accept. This suggests that the sequence, in which we accepted or enfolded things in a process of construction, need not bear any relation to the sequence in which we unfold them.

The process of construction and the pursuit of a curiosity are complementary; we cannot begin to consider a relation (placing a black box between two expressions), without accepting it; accepting that there is a relation to be considered. We cannot begin to accept a relation (placing it within a black box), without considering it; considering that there is relation to be accepted. We may do one overtly and the other covertly. We may distinguish the two, distinguishing what we accept and question explicitly, from what we accept and question implicitly. But this distinction in turn reflects the complementarity between the two processes. If it nevertheless these processes appear distinct; if the complementarity can be difficult to perceive, it is that our learning, speaking, and doing, arises in, and relies on, our ability to distinguish aspects of this complementarity, and treat these as distinct; distinguishing between what we take to be the case (ontology), and what we can learn, say, and do with this (epistemology).

The complementarity between these two processes reflects on the notions of time and existence.

In the narrow sense of unfolding the possibility of (simply) reversing a process of enfolding, assumes that an externally observed sequence in a process of construction can be reversed in pursuing a curiosity. Similarly, if anything which can be unfolded must have been enfolded, the things unfolded or enfolded are assumed to have an existence which remains unaffected by our curiosity and acceptance. (Unless such existence is assumed, the complementarity between the two processes leads to a problem of origin, where anything unfoldable would need to have been enfolded, while anything enfolded would need to have been unfolded first.)

Where in the wider sense of unfolding, a thing unfolded need not have been enfolded as such, no external time reference is assumed. Epistemologically, the existence of a thing, as far as we can know of it, is brought about by an observer and depends on his curiosity and acceptance. Where the result of unfolding a black box is indeterminate, the use of the black box cannot be separated from its user.

The indeterminacy of unfolding a black box reveals the form of acceptance. However many things we speak about and unfold 'out' of a black box, the black box itself remains unaffected in being thus unfolded:

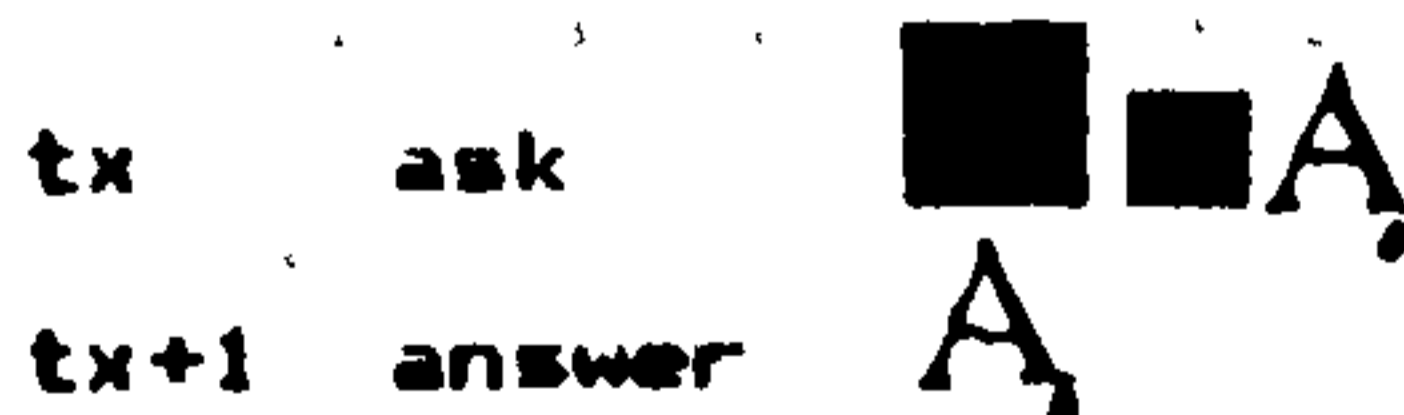
(20)



(While we wonder about how a new thing we speak about relates to what we have accepted, we persist in accepting all things which are not brought into question by this new relation.) While particular relations are accepted when placed within a black box, the black box cannot be considered as representing the acceptance of a set of particular relations. It reflects the wholeness of the act of acceptance. The wholeness of Wittgenstein's silence, within which nothing can be distinguished. In order to be distinguished it would have to be brought outside the black box. It would, in Wittgenstein's terms, have to be spoken about.

Consider now the point where we refuse to further unfold a black box:

(21)



This corresponds to equating the black box and what is outside it with what is outside it, i.e.

(22)



It might appear that in so doing, we remove the black box. But consider Gertrude Stein's well known example of just this type of assertion,

"A rose is a rose is a rose".

Refusing to (further) question what a rose is, we accept, and hence place whatever a rose is, within a black box. Where we thus use the black box to assert that there is nothing (more) to be said about a thing, we assert that a thing is itself. We use the black box to pass a thing over in silence (so as to be able to do something with it).  
>C=Y

\* \* \*

#### WITTGENSTEIN AND SELF-REFERENCE

The black box can thus be used to indicate that we know that we don't know. Placing a black box to direct our curiosity to what we don't know, we can pursue this and try to come to know. But, more basically, using the black box to indicate that we know that we don't know, we can begin. (Beginning, in the sense of saying "A rose is a rose is a rose"). We use the black box, knowing that we don't know, and don't care to know, to treat the foundations of our reasoning (or more generally, the starting point of a particular process of construction) as irreducible.

Similarly, Wittgenstein's observation that the world is constituted of all the facts (we know), in addition to our knowledge that these are all the facts, can be shown in terms of the black box:

$$(23) \quad \blacksquare V_{\text{facts}} = V_{\text{facts}}$$

equating all the facts known to us (shown as  $V$ ) and the doubt (black box) as to whether these are all the facts with our knowledge of all the facts. While the concern with a completeness of knowledge and the concern with the foundations of our reasoning may be seen as opposite extremes, their similarity reflects the complementarity between the process of construction and the pursuit of a curiosity, and emphasises the essential role of self-reference in knowledge. While logicians have been at pains to grapple with this in the generalised form of

$$(24) \quad f(x) = x,$$

it is precisely in this form that we can accept things and limit our curiosities. The acceptance or rejection of this form underlies the differences between Russell and Wittgenstein. In its all-pervasiveness this form enables us to limit and to pursue our curiosities beyond what we take, at any one time, to be the limitations of our world.

Placing a black box we bring about a change in our curiosity. Thus, we can begin to speak about what we previously could not speak about. To say one thing rather than another, we pass the black box over in silence. In not being spoken about, being placed within a black box and thus passed over in silence, relations can (temporarily) escape our curiosity. To assert and explore any one relation, other relations need to be passed over in

silence; in Wittgenstein's terms, we can only speak about bounded portions of the world. If we could not pass things over in silence, we could not begin to say anything.

(1)



which shows Wittgenstein's notion, that we can only speak about bounded portions of the world. It also shows the reification involved in speaking about a THING, in that we need to distinguish the thing we speak about.

But, just as the change involved in speaking cannot be shown using the conventional black box, it runs into difficulties with the notion of a distinction, as this is treated by Spencer Brown (or with the conventional view of the two-sidedness of boundaries).

To say "I hereby distinguish what I speak about from what I pass over in silence" is to contradict oneself. Where A is distinguished from B, and represented as in (1), B is spoken about while, at the same time, taken to show what is chosen not to be spoken about. To say "I hereby distinguish A", is to speak about what we can speak about, passing what we pass over in silence, over in silence. No contradiction arises in distinguishing A:

(2)



Here talk of distinguishing appears superfluous: to thus distinguish what we speak about (A), is simply to begin and

(1)



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Here talk of distinguishing appears superfluous: to thus distinguish what we speak about (A), is simply to begin and proceed to speak about this. But the



distinction between what we choose to pass over in silence (B) and what we choose to speak about (A), is all but superfluous: only such an act of distinction enables us to begin to speak.

To consider how (or that) the act of distinction enables us to speak about a thing, is to distinguish the thing we speak about from the distinction which allows us to speak about it:

$$(3) \quad A \overline{\overline{\quad}} \overline{\quad}$$

In considering the act of distinction which enables us to speak about a thing, we raise a doubt about the validity of this distinction. We perceive that what we can say depends on what we choose to pass over in silence. We can go on and on questioning such distinctions (pursuing a curiosity). But, to do so for its own sake, is judged pedantic. A distinction made, tends to be accepted. While any distinction between what is passed over in silence and what is spoken about, can be questioned, such a distinction needs to be accepted to speak about any one thing. In this acceptance we acknowledge the silence. We acknowledge the arbitrariness of our beginning. In Spencer Brown's Laws of Form, this is shown in the cancellation, to silence, of the double cross:

$$(4) \quad \overline{\overline{\quad}} =$$

In terms of the above discussion of black boxes, this potential regression in questioning the distinction which enables us to speak about a thing, is terminated in the refusal to question. Thus the act of acceptance can similarly be shown in terms of distinctions,

$$(5) \quad A_x \overline{\overline{\quad}} = A_x$$

which shows why talk of distinguishing appears superfluous. Where we cannot speak about the distinction between what we take to be beyond, and what we speak about, we simply begin and proceed to speak about whatever we wish to speak about. Such common sense, however, leads to a contradiction in Spencer Brown's terms, where crossing a boundary once results in silence just as crossing it twice results in silence (there being no distinction), i.e.

$$(6) \quad \begin{array}{l} \overline{\overline{\quad}} = \\ \overline{\quad} = \end{array}$$

Worse, still, such common sense questions the very point of considering the drawing of distinctions, rendering

$$(7) \quad \overline{\quad} = \overline{\overline{\quad}} = \quad !$$

These difficulties arise in considering how what is beyond is changed in being spoken about in terms of distinctions and correspond to the difficulties of capturing this transformation in terms of the black box. They arise in a lack of clarity as to whether the distinction between what we pass over in silence and what we speak about, is itself passed over in silence, or whether it is part of what we speak about.

This lack of clarity lies in the very notion of a distinction. It arises in the temporality of the act of drawing a distinction. Just as we change our curiosity in the act of placing a black box the act of drawing a distinction gives rise to the possibility of changing our curiosity. To begin to speak about a thing, is one thing. To begin by saying "Let me begin with this." is another. (Similarly, to speak about what we can speak about is one thing, while to speak about how we distinguish what we speak about is another.) The latter may be implicit in the former. But being implicit, it is passed over in silence. The difference lies in speaking about the distinction by which we begin speaking about a thing. To do so is to raise a doubt about, and to ask for the acceptance of, the beginning chosen.

The act of drawing a distinction cannot be considered outside time, for it involves time. In drawing a distinction, we raise a doubt about the validity of this distinction. To accept this doubt is to pass the distinction over in silence (to place it within a black box). To address this doubt is to consider the distinction itself as part of what we choose to speak about. To address this doubt, is to begin to pursue a curiosity. To consider whether the distinction itself is passed over in silence or taken as part of what we speak about, it is necessary to consider what we do with the distinction. It is necessary to consider how we proceed, having drawn a distinction. Subject to our curiosity, we can take any thing spoken about as distinguished (considering the distinction by which it is spoken about):

(8)  $A : A \sqsupset$

In treating it as distinguished, considering this distinction, we unfold or question what we have said. Similarly, subject to our acceptance, a thing distinguished can be taken as a thing

(9)  $A \sqsupset : A$

In accepting A, we unfold whatever was passed over in silence in distinguishing what is spoken about, into what is spoken about. In other words, should we ever change our mind and wish to consider how we distinguished A (i.e. what we passed over in silence in distinguishing it), we can unfold this out of A (as though, in the narrower sense of "unfolding", we had unfolded it).

It is thus in overlooking the distinction (!) between implicit and

explicit distinctions (between accepting and questioning a distinction) in a timeless world (of logic), that the act of drawing a distinction appears pointless.

\* \* \*

### DISTINCTIONS AND LEVELS

Consider a distinction between two things we can speak about:

$$(10) \quad A_1 \sqsupset A_2$$

Distinguishing one thing from another this would appear to be a distinction in the ordinary sense of a two-sided boundary. However, to thus distinguish two things from one another, we need to speak about them, and hence we need to accept the distinctions which enable us to do so. Subject to our curiosity, we can reconsider these distinctions, i.e.

$$(11) \quad \overline{A_1} \sqsupset \overline{A_2}$$

Where Spencer Brown's cancellation rule is applied to this, it appears that the two things have not been distinguished from one another at all:

$$(12) \quad A_1 \overline{A_1}$$

All that appears to be distinguished is that we choose to speak about these things, passing anything else over in silence! Where a notion of levels is invoked to prevent a distinction of one sort to lead to the cancellation of a distinction of another sort, a distinction between different types of distinctions is involved. This distinction would, in turn, need to be distinguished in type from the distinctions it distinguishes, and so on and on, leading to an infinite regress of types of distinctions:

$$(13) \quad \overline{\overline{\overline{\overline{A_1}}}} \overline{\overline{\overline{\overline{\overline{\overline{A_1}}}}}}$$

More importantly, such distinction in levels renders the process of drawing distinctions irreversible. Once drawn, the drawing of a distinction could not be reconsidered: distinctions cannot be accepted or questioned across levels invoked to distinguish between distinctions. In introducing a level, in distinguishing between distinctions, the role in which distinctions are to be treated is fixed, and hence whatever was accepted prior to this act can no longer be questioned. (To introduce levels is thus to introduce limits on our abilities to accept and question distinctions.)

In distinguishing between distinctions the reification involved in speaking is emphasised: where levels prevent things being questioned and unfolded beyond a certain point, things distinguished are treated as things given. To invoke levels

is to banish the silence; is to place it beyond reach. What was passed over in silence in distinguishing a thing given can no longer be unfolded; what may be said about a thing and accepted, can no longer be enfolded within it.

However, the need to introduce levels arises only in a timeless world, i.e. in a world in which the temporality the activity of drawing distinctions cannot be accommodated. Thus, where at a particular point in time we speak about one thing, and at another point in time we speak about another thing, there is no need (and, no possibility) to distinguish between these two things: each is distinguished in its own right, and there is nothing to bring the two events together, i.e.



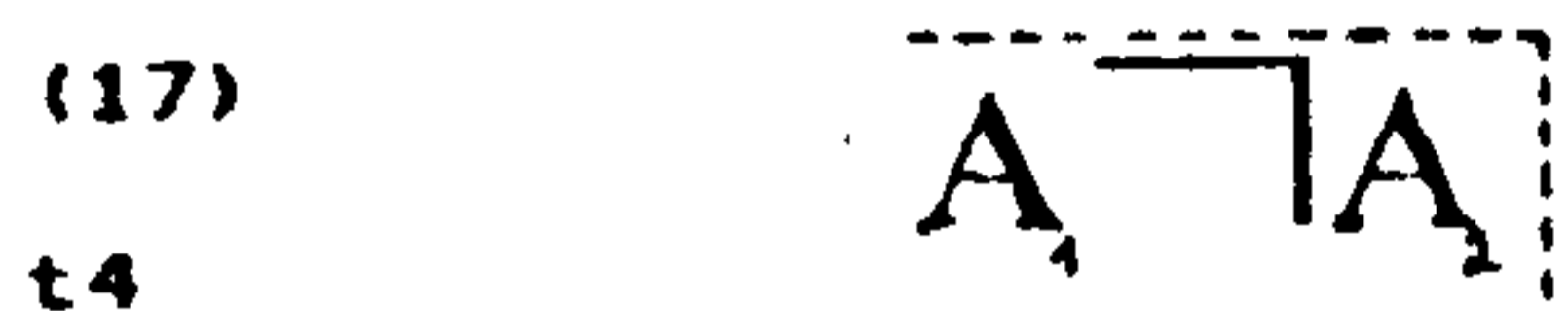
In order to distinguish the one thing from the other (i.e. before we can distinguish between them) they need first to be brought together (eg. by distinguishing a similarity or a relation between them) i.e.



The double crossing rule applies here and enables us to bring two separate things together, distinguishing them from whatever else we pass over in silence, in speaking about them:



Having thus brought two things together, can we distinguish between them in the normal sense of distinguishing one thing from another,



We thus distinguish one thing from another within the distinction (shown dotted) in which we speak about the two, passing whatever else over in silence). Concerned with the relation between two things we do speak about, we (can now) pass this distinction over in silence (as a trailing cross). We may at a later stage reconsider it, eg. wondering about something we have passed over in silence in distinguishing them.

This trailing cross corresponds to Spencer Brown's "unwritten cross": in a timeless system, the trailing cross remains unwritten around every expression in the system. It is the distinction by which such a system is distinguished, and maintained outside time. This suggests that there is nothing special about this unwritten cross. Like any cross (showing a distinction), it is either passed over in silence (where we accept it) or part of what we speak about (where we are curious about it). Like any cross, the "unwritten cross" is, in time, actively written and unwritten.

DISTINCTIONS, LEVELS AND TIME

Thus Spencer Brown's "unwritten cross" acknowledges the temporal nature of the act of drawing a distinction. With a view to time, there are other implicitly temporal notions in his a-temporal calculus. Most clearly perhaps the cancellation of the double cross involves time: we need time to cross a distinction and then crossed again; we need time to cross and "un-" cross a distinction.

More basically, however, the very two-sidedness of the boundary we perceive as result of drawing a distinction) only arises with regard to a fixed point in time. This corresponds to Wittgenstein's analogy with the field of vision, which while being bounded has nothing visible, to us from where we stand, outside it. Similarly, the process of drawing one distinction after another in pursuing a curiosity, can then be likened to the process of walking, finding the landscape, so to speak unfolding itself as we proceed. In pursuing a curiosity we do not discover the other side of the boundary. The boundary as we perceive it in one instant, "dissolves" in the next, - just as the horizon does not leave a line on the landscape which we eventually cross on a walk. The trailing cross is passed over in silence. It is only relative to a particular position in time, that we can draw a distinction.

Consider how we may come to know time. Going for a walk we perceive the process of walking in terms of how the landscape unfolds as we proceed. Similarly, the drawing of a distinction does not depend on a position in (some externally observed) time. We perceive the passing of time in the process of drawing one distinction after another. We perceive changes in our boundaries. We perceive time in distinguishing one event from another.

Thus, rather than distinguishing things and events and establishing a mapping between them, as the ordinary notion of time suggests, the very act of distinguishing the thing, constitutes the event. Where the two are one no mapping is needed, or indeed possible.

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...AND THE CYBERNETICS OF LANGUAGE

It may now appear necessary to turn to how this discussion of black boxes and distinctions can be applied to language. It cannot be applied to language. To be applied to language, this discussion would have to concern something other than language, which, I maintain, it does not.

The difficulty arises in that we pass these aspects of language (eg. the silence) over in silence. It is in passing them over in silence, that we can use a language, or appear to use language. It is in passing them over in silence, that we can distinguish a language as a thing, or believe there to be such a thing as language. Moreover, in using language to speak about language, we appear to have no choice, but to pass language over in silence. (In using use the black box to study the black box we appear to pass the black box over in silence).

The transformation between the silence beyond and what we speak about involves (or cannot be separated from) the notion of existence, in the reification involved in speaking. Moreover, it involves the notion of the existence of language. Where language exists in the balance of the complementary activities of constructing and pursuing our curiosities, the reluctance to question its existence (the tendency to reify it) is shown in the circumstance that the black box remains unaffected in being unfolded. No matter what we unfold out of the black box, we are left with the SAME black box: no matter how much we question and change language, we tend to insist that IT is one and the same language. Where we ultimately 'unfold' a black box by saying that a thing is what it is, we ultimately unfold language by saying that it is what it is (by saying that the language is the meta-language; or, by saying that the language is whatever we say it is).

Where, in any one act, the language is what we accept and pass over in silence we place the language within a black box. Unfolding this black box, we unfold parts of language, which, in turn we enfold into the black box. Thus unfolding and enfolding, we explore parts of the language in pursuing our curiosities. Where, over time, language arises in the interaction between the complementary processes of constructing and pursuing our curiosities, a reification of it may cristalise every now and then, but, like the placing of the black box language lives in our activities (to guard against reification it is better to speak of our linguistic activities). Where the black box is treated as distinct from language, it is both an example and model of language.

Arising as an activity in the interaction between these two processes, language is a process, and hence involves, and cannot be separated from, our notion of time. Our experience of time arises in, and with regard to, our (linguistic) activities. Our notion of time arises in distinguishing activities.

In the reification involved in speaking about language, however, language is cut out of the very process in which it exists as an activity. In speaking about language, its reification leads to the introduction of levels, distinguishing some things, which we (then come to think we must) accept, and which we call "the language", from others, which we may or may not accept and which arise in 'what we can do with the language'. To overcome the difficulties in speaking about language, it does not in itself suffice to speak about activities. It is necessary to recognise the mutual interdependence of our conceptions of language and what we can say about language, and what we take to be the function of language; recognising that where language is reified in being spoken about, it is (bound to be) whatever we may say it is (used for).

Where any one (asserted) use of language entails a particular reification of language (a particular language), the reification in speaking about language can be minimalised, or even overcome, in considering the interaction between a number of uses of language. The reification can be overcome in a process of changing our curiosity in and about language. I will thus unfold language by considering

(i) that in terms of a constructive function of language, there is no language (something is in the process of being constructed),

(ii) in terms of a communicative function of language, such a construction is in the process of being or not being accepted (something is in the process of being negotiated) and

(iii) in terms of an argumentative function of language, a commonly accepted language (taken for granted, eg. having been negotiated) is necessary to examine (or negotiate) things other than this language.

In the process of changing our curiosity about language, the reification of language is explored. The reification involved in speaking suggests that a language needs to be commonly accepted before we can speak about things other than language. It suggests, that the processes of construction, communication and argumentation are independent stages in the development of language. But they are not.

Such stages are indeed distinguished where a language is spoken about. They are distinguished in speaking about language. They are distinguished in arguing, i.e. in distinguishing a language from the things spoken about. They are distinguished in using a language, i.e. in distinguishing between the language and what we can do with it. They are distinguished, and

invoked as independent (invoking levels), where a language is constructed for a particular purpose (i.e. artificial languages)

To speak about a language, in turn, is to use a language to do so. To distinguish these processes and ordain their independence, in turn is to use language to do so. It is to distinguish the language used to do so from our ability to distinguish, and thus to distinguish between distinctions. The discussion of distinctions shows that there is nothing to distinguish the "unwritten cross" from any other cross, that there is nothing to distinguish distinctions, except in how we choose to treat them (for a particular purpose). Thus, the need to distinguish a language from what we do with it can only arise in speaking about a (reification of) language. To distinguish between, and treat the three processes as three independent stages in the development of a language, is to treat language as a thing, as an it. To distinguish a thing, to distinguish language as a thing, is to step out of the process in which we construct, communicate and argue. It is to step out of the process in which we can change our curiosity: surrounding the language we speak about with a(n unwritten) cross.

It is instead, in the activity of pursuing our curiosities, in the activity of constructing, communicating and arguing that the reification of language is overcome in the coincidence of what we DO and what we speak about. In the process of construction, the construction of a language coincides with the construction of what we speak about. The "two" are one. In the event of communication, the communication of the language coincides with the communication of what we convey. The "two" are one. In beginning to argue, the distinction by which we distinguish the thing we argue about coincides with the distinction by which we distinguish the language. Where the "two" are thus one, the end is in the beginning.

In the activity of pursuing a curiosity, in constructing, communicating and arguing, in doing what we speak about, what can be said about construction relies on the ability to communicate and argue, what can be said about communication relies on the ability to construct and argue and what can be said about arguing relies on the ability to construct and communicate.

In the process of pursuing a curiosity, this or that language may be distinguished as an it, for the purpose of this or that argument, and with regard to this or that curiosity. In changing our curiosity, in the process of constructing, communicating and arguing, we journey between things we speak about and languages we distinguish as things. In so doing, we explore the complement to speaking, the silence. Between things, we explore the complement to things. We explore the "I" of language, in which we construct, communicate and argue (within which we can distinguish things and languages as its).



## WHAT WE CAN SPEAK ABOUT

### (OR, NATURAL LANGUAGE AT THE BOUNDS OF OBJECTIVE KNOWLEDGE)

Where the "I" of language unfolds between Wittgenstein's silence, and its complement, speaking, we cannot speak about language. Where to speak about a thing is to distinguish it, we cannot speak about the process within which we can distinguish. Where language is what enables us to speak about bounded portions of the world, while itself being unbounded, and where we can only speak about bounded portions of the world, we cannot speak about language.

If nevertheless we can say a good deal about what we cannot speak about, we can do so in the process of pursuing a curiosity. Whatever can be spoken about, is said and interpreted within such a process. To speak about a thing, is to distinguish it by arresting this process. The boundedness of what we can speak about arises in the absence of time within one act of speaking. To interpret what is said in speaking about a thing, is to obliterate the distinction by which it was distinguished, is to move on in time. Where in the absence of time, we can speak and argue about a bounded portion of the world, we cannot interpret this. Where in the process of pursuing a curiosity, we can say and do a good deal, this cannot, in terms of speaking about one thing, amount to an argument.

While the difficulty of reifying language in speaking about it, is overcome in a process of pursuing a curiosity in and about language, a difficulty arises where all that can be said is what can be spoken about. While a good deal may be said and done in pursuing a curiosity in and about language, where language cannot be spoken about, this would appear not to be said (in and about language)! The difficulty of reifying language in speaking about it arises in the form of speaking. The difficulty about what can be said in a process of pursuing a curiosity arises in the form of interpretation.

What is said, is what is taken to be said. Thus the difficulty arises in part in a particular convention about what it is to say something. Although it is only a convention that all that can be said is what can be spoken about (i.e. that to say something we need to be able to speak about the interpretation of what we say), the purpose of this convention is to avoid the indeterminacy in what can be taken to be said. To transcend this convention is thus to accept this indeterminacy.

But as this indeterminacy arises in the form of interpretation, it is in involving interpretation that language cannot be spoken about. To try to speak about language (avoiding this indeterminacy), is to eliminate interpretation (i.e. in artificial languages). To use language to do so, is, nevertheless to accept this indeterminacy (while pretending not to)!

Where our ability to speak about bounded portions of the world, and our ability to accept conventions (eg. that what can be said is what can be spoken about) arise in language (activities, i.e. in the processes of construction, communication and argumentation), it is necessary to transcend this convention, to say something about language. It is necessary to accept the indeterminacy.

The indeterminacy of interpretation bounds what we can say about language (eg. we cannot speak about how what is said is interpreted) and it is in terms of these bounds that we can say a great deal about language and about what we can speak about.

The convention whereby what can be said is what can be spoken about is transcended ordinary language, where it is in the indeterminacy of interpretation, that there can be intelligence. The difficulties with this indeterminacy arise in speaking about things. They arise in the timelessness in which action and interpretation are excluded: where there can be a coincidence between what we say and what we do, there is no need to avoid the indeterminacy of interpretation. At any particular point, the indeterminacy is removed in the coincidence of what is said and done.

Thus, what can be said about language (transcending the convention whereby what we can say is what we can speak about) is what can be said and done in a process of pursuing a curiosity in and about language. The indeterminacy about what curiosity we pursue, and how we pursue it is removed in the coincidence of what we say with what we do. It is removed where what is said about language is said in the form of interpretation.

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## THE NATURAL AND THE ARTIFICIAL

The differences between Russell and Wittgenstein can be seen as rooted in Russell's concern with the artificial, and Wittgenstein's concern with the natural; or with what applies to both the natural and the artificial (and to which distinctions from within the artificial, and excluding the natural, cannot apply).

The difficulty arises in distinguishing between the natural and the artificial. Since any distinction is an artificial one (artificial, in the sense of being made by us), a distinction between the natural and the artificial, appears necessarily to lead to the artificial. This corresponds to the difficulty in speaking about what is passed over in silence. The complementarity between speaking and passing over in silence is reflected in the complementarity between the natural and the artificial. In distinguishing (or using) the natural we create the artificial. In understanding the artificial we rely on the natural.

In the complementarity between the natural and the artificial, the open process (involving time) generated in the complementarity between speaking and passing over in silence characterises natural language, while artificial languages are a-temporal products of this process, in which the residue temporality of the natural process is unfolded in terms of levels. In terms of this distinction, the construction of an artificial language is a natural language activity, and an argument requires an artificial language, to the extent to which it needs to stop the flow of the natural language process.

Where an artificial language is distinguished from the natural activities in which it was generated, the interaction between the construction of the language and what is said within it, is eliminated. In an artificial language a distinction between the language and what we can speak about is invoked; the distinction by which the language is distinguished, is ordained distinct from the distinction by which things spoken and argued about are distinguished; the construction of the language is ordained to be distinct from the construction of the things we speak about and thus the communication of the language (eg. of the code) is distinct from what is conveyed using the language.

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## THE ARTIFICIAL AND THE UNWRITTEN CROSS

The distinction by which an artificial language is distinguished from the natural process in which it is generated thus amounts to surrounding all that can be said within this language with Spencer Brown's "unwritten cross".

Where in the natural process the

construction of a language coincides with the construction of what is said (where the language is communicated in what is conveyed), the language is affected (constructed and communicated) with everything said. Where what is said affects the construction of the language, whatever has previously been said is unwritten in the process of saying something new: to speak about one thing other things need to be passed over in silence.

To distinguish an artificial language from the natural process in which it is constructed, is to avoid such unwriting. Such unwriting is avoided in speaking about one thing, rather than another. It is avoided where everything said, is said within one distinction between what we choose to speak about and what we choose to pass over in silence.

To thus distinguish an artificial language and surround all that is said with an "unwritten" cross, is to limit what can be said in that language. It is to limit what can be spoken about in the language to one and the same thing, passing the same things over in silence.

Just as we can only speak about bounded portions of the world, we can only argue, in differing about one and the same thing. Thus, the distinction of an artificial language from the process in which it was constructed enables us to argue, knowing what we are arguing about.

But, to insist on speaking about one thing alone, passing the same things over in silence, is to constrain (and limit, in Russell's sense) our curiosity. It is to reify our curiosity and thus emphasises rather than removes the reification involved in speaking. While an artificial language is distinguished to pursue a curiosity with some rigour, the curiosity in arguing must arise outside the bounds of this language. Within an argument, there can be no point in arguing.

A distinction between natural language, in which we proceed from speaking about one thing to speaking about another, and artificial languages, within any one of which we speak about one thing only, reflects the complementarity between the natural and the artificial in the difficulty of distinguishing between speaking about one thing and speaking about another. This difficulty is shown in the essential similarity between saying that a thing is itself (refusing to further unfold a black box (22)) and considering the world as a whole (including our knowledge that it is the whole world (23)), i.e.

$$(1) \quad \blacksquare A_0 = A_0$$

$$\blacksquare V_{facts} = V_{facts}$$

It is reflected in the one-, rather than two-sidedness of the distinction between what we speak about and what we pass over in silence. It is reflected in Wittgenstein's observation, that the possibility for a thing to occur in a state of affairs, must be written into the thing itself. Anything may be unfolded in speaking about one

thing. To speak about more and more, and eventually all, things, is to speak about one thing. The two are complementary, and as processes come to the same.

In this complementarity natural language is distinct from artificial languages in the interaction between our curiosity and what we speak about. To speak about a thing in the natural process (of continuously changing our curiosity), we need to be curious about this thing. To speak about a thing in an artificial language, we need, instead, to adopt the particular curiosity reified in the particular language which enables us to speak about this thing. In natural language our curiosity determines what we speak about, while in an artificial language our wish to speak about a particular thing determines our curiosity. In one case our curiosity changes and changes what we speak about; in the other case, one curiosity is used to determine another curiosity, and hence two levels of curiosity are distinguished. Where all that can be said in an artificial language is surrounded by an unwritten cross, this cross thus distinguishes these two levels of curiosity.

Spencer-Brown's calculus applies to distinctions drawn by someone with one curiosity. To apply his calculus, is to look upon such distinctions as an observer, who's own (unwritten) distinctions do not effect the calculations. The "unwritten cross" thus separates the observer (and his distinctions) from the distinguisher. It is, and excludes from the calculus, the distinction by which an observer distinguishes what he chooses to speak about, as a distinguisher. It distinguishes distinctions drawn by anyone who adopts the particular curiosity distinguished by the unwritten cross.

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#### BOUNDED PORTIONS OF THE WORLD AND SEMANTICS

Within any one artificial language we can speak about a bounded portion of the world. In natural language, we can speak about a bounded portion of the world in every act of speaking, and change our curiosity in the process of moving from one act to another. Where thus what can be spoken about within one artificial language is bounded and what can be spoken about within one speech act is bounded, the question arises how what can be said about a thing in an artificial language differs from what can be said about it in speaking about it (how what can be said about a thing using a language differs from what can be said about it).

Consider a language (L) constructed to speak about a bounded portion of the world (D), and consider how the ability to speak about D differs, if it does, from the ability to speak about D using the language L. In either case D is delineated by the distinction to speak about D and pass whatever else over in silence, i.e.

(2)

$\overline{D}$

The construction of L is based on this distinction, and the curiosity we can pursue in L is bounded by this distinction. It is the "unwritten cross" which surrounds anything which can be said (shown as "l") within L.

(3)

Within L this distinction must be passed over in silence. It cannot be drawn or spoken about, within L, without in so doing "unwriting" L: to speak about this distinction is to speak, and raise a doubt, about what is passed over in silence within L. This distinction can, however, be spoken about, not using L (it is spoken about in the construction of L). Not using L, moreover, what is passed over in silence in L can be unfolded and spoken about.

Anything which can be said ("l") about D using L, can also simply be said (shown as "s") about D (without using L). For each "l", there should thus be a corresponding "s", i.e.

(4)

Whatever can be said in an artificial language L, can also be said in natural language, eg. in the process of constructing L. It is in the construction of L that what can be said ("l") in L, is said ("s") outside L. Whatever can be spoken about within L needs to be distinguished outside L (using natural expressions "s"). The possibility of making an "s" corresponding to each "l" is the possibility of constructing L.

Where an L has been constructed, the correspondance between "l" and "s" enables us to speak outside L (in "s" expressions), about what is said in L (in "l" expressions). What can thus be said about what is said in L, is said about (what was said in) the construction of L.

In naturally speaking about what is said within an artificial language, the absence of an unwritten cross in our natural activities is used; using a corresponding "s" to pursue a curiosity about an "l" beyond the bounds of L.

Where the form of interpretation is the complement of the form of speaking, what is said in L, being bounded by an unwritten cross cannot be interpreted in L. It can only be interpreted in terms of what we can naturally say ("s") about what is said within L: it is interpreted, in time, in the silence between "s" expressions. It is only in terms of what we can say naturally, that the things passed over in silence in distinguishing D can be unfolded.

The possibility of doing so is what is referred to as the semantics of a language. It is to be able to do so that what can be said in an artificial language is what can be spoken about. In using natural expressions to speak about and explain expressions in an artificial language, the "semantics" of a language L is no more than

the natural by-product of constructing an artificial language.

The need for a semantics arises only in an artificial language. It arises in the need to bridge the unwritten cross by which the language is distinguished from the process in which it was constructed. This cross needs to be bridged to move on in time, to interpret what can only be spoken about within an artificial language (or to move on in time to change our curiosity). Embedded within one act of speaking, an artificial language cannot accommodate the complementary act of interpretation. Rather than constituting an interpretation, a semantics simply bridges between a timeless language and the process in which, in time, things said can be interpreted.

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#### INTERPRETATION, INTERPRETATIONS AND SILENCE

However many artificial languages may be embedded within one another, one artificial language cannot be interpreted in another artificial language, for it is in excluding interpretation, that any artificial language needs a semantics. There is no difficulty in the circumstance that natural language cannot have a semantics. The difficulty rather arises in the notion that a language 'has a semantics'; in the notion that interpretation can be (or needs to be) spoken about. It is this notion which leads to a hierarchy of languages. It is this notion which distinguishes even an ever-changing hierarchy of languages from the process of (natural) language.

We interpret things silently. We interpret particular things we say at a particular time. Should a question arise, we may, in addressing this question, speak about how we interpreted something. In so doing, we change our curiosity, bringing what was beyond being spoken about into the domain of speaking. In thus speaking about what was beyond being spoken about, this is transformed. In changing our curiosity, we turn away from what we were speaking about, changing what we are speaking about. The particular curiosity in wondering about how we interpreted a thing, moreover determines what we can say about how we interpreted it.

To speak about how we interpret a thing is to unfold a silence. There is no way of knowing what we will unfold. This is the nature of interpretation: rather than being ambiguous (where we would need to know the possible interpretations) or imprecise (where we would need to know exactly what sort of thing we will unfold) or unspecific (where we would need to know the specific set of things which may be unfolded), interpretation is simply, and essentially, unpredictable.

Natural interpretation (or naturally interpretation) is silent and thus essentially indeterminate. In the process of speaking, interpreting, and changing our curiosities, the interpretation of a particular thing said, can become subject to our curiosity. Where necessary, any

doubt concerning a particular act of interpretation, can be clarified in the very process in which it arises. Given time, there is no need to speak about (or prescribe) how, in general, expressions of a language are (to be) interpreted.

In time, the process in which a thing is said coincides with, and is indistinguishable from, the process in which we speak about how a thing was interpreted. In the indeterminacy of interpretation the two processes are one. Within this one process, speaking about one, is distinct from speaking about the other, only in time, i.e. they are distinct in curiosity. We speak about one thing on one occasion, and about another thing on another occasion.

In an artificial language this time is excluded. To argue, we need to know that we are speaking about one and the same thing. Hence we need to exclude the possibility of thus changing our curiosity. In speaking about how what is said within a language is interpreted, we change our curiosity and hence unwrite the timelessness which such a language exists.

In speaking about how an artificial language is interpreted, we prevent such unwriting by distinguishing the language from the meta-language in which we do so. Time spirals on, as we move from language to language, in just the same way as, in time, we move between speech acts. Wherever we change our curiosity, we leave a language behind, in just the same way as we naturally pass what we have said over in silence (unwrite what was said with every new thing said). In moving from language to language we move through a silence, in just the same way as we naturally interpret silently.

If, to this hierarchy of languages there can be no end, it is that whatever can be said (about how a thing was interpreted), in turn, needs to be interpreted, silently. An end can be made to this hierarchy of languages where there is no need to speak (about how a thing was interpreted). If to this hierarchy of languages there can be no given end, it is, that there are no given bounds to our curiosity. To move from bounded language to bounded language, is to move naturally from speaking about bounded portions of the world, to speaking about other bounded portions of the world.



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#### PARADIGM AND THE BLACK BOX

While there can be no (given) bounds to our curiosity, we need to bound our curiosity to do or say anything. We bound our curiosity in speaking about a thing, speaking about one thing rather than another. We cannot change our curiosity within the act of speaking. The possibility of changing our curiosity arises in the act of interpretation. We can only change our curiosity in the process of moving from one act of speaking to another. Any act of speaking stands against time. What is said within it is timeless, and can only be temporal by reference to the act in which it is said.

To be able to change our curiosity, is to be able to choose the curiosity we wish to pursue: it is the ability to direct our attention to a thing (for as long as we choose). To be able to change our curiosity, we must also be able not to change it. This is what we choose to do in artificial languages, and it is what enables us to consider something in depth.

In choosing not to change our curiosity, we embed all we say about a thing into a single speech act. Thus in artificial languages, the time generated in their construction is embedded or enfolded in the language (and can be unfolded through the semantics of the language). The ability to do so is the ability to enfold (accept) things in (and unfold (question) things out of) a black box. But unlike the indeterminacy in unfolding a black box, artificial languages are determinate by reference to the particular temporality of their construction.

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#### 'DESCRIPTIONS' AND DESCRIPTIONS

In terms of this difference it is necessary to distinguish between 'descriptions', the 'interpretation' of which is determined, and descriptions (made in single speech acts), which are naturally subject to the indeterminacy of interpretation. While descriptions are made and interpreted in the natural processes, the 'interpretation' of 'descriptions' can only be determined where this ordained (or prescribed) to be so within an artificial language or descriptive framework.

In making and 'interpreting' 'descriptions' we choose not to change our curiosity, so as to be able to pursue a thing with some rigour in some depth. In choosing to make a 'description' within an artificial language or descriptive framework, we choose to pursue the curiosity, for the pursuit of which this language or paradigm was constructed. A 'description' can only be 'interpreted' in terms of the artificial language or paradigm in which it is made. All 'descriptions' made within a (static) paradigm constitute a single speech act, no matter how many statements or scientists

are involved. Embedded within one speech act, a paradigm constitutes a description, which can, in time, be interpreted. It is in terms of such indeterminate interpretations, that a paradigm is accepted, questioned, changed or abandoned.

While there can be synthetic descriptions (eg. poetry), the very nature of 'descriptions' supports their analytic character. To be able to speak about and determine (define) the 'interpretation' of 'descriptions', a 'description' must be composed of the discrete and distinct parts, for which 'interpretations' are provided. While descriptions and 'descriptions' may be composed of very similar components, the difference between them lies in the distinction of these components. The components of a description are distinguished by the describer in the process of describing (the punctuations between components reflect silences in which he interprets and passes what he has said over in silence). Instead, the components of a 'description' cannot be thus distinguished by the describer, (except in his role of constructing the language). The analytic nature of a 'description' is emphasised, in that the components of which it is composed cannot arise in the description itself. They are the terms made available in the language, to which whatever can be said in the paradigm has to be reduced. The analytic nature of 'descriptions' arises in the timelessness in which the interaction between the construction of the language and what is said in it, is excluded.

The analytic nature of 'descriptions' is further emphasised where a paradigm has to accommodate the possibility of saying something. Where the possibility of saying something arises in the possibility of saying something different about the same thing (is the possibility of making a point), a paradigm has to accommodate differences. But unlike differences between descriptions, or 'descriptions' made within different paradigms, these differences need to be resolved within the same paradigm. Thus the paradigm needs to provide terms in which these differences can be expressed, leading to further and further partitioning of the terms in which 'descriptions' are to be made and 'interpreted'. (Where, moreover, such differences arise, over time, in a partial interaction between what is said and the construction of the language (i.e. the descriptions and interpretations scientists make in speaking about their paradigm), and lead to changes within the paradigm, the same phenomenon of further and further partitioning arises.)

This partitioning of terms necessary to accommodate differences within a paradigm (and necessary to maintain the paradigm), is a reflection, within the single speech act, of the unboundness of our curiosities in moving from speech act to speech act. The process of thus increasing the analytic nature of descriptions mirrors the wholeness of the silence beyond the unwritten cross surrounding the paradigm; it mirrors the complementary synthetic nature of the act of interpretation. In this complementarity, the consistency or coherence sought within an unwritten cross

mirrors the wholeness of the form of interpretation.

Where the fragmentation of 'descriptions' thus mirrors the wholeness of the interpretation excluded from them; where speaking and pursuing a curiosity about one thing, and speaking about more and more and eventually all things, come to one, this reflects the complementarity between description and interpretation; the complementarity between speaking and passing over in silence; the complementarity which arises where in the act of distinction, in speaking about a thing, the wholeness, in which it is passed over in silence, is severed.

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#### DISTINCTIONS - A DEJA VU? (OR A CONTINUITY IN FORM)

A complementarity arises where, in the act of distinction, a whole is severed. It is perceived as a complementarity, where we perceive the whole severed by our distinction. Aspects distinguished are perceived as distinct, where the act of drawing the distinction is itself passed over in silence. The distinction invoked between two aspects of a whole, is brought into question where the act of distinguishing them is perceived.

The distinction invoked between the natural and the artificial is brought into question where the act distinguishing them is perceived. Where an artificial language is distinguished from the natural process in which it is constructed (with an unwritten cross), the complementarity between the natural and the artificial is perceived in considering this unwritten cross (as distinguishing them).

Where artificial languages are distinguished from the natural processes in which they are constructed, in terms of the use of the unwritten cross, the complementarity between them is perceived. Where a distinction between, the process of speaking and passing over in silence, and an act of speaking, is invoked as involving an act of distinction, the complementarity between them is perceived (where speaking involves an act of drawing a distinction).

A distinction drawn is perceived as two-sided where the act of drawing the distinction is passed over in silence. The one-sidedness of the distinction is perceived where the act of distinction is, itself, spoken about.

The difficulty, if it is one, arises in the coincidence of the distinction we speak about with the distinction we draw in speaking about this distinction. It is in this coincidence that the distinctness of what we distinguish is brought into question. It is in this coincidence, that the distinction is unwritten. But it is also in this coincidence, that the whole severed in the act of distinction can be perceived.

Enabling us to perceive this whole, rather than being a difficulty, this coincidence provides the possibility of saying something about this whole. It is in this coincidence, that what cannot be spoken about can, nevertheless be said (or shown, as Wittgenstein put it). It can be said, in the coincidence of what we speak about with what we do. (Speaking about distinctions, we draw distinctions).

(Coinciding with this possibility, it is in the coincidence of what we say with what we do, that our descriptions can be interpreted. In this coincidence, the form of interpretation is reflected in the act of speaking, and thus this coincidence reflects the complementarity between description and interpretation.)

Where, in this coincidence, a distinction is unwritten (rather than being written and then passed over in silence as Spencer Brown's unwritten cross), and where, in this coincidence, something can be said, without in any ordinary sense being spoken about, what is unwritten is unwritten, and what is said is said, in a process of moving from speaking about one thing to speaking about another. What is said, is not what is spoken about. What is said is said, what is unwritten is unwritten, in the continuity of form between what is said about one thing and what is said about the other.

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#### BLACK BOXES - A DEJA VU

It is in capturing this continuity of form, that the black box enables us to consider what cannot be spoken about, without in any ordinary sense speaking about it.

Where we use a black box in speaking about a black box, the coincidence between what we speak about and what we do unwrites the distinction by which we distinguish the black box. In this continuity of form, the use of the black box thus both captures this continuity and exemplifies the process in which, considering the act of distinguishing, a distinction is unwritten.

(Should we care to label the black box a description of this continuity, in that it captures it, and an example of this continuity, in exemplifying it, it is characteristic of this continuity in form that we cannot distinguish between examples and descriptions, between theories and what they describe (or between rules and what is governed by these rules).

Like a paradigm, the black box is used to direct attention, and can thus be considered as a particular paradigm (or, further manifesting this continuity in form, paradigms can be considered particular uses of the black box). What can be described using the black box as a paradigm, is thus surrounded by the unwritten cross delimiting a "black box

paradigm", instructing us how to the black box is to be used, and distinguishing what can be spoken about (eg. systems or things as wholes) from what is passed over in silence within this paradigm.

Moving on in time, a difficulty arises in that what is placed within the black box is passed over in silence. Used to describe specific systems (eg. electronic gadgetry, traffic systems and the like), what is deemed irrelevant to the description of the specific system is placed within a black box and passed over in silence. What is passed over in silence differs with every use of the black box, and hence, there can be no one "black box paradigm".

In the process of considering the placing of the black box, the unwritten cross distinguishing a "black box paradigm" is unwritten (rather than being passed over in silence). What, prescribing how the black box is to be used, was to distinguish this paradigm, concerns how it is that we can use black boxes. The instructions for using this paradigm, concern the placing of unwritten crosses to distinguish any paradigm (using, or not using, the black box). In the process of unwriting the unwritten cross distinguishing the "black box paradigm", the discussion of our ability to use black boxes, considers, and unwrites, the distinction by which a paradigm is distinguished, and thus concerns our general ability to describe things (using, or not using, a paradigm).

Where thus the distinctions, distinguishing uses of black boxes or paradigms from our general ability to describe, are unwritten, we perceive a continuity of form throughout our descriptive activities in thinking, speaking, learning, constructing languages and paradigms, developing theories and the like. (Where such activities are distinguished in order to be described, this continuity is manifest in that, in distinguishing and describing any one of these activities, the others are passed over in silence.)

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#### DESCRIBING DESCRIPTION

In unwriting the distinction distinguishing a "black box paradigm", the black box is used to direct attention to our descriptive activities. Where the black box is thus a paradigm for describing description, the difficulties in the attempt to do so, are manifest in the circumstance that we use a black box in describing the black box; i.e. in the coincidence of what we do and what we speak about.

Consider the use a black box as a paradigm to 'describe' description. To consider how an observer uses a black box to make a description, an external observer needs to distinguish what the observer does (using an object-language) from what he himself does (using a meta-language to describe the observer's description). The

need for such a distinction arises with the unwritten cross surrounding the external observer's meta-language (or paradigm): to 'describe' the observer's description, the interpretation of the external observer's meta-language needs to be determined, and hence, unlike the observer, he needs to know what the observer's black box "contains".

But, the interpretation of the meta-language can only be thus determined where the observer's object-language is similarly determined. In the very attempt to 'describe' description, the external observer thus remains restricted to 'describing' 'description'! (In requiring insight into the observer's black box, whitening this, he limits what he can 'describe' to how an observer can 'describe', i.e. to how an observer can use a box which is at best grey.)

Where instead, the observer's black box is truly black, where his object language is natural language, the external observer's own black box needs to be similarly black. The external observer cannot be in an omniscient position concerning what the observer does and what he is describing in using his black box; the two coincide in their predicament.

The continuity in form reflected in the impossibility of 'describing' description without in so doing restricting the 'description' to one of 'description', is the continuity of form necessary to describe description; it is the coincidence of the black box used to describe and the black box described; it is the coincidence of the language with the meta-language (in natural language).

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#### INDETERMINACY AND INTERPRETATION

Indeterminacy arises in this continuity of form between the describing and the described description. It is in this indeterminacy, that, in capturing this continuity of form, the black box is black.

Describing description involves a silence. Indeterminacy is removed in an act of distinction (eg. the unwritten cross surrounding an artificial language). In the silence involved in describing description, the distinction removing the indeterminacy is unwritten; unwriting the distinction between the described and the describing (description, observer, and language). It is in the silence, that the two are continuous in form: being continuous in form, they can be linked.

The external observer coincides with the observer where they both (use black boxes to) try to understand each other; to interpret in silence what they describe. In our attempts to understand (each other), all our uses of the black box coincide. Only in an act of interpretation can descriptions be linked. But no distinction can be sustained between descriptions in this act. Descriptions are continuous in form in reflecting the form of

interpretation. The indeterminacy which arises in this continuity of form is the indeterminacy of interpretation.

Where interpretations are determined, indeterminacy can only be removed in an act of description, which in turn is continuous in form with all our description building activities. (The impossibility of 'describing' description, thus arises in that the description to be 'described' needs already to have been described.) In removing indeterminacy (of not knowing) indeterminacy (the description effecting the object of description) is created!

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#### CONTINUITY IN FORM AND WHAT CAN BE SAID

In the continuity in form necessary to describe description, the indeterminacy of interpretation cannot be avoided. Where what can be said is not what can be spoken about, what can be said is what can be taken to be said. The indeterminacy (and its source in an act of interpretation) is reflected in that all that can be said is what, in an act of interpretation, can be taken to be said.

It is in involving an act of interpretation, that what can be said differs from what can be spoken about; that what cannot be spoken about can nevertheless be shown. It is in excluding an act of interpretation, that what is spoken about can be spoken about. In the complementary act of interpretation, the distinction by which it can be spoken about is unwritten in the form of interpretation.

But, while a distinction drawn is unwritten where the act of drawing the distinction is considered, the indeterminacy of interpretation cannot be removed in considering the act of interpretation (to do so, is, in itself, to make a description, drawing a distinction, which is unwritten in the act in which it is interpreted). It is thus, that what can be said, is said (and can be taken to be said) in the continuity of form between descriptions. There can, in the coincidence

between the described and the describing, be no indeterminacy concerning what it is said about.

In the coincidence of the describing and described black boxes, the application of the black box to itself does not un-blacken the black box. (The 'inverse' unwriting of distinctions (distinguishing things spoken about) coincides in result with the blackness of the black box.) Hence, in describing description there can be no indeterminacy concerning the blackness of the black box; there can be no indeterminacy concerning the indeterminacy of interpretation. It is thus that the black box captures the continuity of form.

Where such indeterminacy is removed in what can be said, while being taken to be said, description is described.

The possibility of thus describing description in the continuity of form between descriptions may be considered a special criterion of 'description', i.e. specifying "description" as removing an indeterminacy in the coincidence between the describing (the activity of describing) and the described (the description of this activity).

The need for such a notion of "description" arises wherever we attempt to describe description; i.e. wherever we attempt to describe our description building activities. The need for such a notion of "description" arises wherever the attempt 'describe' our description building activities is bound to fail in the removal of the indeterminacy of interpretation, reducing these activities themselves to 'description' building activities (gray boxes). It is in overlooking the basic predicament of describing description, that the omniscient greyness of pseudo 'description', prescribes limitations, and hence creates indeterminacy, by subjecting what cannot be 'described' to 'description'; that it breaks the silence, in speaking about what cannot be spoken about.

However, the need for a special notion of "description", only arises with regard to such attempts at 'describing' description. The notion of "description" is, and must be, continuous in form with the description building activities it can be used to "describe". It is none other than the continuity in form between descriptions which enables us to interpret, and reflects the form of interpretation in the form of our descriptions. It is none other than our ability to remove indeterminacy, within any one description, in the coincidence between what we say and what we do, with regard to the speech act in which we do so. In the coincidence between the describing and the described, what we can (be taken to) say about one, is also (taken to be) said about the other.



things need to be comparable to be compared, the continuity in form between descriptions provides the basic comparability between all descriptions (or things we choose to distinguish). Similarly, it is in the form of interpretation, that we can say what we think, think about what we know, know what we say, and so on, and it is thus that the continuity in form between descriptions is essential to all our description building activities, reflecting that what activities we may distinguish, we merely distinguish with this or that curiosity. (Compare for example the cumbersome result of a lack of such continuity in computers).

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#### WHERE WE CANNOT REMAIN SILENT

Any distinction is arbitrary. In the continuity in form between descriptions this arbitrariness is complemented by our ability to unwrite a distinction, and with it, its arbitrariness. We could have remained silent.

But, as Beckett says, 'and yet you go on.' We cannot remain silent: where I stop speaking to you, I speak to myself and so on and on, in the continuity of form. A silence holds as many sayings as we care to mention. The number of things we say and pass over in silence between any two things we say is indeterminate.

I can only say one thing at a time. The distinction is timeless, and in its timelessness arbitrary. To speak is to raise a doubt. A doubt about the bounds of what we speak about, acknowledging the severed whole. Acknowledging what is passed over in silence. We cannot pass a doubt over in silence, and yet we cannot at once accept and question a thing (complementarity). Hence, having questioned it, we make time to accept it; having said it, we make time to question it.

Doubt after doubt, we are bound to go on, and on. We cannot remain silent, where time after time

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"What we cannot speak about,  
we must pass over in silence."

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## IN AND ABOUT LANGUAGE

Most things that can be said in and about language have in some way or another been said about something or other.

Some have been said about the world, reflecting that the world is conceived of, and represented through, language.

Some have been said about thinking, reflecting the intimate relation between language, thought and consciousness.

Some have been said about learning, reflecting the use of linguistic abilities in learning.

Some have been said about ourselves, reflecting that we use and generate language and that we use language to reflect about ourselves.

Some have been said about formal languages, reflecting the natural linguistic abilities used in constructing these.

Some have been said about language, or aspects of language, indicating the thing language is considered to be.

To hope to say something new about these things would be naive. But to say something new in saying it in and about language may be possible: there is a tendency to overlook the relation between ourselves and the language we generate in conceiving of the world we take to surround us.

What I am about to say in and about language is simple. It may be difficult only in seeing how what is normally said about the world, ourselves, thinking, learning, and languages, concerns language. Perhaps it need not be said. But what need not be said is often difficult to see, and seeing it, it is often difficult to see the point of saying it. The point of speaking about things is perhaps to make significant distinctions. But, in trying to speak about language, I found that I had to remove distinctions; excessive distinctions. We seem to think it pointless to remove distinctions. If there is perhaps a point in saying the things I say, it is as the naive child protesting about the cumbersome ways grown-ups have of going about things. Cumbersome ways which Saint Exupery, the child, found to make such grown-ups blind to the simplicity of things, when he drew his Drawing Number One:



It was a picture of a boa constrictor digesting an elephant. But the grown-ups did not understand. They asked him to explain his drawing. They need to have things made explicit to understand them. He reluctantly made his Drawing Number Two:



Cutting the boa open to show what is going on inside it, spoils the process of digestion. Cutting a living whole open, so as to be able to describe it, stops it being alive and so there is (or was) a tendency to describe aliveness as a mere reflection in a dead thing. Explicitness spoils the understanding we may have of a thing. Perhaps it is the child in all of us who understands the need to pass things over in silence, as Wittgenstein put it. So, I ask for the understanding of the child in all of us, to whom the simple may not appear trivial. I say what I say to re-awaken our confidence in our simple intuitions.

Sometimes I will speak as a child would. Sometimes I will do what I do, relying on the child in you to understand. Sometimes I will have to speak as a grown-up would. I will have to explain and argue and do the things which give us grown-ups confidence that what we do and say is important. In exploring language, these two approaches went hand in hand. When I was at a loss as to what to say, I could fall back on what I had been doing. When I was at a loss as to what to do next, I could fall back on what I had been explaining. The way in which they complemented each other gave me confidence, made me feel language was showing me its way, taking me by the hand. I hope that, reading this, you will have the same experience and will perhaps feel that it is important.

The two approaches reflect the complementarity between analysing and synthesising. It is customary in science to emphasise one approach, the analytic or rational. To do so, is to interpret the complementarity as exclusive or prohibitive, rather than as productive. This is inevitable, in that science is about making observations and understandings explicit, rather than pass them over in silence. I need to consider and use both approaches to speak about the interplay between them. This interplay is what allows us to use and generate language. It is this interplay which allows me to write my thesis. The interplay in which I write about what I do, and do what I write about.

In this interplay, science goes beyond the 'scientific' in the art of science. It is not for me to speak about the art of science. It is simply, that language lives in this same interplay and so reflects on the art of science. The distinction between art and science, is, like every distinction, artificial. Each of these apparently distinct approaches requires its apparent complement within itself. Whether we inquire into the nature of science, or look for what is outside it, we encounter art. Whether we look into art, or around art, we encounter science. The two are aspects of one and the same; the same endeavour to construct and express.

ON THE FUNCTION AND EXISTENCE OF LANGUAGE

To ask about the function is to ask about the function of a thing. To ask about the function of a thing is to presuppose that it exists. Thus it may seem odd to ask about the function of language while considering whether or not it exists.

The problem lies in the circumstance that, while it is impossible to ask about the function of language without presupposing that language exists, it is also impossible to do so without using language. To ask is to use language. The presupposition of a thing's existence arises in using language to ask about the thing. Language cannot be used to ask about the function of language without, in so doing, presupposing that its function is, in part at least, to ask about the function of things. Using language to ask about the function of language is to presuppose (at least part of) the answer to the question.

This difficulty may be approached by distinguishing different types of things, different types of languages, or different ways in which a thing's existence is presupposed (assumed, or known) in asking about its point (its meaning, or its function). Thus a fair number of distinctions could be explored. Using language to do so, again, at least part of the function of language would be determined. Language cannot be used to distinguish without, in so doing, presupposing its function in part to be that of distinguishing things; without, in so doing, presupposing that it exists.

The need to presuppose the existence of a thing arises in the act of speaking about it. The act of speaking about a thing is an act of ordaining its existence. Thus, language cannot be used to speak about the function of language without assuming both that it exists and has a function, and that one of its functions is to ordain existence to the things spoken or asked about.

A paradox thus arises. To speak about language is to to ordain its existence, while its existence is presupposed in so doing! It is here that distinctions impose themselves, either between languages (eg. between the describing and the described language), or between ordained and presupposed existences. But it is just in such distinguishing that this predicament arises, and no distinction between ordaining and presupposing existence has been invoked.

Where, not distinguishing different languages, there is only one language, the paradox becomes apparent. It becomes apparent as a paradox of means, where to achieve an end (i.e. ordain the existence of language) a means (i.e. language) is required, which can only be brought about or generated where the end has already been achieved.

Consider the source of the intentionality (i.e. 'to achieve an end') involved in the paradox. It arises with the very quest for the function of language, and it is in asking what the function is that the predicament becomes paradoxical. To ask 'what is language used for?' is to use language, and hence to contribute to

and change its use. To use language is to use it with a particular intention. But to ask for the function of language is to ask 'what, in general, is language used for?', and particular intentions cannot be spoken for in general. It is in just this generalisation that the paradox arises. It arises as such with regard to every function of language we care to examine. As a paradox it manifests the dependence of a 'function of language' on the 'existence of language'; and the dependence of the 'existence of language' on a 'function of language'. This paradox finds its resolution in our particular activities.

But this paradox arises in speaking about language and the ordaining of existence involved in speaking. The reification of language arises in speaking about language. As a consequence of speaking about language, the result and its means are considered to be one and the same thing, i.e. 'language'. Considering that what is spoken of as 'language' is a generalisation over particular activities, the paradox loses much of its force. The difficulty arises simply in the act of speaking about language. It arises in generalising particular and distinct activities as constituting 'language'. The particular activities, whatever they may be, in themselves need not give rise to the paradox.

The paradox arises in using language (to speak about language). Even where it is only this particular use which, at any one time, cannot be spoken about, there is necessarily more to language than can be captured by saying language (or the function of language) is this or that. Where to speak about 'language' thus involves a choice, to speak about language is to ordain 'language' to be one rather than another sort of a thing. Thus, the paradox is reflected in the circumstance that whatever is taken to be language is ordained to be language (with regard to either the linguist, the speaker or the community who take it to be so). Propositions of the sort

"Language is ...."  
are unfalsifiable, because they are definitions of what is considered to be language, or, what comes to the same, statements of an acceptable use of the word 'language'. They are not observations on the nature of language (though they may indeed be based on and reflect such observations).

This reflects the essential difficulty in speaking about language in general. But it also manifests the essential ability to construct languages with and for particular purposes. The interdependence between the 'function of language' and the 'existence of language' manifests the constructive ability, in which the function of a language is determined in the process of constructing (or designing) it. It is here, that the 'function of' a language cannot be considered independently of the intention with which it was (or is) constructed.

The paradox of means can thus be locally resolved in terms of the intentions with which a language was (or is) constructed. This however relies on a sharp separation (and hence distinction) between the language and its construction. A separation which, restricts what can be said about language to what can be said about particular languages constructed for particular purposes (artificial languages) and to what can be said about particular (intentional) uses of natural language on particular occasions. The possibility of this resolution is significant, for it is the only resolution of the paradoxical predicament in speaking about language where the content and the particular shape and form of a language such as English, French etc. are to be discussed. Beyond the prescriptive, it determines what linguistic inquiry can say about such languages.

Where, however, the constructive ability is considered a linguistic ability, the paradox remains, and reveals the nature of the difficulty. For the constructive ability, in the ability to distinguish, and to ordain a thing's existence in speaking about it, is all-pervasive and essential to every act of speaking, and cannot be considered external to language in its ordinary use. If the paradox of means is trivial, with regard to functions commonly associated with natural language (eg. communication, representation, statement, questions and commands, and the like), it is that the language presupposed in these paradoxes can indeed be or have been constructed for just these purposes. But where, beyond particular constructions, we are concerned with the ability to construct, the paradox becomes central. Central, but not necessarily paradoxical. It is indeed paradoxical to ask how we construct the language which enables us to construct languages. But it is paradoxical only in the assumption that such a language is required. To consider 'the language which enables us to construct' is to consider a contradiction in terms. Where construction is concerned, there is no language (it being in the process of being constructed!

While the process of constructing a language does not require a given (prior) language, a given language can be used to construct a new language. It is in this special ability to generate languages, given a prior language, that the apparent paradox of means arises (in the assumption that one language is needed to create another). Here the paradox arises in overlooking the temporality involved in using the product of one activity in a new activity. The ability to use what has been constructed, to construct something new, is essentially temporal. It is only in this temporality that it is possible to speak of experiences or learn from mistakes. Without it no learning would be possible.

The ability to construct relies on the ability to accept something (possibly previously constructed) as given, or to eventually treat something constructed as given (to be used as a basis for doing something new).

The difficulties in speaking of the

'function' or 'existence' of language thus reflect these features of construction. Having constructed a language, it is used to do what it was constructed for ('function'). In so doing it is accepted as given ('existence'), and is in turn (in time) used to construct something new (eg. another language, with another 'function'). The paradox of means simply reflects the dynamic nature of the process of construction (or learning). On any occasion, a language constructed for a particular purpose is, in being used, accepted as given and thus naturally leads to the creation of a new language for a new purpose. Thus it is impossible to speak of 'the function of language' in general. We can only speak of particular languages used on particular occasions. Beyond the particular, we can speak about the processes in which languages are constructed (being as yet non-existent), used (and effected by this use) accepted (and in such acceptance, having an 'existence') and in turn used to construct new languages. It is in these processes that we can speak in general, and without difficulty, about important linguistic abilities, just as it is in this process that we do not, in every day life, run into the paradox of means. It is in these processes that the nature of language reveals itself.

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#### ON THE ORIGIN OF LANGUAGE

Where construction can, but need not, rely on the existence of a prior language used to construct, the constructive ability could be considered a linguistic ability only where a given language is used in constructing a new language (thus, for instance, the ability to construct artificial languages using natural language might be considered a linguistic ability, while a painter's ability to develop a pictorial "language" might not). Where such a distinction is invoked, linguistic construction does rely on the existence of a prior language, and hence leads to the question of the origin of language.

To thus make construction dependent on the existence of a prior language is to attempt to unfold the paradox of means in historical speculations which cannot be proved or disproved. Where instead, construction does not rely on the existence of a prior language, it can be shown to account for the occurrence of the problem of the origin of language.

In considering the 'origin of language' it is by no means clear in which dimension this is to be pursued. There are as many possible dimensions in which to seek the origin of language as there are possible 'functions of' language (beyond dimensions concerning its nature). This interdependence arises in that to ask for

the origin of a thing is to assume that it exists. Where, however, languages are constructed, and hence brought into existence, the quest for the origin is paradoxical, and once more, reveals the difficulties in generalising from this or that language, known to have been constructed, to language in general. Just such a generalisation is involved in asking for the first or original language.

Thus again, the quest for the origin arises in the act of speaking. It arises in the reification involved in speaking about such a thing as language, where the 'existence', the origin of which is sought, is that presupposed in the act of speaking. It is in the nature of construction and in the form of speaking that what 'origin of language' we can speak of, is to be sought.

But the problem of the origin of language cannot be resolved in terms of the forms of speaking and constructing, without, in so doing, using the form of speaking, i.e. the very form, which gives rise to the problem to be resolved. It will thus be necessary to construct a language to speak about both the forms involved in construction and the form of speaking. I attempt to begin to do so, with the ideograms I will develop in the course of my discussion. Speaking about the process of construction, I will also be constructing a simple ideographic language.

Consider the assumptions made in the quest for an origin. To ask about the origin of language is to assume that there is indeed such a thing as language (whatever it may be). It is, moreover, to assume that present existence of a language does not in itself account for its coming into being. Thus, the existence of a constructed language will not in itself raise a question of origin (the abilities used in its construction, or the origin of the person constructing it, say). But, to ask for the origin of a thing, is to perceive the existence of the thing (shown as ".") as relying on something prior, and unknown (shown as "?"), i.e.

(1)                                      ?→

In the case of the ability to construct languages, given a language, this is to perceive the existence of any one language as relying on (emerging from) some temporal process in which it was developed from similar, possibly more and more rudimentary, languages, i.e.

(2)                                      ?→.→.→

This ideogram captures any of a series of origin problems, and reveals a number of oddities. To ask for the origin is to assume (as in the construction of new languages from given languages) that all the dots (languages) linked by the arrows (particular constructions) are in some sense THE SAME and to assume that the origin (i.e. the "?") must be in some sense be DIFFERENT. To ask for the origin is to assume to know something about all the dots (languages) and something about all the arrows (languages being used to construct new languages), and, by virtue of such knowledge, to be prepared to hang dots and



arrows together as one process, the origin of which, is sought. Knowing the similarities between any given language and the new language constructed using it, (knowing the relation between any one dot and the next), a dimension (eg. time) is invoked, along which languages are assumed to have developed, i.e.

(3)                 ?→.→.→.→.→  
                   different                                 same

Apart from the oddity of the sudden loss of confidence in this generalisation, such questions of origin manifest the further oddity of considering every language (dot) at once the 'result' of a construction and the 'means' for the next construction. Thus, the quest for the origin arises in a confused temporal resolution of the paradox, in which different languages are distinguished in time, while nevertheless assuming these to constitute one and the same language.

Showing the circularity of the paradox as a circle, the problem of origin ("?") can be replaced by the paradox of means, ie.

(4)                 ↻→.→.→.→.→

The generalisation and reification involved in speaking about a thing (eg. language) arises in the assumption that the dots (eg. languages) are in some sense THE SAME. It is in generalising the similarity between instances that we assume there to be a thing (i.e. such a thing as language). But such instances (repeated dots) have in turn arisen in a generalisation from limited knowledge. What is known, is not the process represented in the ideogram, but only the similarity and the relation between any two languages. Thus such questioning arises in the knowledge of the circularity whereby languages are constructed while being used to construct, i.e.

(5)                                 ↻

Where the knowledge of this circular relation is thus shown as a circle, the very process (evolution) and the dimension (in which the origin is sought) are invoked in the act of speaking, i.e. in unfolding this circular relation. It is in speaking about language that one language is distinguished from the next. It is in speaking about language that time is invoked to distinguish one from the next. Hence, the reification involved in speaking arises where

- (i) the knowledge of a general circular relation
- (ii) needs to be unfolded to be described,
- (iii) and once described, the generalisation of the similarities between the described parts leads to the inference that a thing was described.

(i)



(ii)

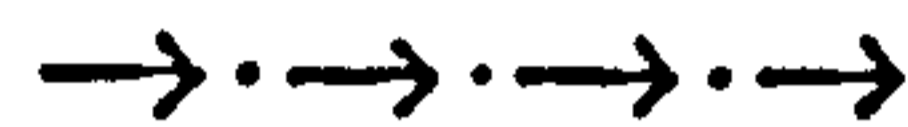


(iii)



The difficulty in speaking about language in particular arises in the circumstance that these three steps are by no means peculiar to speaking about languages. (ii) reflects the form of speaking (describing), whereby any whole needs to be unfolded to be described, and (iii) is necessary to grasp the general pattern in what was described. Hence, no matter what (i) is, its description will take the form of (ii) which will consequently be understood as in (iii), eg.

(j)



(jj)



(jjj)



The difficulty is manifest in the difficulty in interpreting the difference between the (i) and (j) sequences. Let (j) show a process, i.e. a sequence of events which are actually distinct in time. Thus, the j-sequence shows a process of grasping a pattern in a sequence of distinct events, observed over time. In contrast, (i) represents the knowledge of a general circular relation, and the i-sequence shows the process of describing such a relation. Together the two sequences show the difficulty (or impossibility) of distinguishing between a description of circular relation and a description of a sequence of related events.

The problem of the origin of language (and predictably a number of similar origin problems) arises in the difficulty of distinguishing between two such descriptions, eg. time is invoked in the description of a circular relation; the description, is then taken to describe an actual sequence of events, which, together with the knowledge of the circularity involved, leads to the question of how such a sequence could begin. Where thus the problem of the origin of language arises in speaking about language, it is an 'acknowledgement' of what evades being spoken about; 'acknowledging' the circular relation which, as such, evades description.

Consider the nature of this descriptive blindspot. Where (i) shows the knowledge of the circular relation, this is 'already' grasped, suggesting, that for it to be grasped, it must have been grasped in a description of an actual sequence of events observed. Suggesting, in other words, that (i) should be considered as corresponding to (jjj), i.e.

(I) →.→.→.→

(II) →.→.→.→

(III) ○

(IIII) →.→.→.→

(IIIII) ○

here, invoking time to account for our process of describing and grasping (a circular relation). Thus, the blindspot is magnified, where any i-sequence is thus seen to originally arise in a j-sequence, and hence any circular relation (i) would be seen as having at some stage to be grasped in terms of observations of an actual sequence of events. Where no evidence for the sequence of observations (I) is available, this may in turn lead to invoking any number of steps (II) - (III) to explain the knowledge of a circular relation. It is thus in the nature of description to reinforce the blind spot by invoking regressions within regressions, i.e.

(6) → →.→ ○ →.→ ○  
(I) (II) (III) (IIII) (IIIII)

Such replication of sequences of descriptions in speaking about description-building activities indicates the need to unfold things in order to describe them. The unfolding involved in describing, and the unification involved in grasping a pattern underlying a description, are reflected in the circumstance that the whole of the I-sequence is no more than the instant (II) above, i.e.

(7) . →.→.→

in which every dot corresponds to a sequence of descriptions, i.e.

(8) . : →.→.→

and every arrow corresponds to a grasping of a general pattern in such a sequence, i.e.

(9) →. : ○

? →.→.→

The distinction between the sameness and the difference in (3), and the problem of origin, is thus a chicken-and-egg problem in choosing whether to begin with a description (a dot) or with a pattern grasped (an arrow), i.e.

(10) →.→.→.→  
→.→.→.→

reflecting the complementary nature of these two activities. In speaking about a thing, a dot is replaced by a sequence of dots, (as in (8)), leading to the infinite regress implicit in (7), resulting in the I-sequence, which disallows the grasping of

circular relations, unless they are derived from the observation of a sequence of actual events, i.e.

(11)           ...→.→.→

As a complement to this, in grasping, a 'dot arrow dot' sequence is substituted by a circle connecting a single dot (as in (9)) eventually collapsing the entire sequence, wherever such grasping may begin or end, i.e.

(12)           .→.→.→.→  
           ⊙→.→.→.→  
               ⊙→.→.→  
                   ⊙→.→  
                       ⊙  
                           ⊙

While the problem of origin arises in speaking about a thing, no problem arises in grasping it.

The distinction between the observation of an actual sequence of events and the description of such a sequence of events (i.e. the distinction between (j) and (jj) or (l) and (ll)) differentiates the above

(7)           . .→.→.→

from

(11)           ...→.→.→

and appears to prevent the infinite regression. This distinction is invoked as 'actual' and distinguishes between 'the real world' and descriptions made of this world. Where, the 'real world' (whatever this may be) does not impose itself upon us in such sequences as (j) or (l), such 'observation' is in turn a description made. Where our notion of reality relies on descriptions of descriptions, there is no given cut off point, and thus,

(13)           . . : ...→.→.→

and hence (7) is indistinguishable from (11). But the absence of a cut off point does not effect the grasping whereby the notion of the 'reality' of a thing arises in the commonality grasped between descriptions, i.e.

(14)           . . : ⊙

and hence (7) is resolved as in (12). Thus, any distinction between 'actual' observation and 'mere' description, is one between what is or is not taken for granted. What, having grasped it, is accepted, and what, being explored, is questioned.

The reification (the ordaining or presupposing of a thing's existence) involved in speaking about a thing, arises in the step from (ii) to (iii) above, i.e. in the inference that there is one thing (something) underlying the pattern discerned in a description. Where the two dots in the original (7) are replaced with the circle to show that a pattern grasped

is taken for granted, this reification appears to underlie the very notion of a 'reality'. Taking the circle thus to show that, in grasping it, a thing is assumed to exist, we can represent the origin problem (the question of how a thing comes to exist) as asking how a circular relation can come about, in terms of (1) above.

(15)  $? \rightarrow \text{O}$

Where the argument proceeds as above, it leads eventually (as in (12)), to consider

(16)  $\text{O} \rightarrow \cdot \rightarrow \cdot \rightarrow \text{O}$   
 $\text{O} \rightarrow \cdot \rightarrow \text{O}$   
 $\text{O} \rightarrow \text{O}$   
 $\text{O}?$

in which (as in (3)) the originating circle is (by virtue of the nature of the question of origin) to be considered different from the arrows and dots and the circle in which the thing is taken to exist. Thus the two circles remain somehow distinct.

The resulting form is of interest. Where one of the circles is originating and the other reproductive, the 'existence' of a system of this form, would arise (the originating circle) in whatever the system was doing (the reproductive circle). This form thus captures the interaction between the 'function' and the 'existence' of language. It captures the observation that, while a given language may be used in constructing a new language, the existence of such a language is not a necessary requirement for construction. With regard to the problem of 'origin', a system of this form would be "continuously originating", bringing itself into existence with whatever it does. Thus such a system is whatever it does, and cannot be known to be what it is without seeing what it does, on any particular occasion.

(17)  $\text{O}?$

A continuously-originating system cannot be described, falling apart when unfolded. Rather than

(18)  $\rightarrow ? \rightarrow ? \rightarrow ? \rightarrow$

the result of unfolding such a "continuously originating" system, obliterates the descriptive continuity, i.e.

(19)  $\begin{matrix} \searrow & \rightarrow? & \swarrow & ?\swarrow \\ \nearrow & \rightarrow? & \swarrow & \end{matrix}$

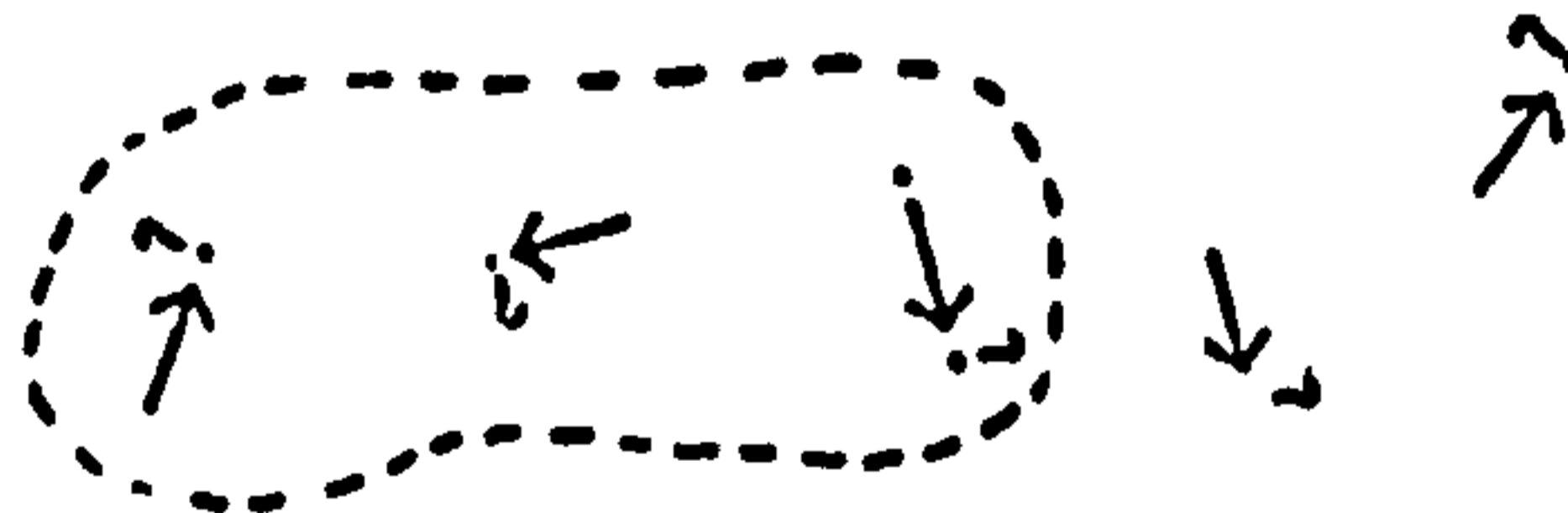
The attempt to unfold such a system thus reveals the crucial assumption of a thing's continuity made in describing it. This assumed continuity is reflected in the description (i.e. the sameness of every circle we unfold). It is in turn what allows the inference from (or 'recognition' in) the description that a thing must have been described (unfolded). It is also with regard to such assumed continuity that we can speak of a 'reproductive' circle.

Where a continuously-originating system is whatever it does, and can change what it is and does, there can be no such continuity. There can be no sense in which a relation known can be reproduced (by invoking time). The description or unfolding of a continuously-originating system results in a set of random manifestations.

The impossibility of describing a originating system arises in the absence of a continuity, where the absence of a continuity cannot be recognised. It is the constancy in the description which allows us to recognise a system. Thus only systems which have already been described can be described! This reflects the difficulty in distinguishing between 'observation' and 'description' (shown in (13) and (14)) in the description building activities which underlie the reification in speaking about a 'thing'.

But, where a continuously-originating system, falls apart when unfolded, it is, so to speak, that it ceases to be observed when unfolded; that it ceases to be described when described! The difficulty arises in the interaction between the form of a continuously-originating system and the form of description. It is this interaction which renders a continuously-originating system undecipherable. To nevertheless speak of a system here, the observer who imposes a distinction must be considered (as part of the system). The observer distinguishes a thing (or pattern) in the random manifestations into which a continuously-originating system disintegrates if described, i.e.

(20)



In other words, a continuously-originating system has an 'existence' only in the eye of the beholder, for it is he who brings it into existence by treating it as manifestations of one and the same 'thing'.

The peculiarity of a continuously originating system lies in the distinctness of the two circles, whereby the system does not go on doing the same thing. For something to originate, it cannot have existed. For something to do something different, what it was doing has to be taken apart. The unfolding in which the system falls apart, is necessary to recreate the system. It is in being the system of unfolding and grasping that the continuously-originating system can exist in the eye of a beholder, i.e.

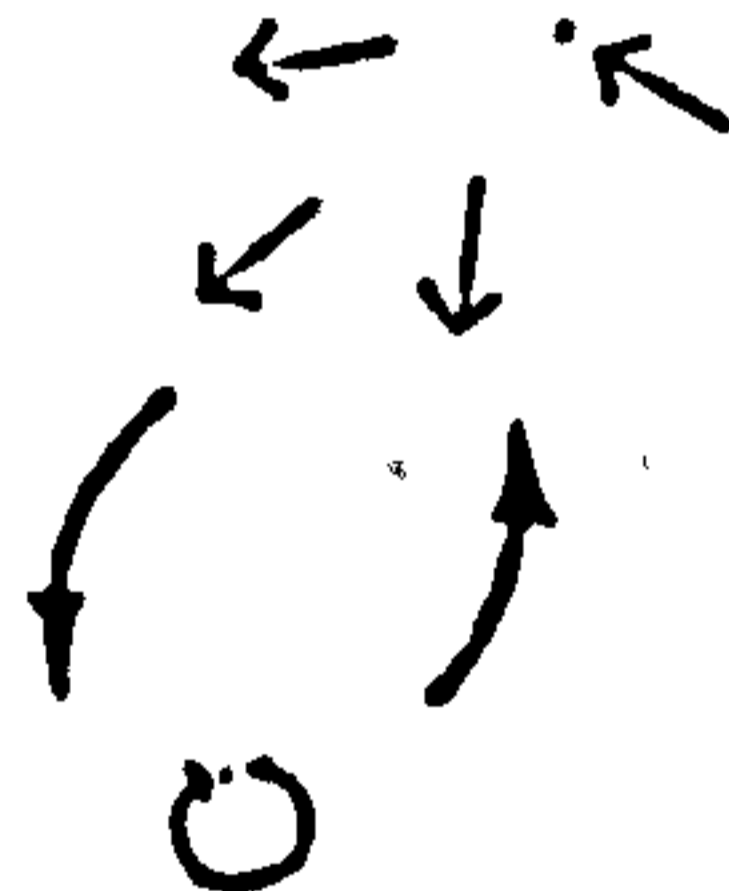
(21)



The downward arrow illustrates the grasping of whatever the observer takes to unite the random manifestations. The upward arrow illustrates the unfolding in which what was grasped is disassembled again. In terms of the two circles the downward arrow represents the originating circle and the upward and downward arrows together represent the reproductive circle. Constancy (i.e. the coincidence of the two circles) is shown where the same pattern is discerned over a number of repetitions of the process. Beyond allowing for the system to change what it does, the unfolding of something grasped can be used to test the continuity of what is grasped.

Thus a continuously-originating system falls apart where to unfold it is to unfold unfolding. In unfolding unfolding the complementarity between unfolding and grasping becomes apparent; the complementarity, in which any description is of an understanding, and any understanding is, eventually, itself a description.

Where the problem of origin arises in the forms of description and construction, the domain in which language 'originates' and can have what existence we can speak of, is the domain of observations, ideas, understandings, thoughts and the like. Language is entertained by an observer/describer and only has an existence in being thus entertained.



CONSTRUCTION

§ §

EXISTENCE

Let there be an observer.  
Let there be random manifestations (R).  
Let the observer have the ability to grasp (1) (distinguish or impose) a pattern (P) in or amongst the random manifestations, i.e.



(Assuming that, for a thing to exist, it has to be discerned by an observer, this construction explores how far this assumption can be taken).

Let the observer have the ability to unfold (2) what he has grasped, and in so doing, obtain random manifestations, i.e.



in which he may in turn discern (1) a pattern, and bring something into existence by thus discerning it.

The observer may go on and on grasping and unfolding. There is no way of knowing what he grasps on each occasion, or that it is the same on any two occasions.

Let the observer's activity of thus oscillating between grasping and unfolding give rise to random manifestations (3), i.e.



Note, that assuming these manifestations (3) to be random, is not to assume the observer's grasping and unfolding to be ordered in time nor even (and here the ideograms may be misleading), that they are sequentially ordered. (Should a space, in which these manifestations become apparent, be required, assume such a space).

Let the random manifestations (3) not be distinct from those in (1) and (2), unless the observer distinguishes them, and hence let there be no a-priori distinction between random manifestations subject to his grasping and random manifestations resulting from his grasping and unfolding.

Under these assumptions, an observer may construct whatever world he will, but neither he nor an external observer can know that, or what, he is constructing. The observer cannot reflect on his constructing, and cannot distinguish himself from his construction. If an

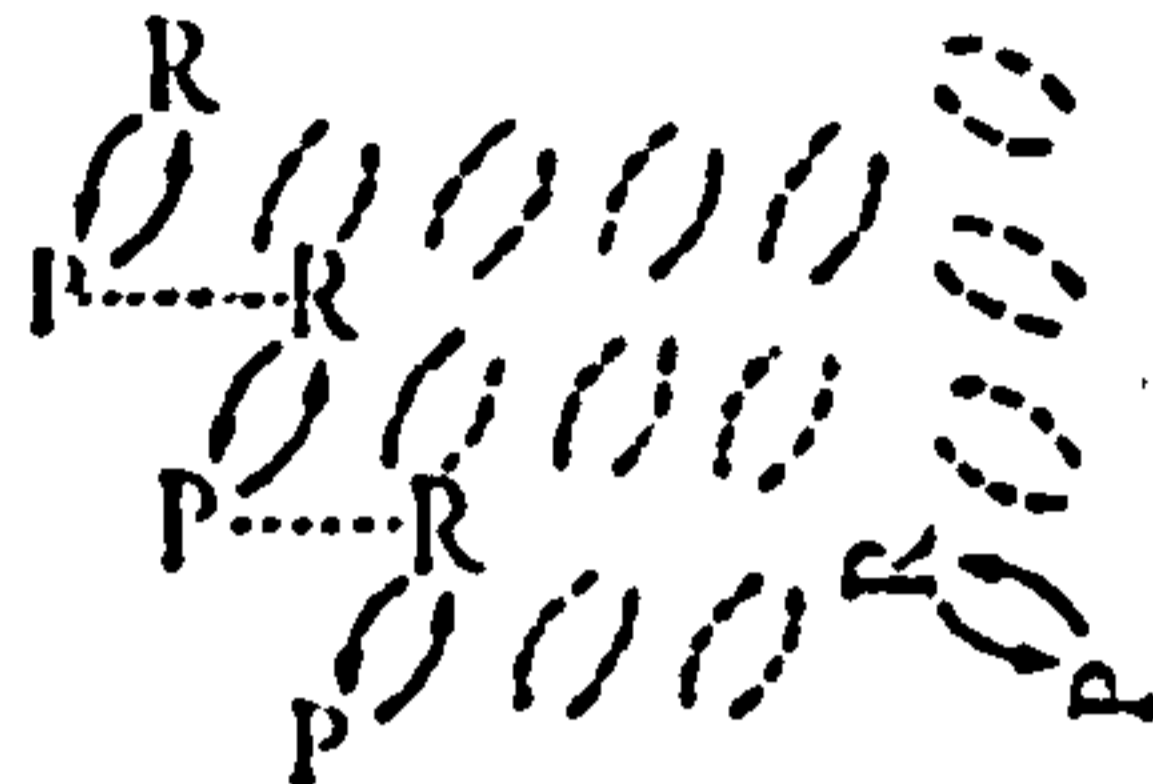


observer thus constructs, he cannot help constructing.

To be able to distinguish random manifestations (R1) from random manifestations (R3) the observer would need to grasp his grasping or unfold his unfolding.

Let thus his grasping, or unfolding, in turn give rise to random manifestations (R4), which may or may not be observed, i.e.

(4)



without assuming such manifestations (R4) to be distinct, unless they are distinguished by the observer.

From an external point of view, overlooking that manifestations (R1), (R3) and (R4) are not a-priori distinct, it might be observed that by

(i) grasping a pattern in the original random manifestations, an observer would bring about a transient existence,

(ii) grasping a pattern in the random manifestations (R3) of his grasping and unfolding activities, an observer would bring about a temporal existence (eg. recognising that he keeps on grasping "the same thing", "a slightly changing thing", "an oscillating thing", "(random) things"),

(iii) grasping a pattern in the random manifestations (R4), an observer could compute relations between temporal or transient existences, in turn bringing about transient, and eventually temporal, existences, between which in turn he could compute relations, and so on and so on.

However, for the observer to speak of thus bringing about existences, he would have to be able to observe what he is doing, and distinguish such 'levels' as R1, R3 and R4. Under the assumptions we have made, an observer can grasp patterns, and patterns in patterns; he can bring things into transient and temporal existence; he can grasp patterns in his grasping and unfolding. But, unable to differentiate between one pattern and another, he remains unable to know what he is doing.

## THE "SELF-SYSTEM"

To come know what he is doing, an observer needs to come to know of his own existence. He can only come to know of his existence by distinguishing himself:

distinguishing himself as having a transient existence, in grasping a pattern in the random manifestations of his grasping and unfolding activities;

distinguishing himself as having an existence over time, by in turn unfolding this pattern to grasp the same self pattern again and again in such manifestations;

distinguishing himself as having an identity, by computing the grasping of his grasping and unfolding of his unfolding to have one source, i.e. his own activities.

But, here an observer confounds a level paradox (identical in predicament to the paradox of means). To be able to differentiate what he does, to be able to distinguish the "levels" of manifestations, he needs to distinguish himself. To be able to distinguish himself, he needs to differentiate his activities on just these levels!

This predicament arises in the attempt to describe an observer and his activities. It arises in the distinction invoked in speaking about an observer (and is resolved where such a description is made from the observer's point of view without differentiating what he cannot differentiate). It arises in the assumptions which had to be made as a matter of exposition.

Firstly, the initial random manifestations have no existence except as manifestations of the observer's activities, and hence any R is necessarily an R3 or R4.

Secondly, the random manifestations of an observer's activities, being his activities, cannot be random. However little coherence there may be, there must be some, or the activities would not be his; there would be no one observer. It is only in such coherence that an observer can distinguish ('recognise') himself. It is in this coherence that, before knowing of his existence, he exists as, and not distinct from, his activities.

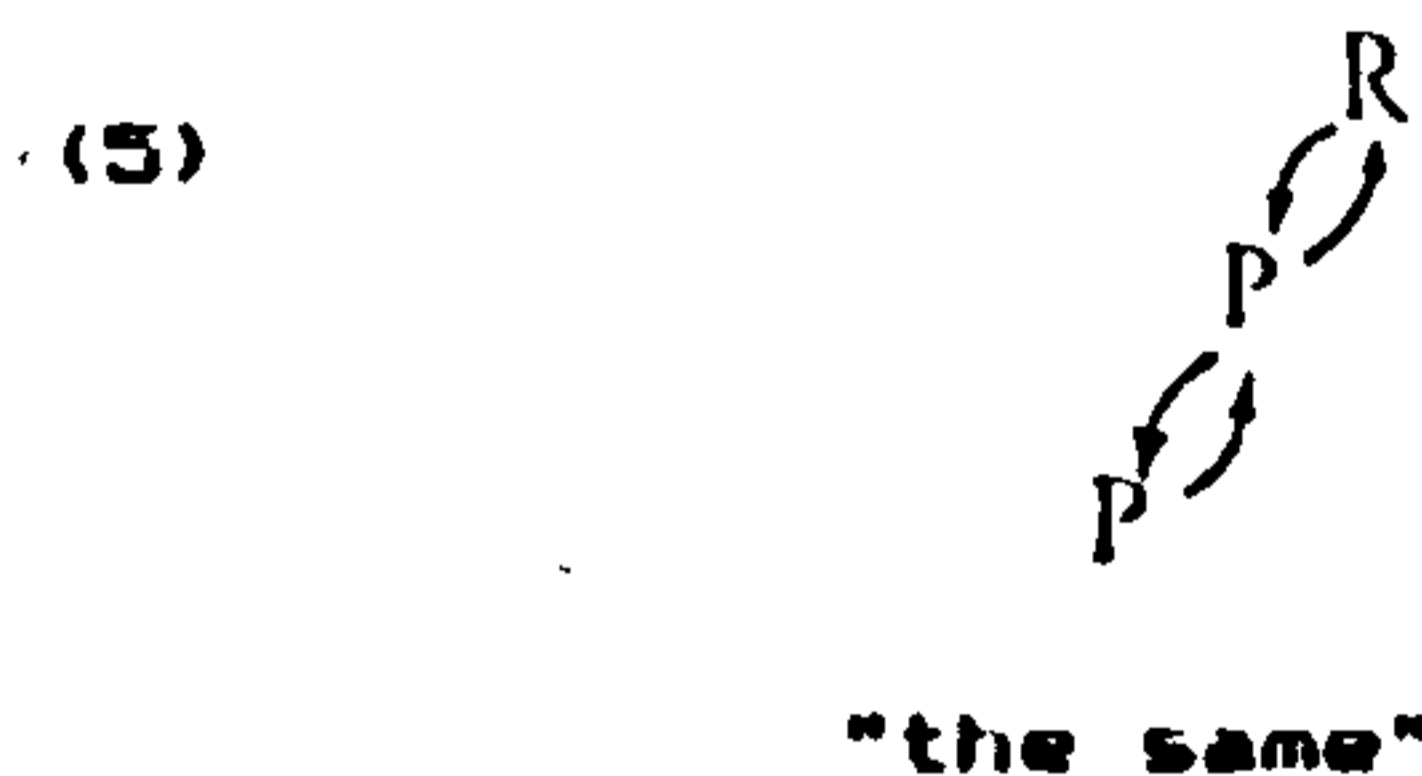
Thirdly, there is no distinction between his ability to grasp and unfold, and his ability to differentiate between things he does (on different "levels"). To differentiate "levels", an observer unfolds the pattern he grasps in the manifestations of his activities (as a whole).

Let there be but one observer.

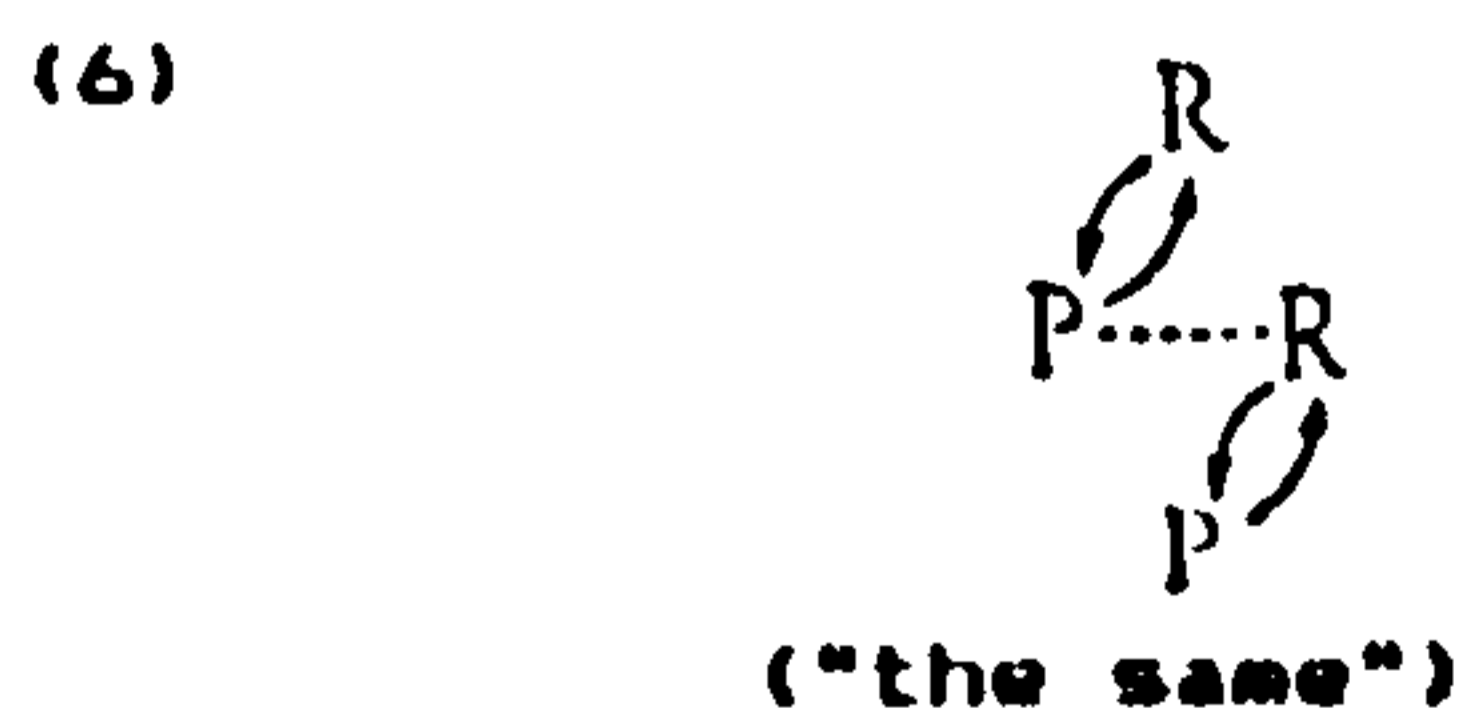
Where there is no distinction between R1 and R3 (or R4) the observer can 'switch' between these non-distinct manifestations. It is the formulation of the 'level' paradox which is inappropriate. This however, does not remove the observer's difficulty of distinguishing himself, or answer the question of how he can distinguish such levels.

For the observer to be able to grasp a pattern in manifestations, these must at least be of transient existence. They must be there to be compared. In the act of grasping, the observer implicitly makes a distinction which corresponds to that between R1 and R3. Where his ability to grasp, similarly, involves an implicit computing of an identity between at least transient existences, he implicitly draws a distinction corresponding to that between R3 and R4. Thus, distinctions between patterns, and patterns of patterns he discerns, arise in what the observer does (with the patterns he grasps). They arise in what he does with the manifestations of his activities, rather than in the manifestations themselves.

To distinguish himself the observer needs to distinguish between the manifestations of his activities, or between the patterns he discerns and what he is doing. In other words, to make explicit the distinctions he implicitly makes in grasping, he needs in turn to grasp what he is doing. Such a distinction needs to manifest itself in his activities. It arises where a pattern he discerns is, in itself, distinct from what he does with it. Where, in other words, the observer distinguishes between discerning a pattern and doing something with a pattern (or patterns) he discerns. This distinction arises as a difference in his concern. Where he is concerned with what he discerns, he checks that in unfolding (2) the pattern he discerned (1), he can grasp (1) the same pattern again and again (as a result of which he can see (1) it to be "the same"), i.e.



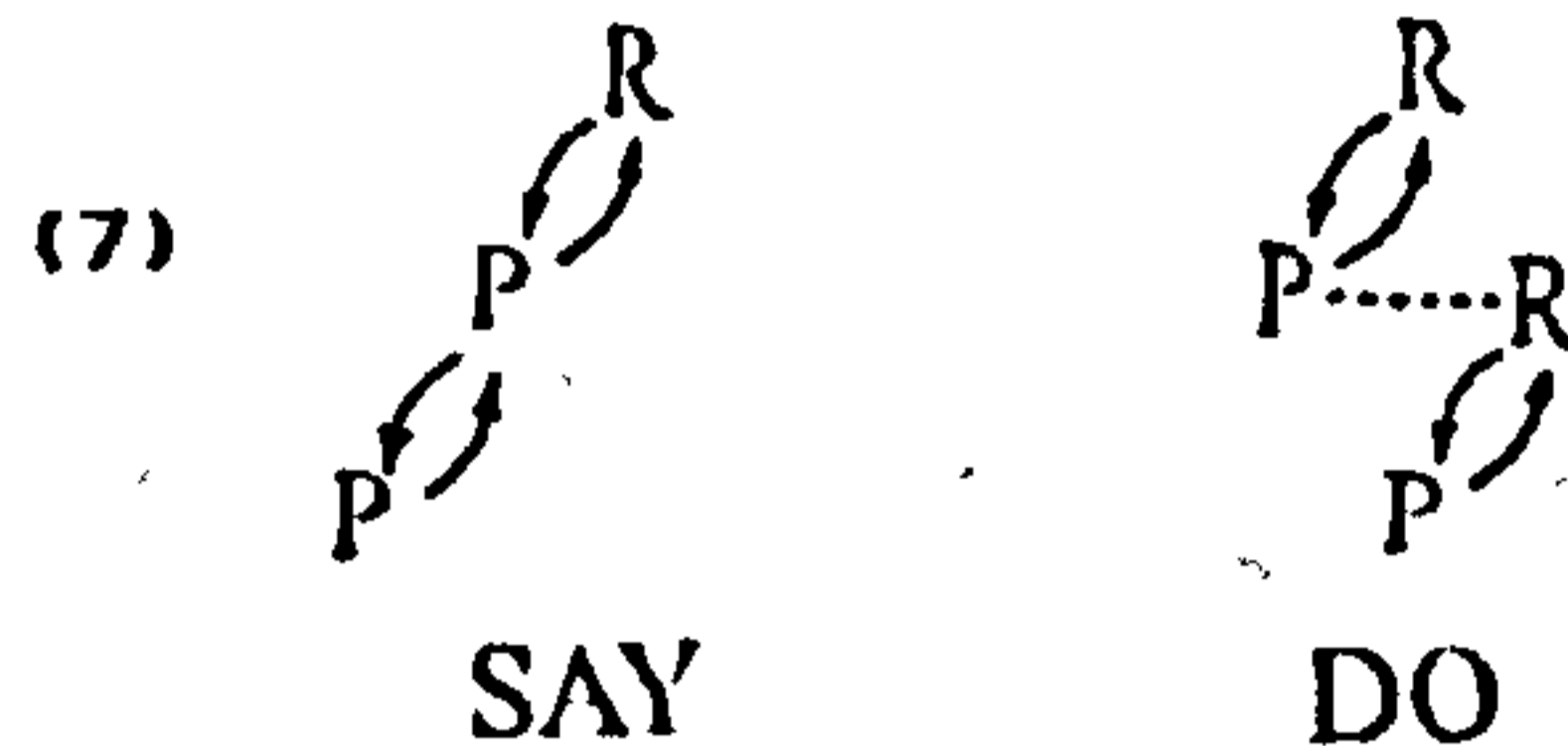
Where he is concerned, to do something with patterns he discerns, he proceeds to grasp (1), and unfold (2), patterns (P) in the manifestations (R) of his activities.



He may find, as in (5), that he keeps on grasping "the same" pattern, but, rather than confirming this, he would be discovering it (in manifestations of his activities). There is no ordering between 'levels', as he may need to discover a thing before he can confirm it. While (5) is closed (over a pattern grasped), (6) is open (over whatever patterns he grasped), reflecting the difference in concerns, whereby the observer chooses, either to focus on a pattern he has grasped (5), to establish its constancy (or existence over time), or to consider the manifestations of his grasping. Closure allows him to come to

know of the existence of a pattern, and openness allows him to grasp new patterns.

In (6) the observer grasps a pattern (perhaps the "same") in which he implicitly distinguishes between patterns, and patterns in patterns he grasps. In (5) the observer is explicit about the (sameness of the) pattern he is concerned with. Thus, the distinction between confirming and discovering, reflects the choice between DOING (6) (i.e. discerning patterns) and making explicit a pattern he discerned, i.e. SAYING what he discerned (5). The distinction between saying and doing is thus shown in these forms, i.e.



Where the observer needs to know what he is doing to know of his own existence, the saying configuration, being explicit, allows for knowledge. In other words, where the observer's grasping activities give rise to the existence of things, it is in grasping patterns in his grasping activities (in the closed form) that he comes to know of such things. But, as there is no a-priori distinction between these, there is no distinction between the existence of things and the existence of knowledge of things, beyond the observer's treating them as one or the other.

To distinguish himself in what he does, the observer needs to make explicit what he implicitly does. He needs to make explicit what he is doing (to 'say what he is doing') while nevertheless doing it (i.e. 'doing what he says he is doing'). For in doing he grasps (himself as the doer) and in saying he makes explicit what he grasps (i.e. 'his same self'). The observer must thus bring together the saying configuration and the doing configuration, so as to be able to discern the patterns resulting together, i.e.

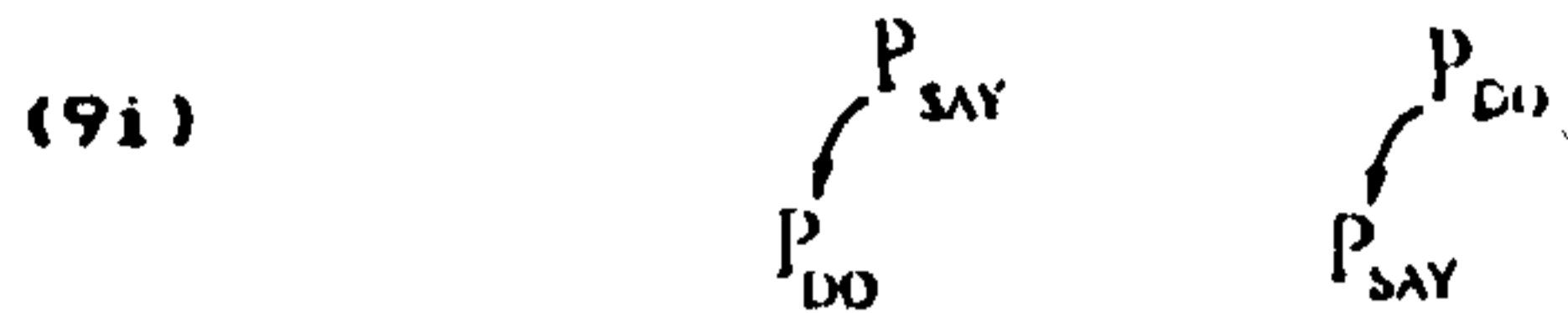


The two patterns (P) are in turn manifestations (R), unless the observer brings the two configurations together. To do so he must in turn grasp a (or the) pattern in this pair of P's, i.e.



It is in grasping this pattern, that the observer grasps himself, i.e. that he grasps "I", and hence let this be shown as 'P'I'', and the pair of P's be 'P DO' and

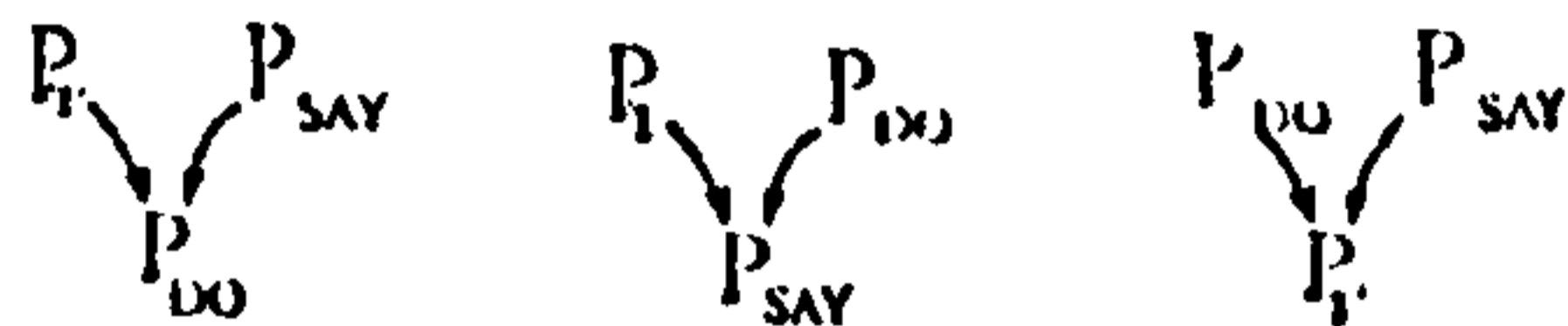
'P SAY', with respect to (7) and (8). As a consequence of thus grasping P "I", the pair of P's need not and cannot be considered random manifestations (i.e. be replaced by R). The pattern arising necessarily in bringing together the saying and doing configurations is such that, in each of the P's in the pair, the pattern of the other P is grasped, i.e.



and hence the pair,



In the triplet of P's in each P the pattern in the other two P's is grasped. Just as P "I" is the pattern grasped in the pair of P's, either of the P's in the pair is the pattern grasped in P "I" and the other P. In these cyclic relations the three Ps are patterns of each other, i.e.



These relations arise necessarily wherever the observer brings a saying and a doing configuration together. In the necessity with which this configuration imposes itself, he can grasp himself (grasp "I") in any such pair of P's, and his ability to do so is not affected by what particular patterns he considers. Thus the form of the triplet of P's is a form in itself. It is the form in which the observer grasps, and grasps himself, grasping his "I". In grasping himself, he grasps (the whole of) this form, and thus, the whole of this form can in turn be treated as the "I" i.e.



Call this form a 'self-system'. It is the form in which the observer exists as (the whole of) his construction, before he distinguishes himself. Where he grasps the whole of his construction, he grasps it in this form. It is in the coherence of (at least) this form, that the manifestations of his activities cannot be (completely) random. He unfolds this form in his description-building activities.

DESCRIPTION AND INTERPRETATION

Where the observer grasps himself, his knowledge of himself merges with his grasp of his construction, rather than enabling him to distinguish himself. The inevitability of grasping the pattern of the self-system as a whole excludes such a distinction; excludes unfolding. Both the ability of grasping (1) and of unfolding (2), are involved in and affected by the form of the self-system. The observer has to distinguish a pattern to grasp it, but this distinction is excluded in grasping the self-system. Similarly, the distinction required to unfold the self-system is excluded. Unfolding is excluded in the circumstance that the observer can grasp himself in ANY pair of P's, i.e. in the form in which he grasps himself, rather than in the particular patterns grasped.

A difficulty arises in the notions of grasping and unfoldings; unfolding involves describing, where the description is made in grasping, and grasping involves interpreting a pattern, while at the same time describing it. This difficulty can be resolved by using the notions of description and interpretation, instead of those of grasping and unfolding. This change in distinction only concerns how the circular relation is severed, and does not otherwise affect what has been said so far.

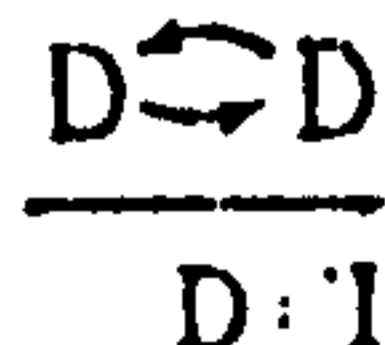
Thus, the form of the self-system as a whole is the form of interpretation. In this form, the P's are patterns grasped, rather than graspings of patterns, and hence token descriptions (slots to be filled by particular descriptions). Hence the P's can be replaced, and shown by, D's, repeating (10), i.e.

(11)



The distinction by which the observer distinguishes himself from his construction is excluded in the form of the self-system. It is excluded in the form of interpretation. This exclusion arises in the complementarity between description and interpretation. The complementarity in which the form of interpretation cannot accommodate the form of a description being made. Hence a distinction (by which the observer can distinguish himself) must open the self-system. In opening the self-system to distinguish himself, the observer distinguishes a pair of token descriptions D (the pair of P's, shown in (9), in which he first grasped himself) from the token description D "I" (the pattern grasped, P "I"), i.e.

(12)



The open self-system reflects the form of the closed self-system; the form of interpretation. The relationships between

the token descriptions are those of the closed self-system: in the complementarity an open self-system needs to be closed to be interpreted.

The opening of the self-system captures the speech act. The two D's (P SAY and P DO) of the pair are token descriptions for aspects of the speech act (what is said and what is done), while D "I" is a token description of the actor (sayer/ doer) with regard to whom a speech act can be interpreted. Artefacts, statements, questions, commands, etc, are examples of opened self-systems. But opening the self-system need not entail an utterance. It is the act of drawing a distinction which comprises the 'saying' and 'doing' aspects and remains tied to (or indicative of) the observer who draws the distinction. Hence, let the pair of token descriptions D as a whole be a description or an artefact. The token descriptions are descriptions made implicitly in the act of distinguishing (an observer can be taken to make them). They can be treated as descriptions in an interpretation of a description or an artefact.

The making of descriptions by opening the self-system provides the observer with new possibilities in bringing things into existence. He and his description can exist independently. Having distinguished himself from his construction, he can step back, look at it, and change it. He can dissociate himself from his construction, seeing its weaknesses. Such independence allows for learning and designing; it allows the observer to use the artefacts or descriptions he makes. He can discern himself in the things he does and can choose to discern himself in some, and not in other, things he does. He can know of his existence by interacting with descriptions of himself and the artefacts he makes. He can change his descriptions and what he does and thus construct his own identity.

His construction or description acquires an observer-independent existence (iv), as an artefact, as a thing made. It is a trace of the observer's description-building activities, and acquires a life of its own where it is observed and interpreted by others. It may eventually acquire an interpersonal existence (v) across the interpretations of a number of observers. It is such independence of descriptions or artefacts (tools, chairs, cups, buildings, theories, languages and the like), which allows for the construction of an (interpersonal) reality, inhabited by artefacts and descriptions. As yet the distinction by which the observer distinguishes himself from his construction only gives rise to these possibilities, without in itself realising them. The observer and his descriptions and artefacts only acquire independence where they are actually treated as independent. Thus, the notion of independence bears out the assumption that a thing's existence depends on being distinguished, by, and possibly from, an observer. Descriptions and artefacts cannot be treated as independent in isolation. To treat a description or artefact as this or that is to interpret it.

To identify the closed self-system with the form of interpretation is to say that nothing can remain distinct in the form of interpretation. What was distinguished is no longer distinct. In the act of interpretation, the observer and his construction are one.

To distinguish (what was interpreted or how it was interpreted) it is to break open the self-system. It is to make another description. The "content" of interpretations arises in the particularity of such descriptions. Where there is only one observer there is nothing to distinguish one interpretation from another. There can be no ambiguity. The form of interpretation imposes itself necessarily on any description. It is in the act of interpretation that things come to cohere, hold together, and stand against the fragmentation of the random manifestations assumed.

In the form of interpretation, descriptions and artefacts have an existence complementary to the independent existence they can have in an open self-system. It is in reflecting the form of interpretation that descriptions can become independent. The pair of D's, reflecting aspects of the act of distinction, allow for the form of interpretation to be grasped, allow the self-system to be closed over a description. Thus it is the form of descriptions which enables different observers to close the form of interpretation over a description or artefact and hence it is the form of a description which allows it to acquire an interpersonal existence, i.e.

(13)



⋆ ⋆

TIME

In constructing the self-system, unfolding was excluded. It was excluded in that time was excluded in the observer's act of grasping the self-system. The distinction between unfolding and grasping assumed the time in which a pattern could be unfolded and in turn grasped. The exclusion of time in the grasping of the self-system thus made it necessary to change the distinction (between grasping and unfolding) to the timeless notions of description and interpretation, so as to eliminate this assumed time.

It is in the absence of time, that the exclusive nature of the complementarity between description and interpretation arises. In the absence of time the distinction by which the observer distinguishes himself from his construction is excluded from his grasping of the self-system. In the absence of time a description or artefact made cannot be accommodated in the form of interpretation. In the absence of time a description or an interpretation can only be considered in



isolation. In their timelessness these notions are in mutual exclusion and hence complementary.

The complementarity between these forms leads the observer to generate time (before and without as yet distinguishing it as such). The act of making a description, of opening the self-system calls for it to be, in turn, closed in an act of interpretation. The act of interpretation, of closing of the self-system, in turn calls for it to be opened to make a new description. What is excluded in the interpretation imposes the need for a description. What is excluded in the description imposes the need for an interpretation. Hence the observer is involved in a process of opening and closing his self-system. This process becomes identifiable as a process with regard to the time generated in this oscillation, and in so doing, the observer creates the dimension of events he will later distinguish as time, i.e.

$$(14) \quad \begin{array}{c} D \rightleftharpoons D \\ \vee \\ D \end{array} \rightarrow \frac{D \rightleftharpoons D}{D} \rightarrow \begin{array}{c} D \rightleftharpoons D \\ \vee \\ D \end{array} \rightarrow \frac{D \rightleftharpoons D}{D} \rightarrow \begin{array}{c} D \rightleftharpoons D \\ \vee \\ D \end{array}$$

In the process of oscillating between opening and closing his self system, the observer makes a description (opening the self-system), steps back to consider and interpret this description (closing the self-system), and in turn makes a new description (opening the self-system), and so on. In such interaction with his description, the observer can change, develop, and build upon, a description in a new description. The process is that of construction, or design.

The process of construction is formally governed by, and formally governs, the form of the self-system and the forms of description and interpretation. The time generated in the process of construction reflects the forms of description and interpretation. Similarly, the form of the observer's descriptions and interpretations reflect the nature of this process.

As a consequence of this complementarity the observer can only 'say' one thing within any one description in the process of oscillating between descriptions and interpretations. The notion of 'saying' here concerns saying one thing rather than another; making this point rather than that. (It is not that of 'uttering', and does not presuppose that an utterance has or will be made.) Thus, the notion of 'saying' arises in the process of oscillating between opening and closing the self-system. The observer can only say one thing at a time as there is no point in saying more than one thing at a time. There is no point in saying more than one thing at a time as all that can be said in a description is merged into one in the form of the subsequent interpretation.

In the complement interpretation, it is impossible to say how a description is (will or should be) interpreted. All that can be said is that a description was interpreted. How it was interpreted can only be considered after the event in terms

of the subsequent description(s). To say how a description was interpreted it is necessary to move on in time to open the self-system. It cannot be known within the act of interpretation how something is interpreted. To consider how it is interpreted is to distinguish what is interpreted from the way in which this is interpreted. The form of interpretation cannot accommodate distinctions. To say how a description was interpreted is to press on in time and make the next description.

The complementarity between description and interpretation thus formally provides the dynamics of the observer's description-building process. The observer generates time in oscillating between opening and closing the self-system. The form of the time generated arises in the complementary forms of description and interpretation. The observer and his description merge with every act of interpretation. The distinction by which a description was made is obliterated. The form of interpretation cannot accommodate distinctions. In the act of interpretation the observer cannot distinguish himself. He cannot distinguish the description he is interpreting. While generating time he cannot distinguish this time. He can have no notion of time. With every act of interpretation, with every closing of the self-system, the observer accumulates time. The form of the time generated is that of such accumulation. To notionally illustrate such accumulation, or embedding, let "I" be an abbreviation for D "I", and D an abbreviation for the pair of token descriptions, i.e.

(15)  $((((I) D) D) D)$

But rather than being embedded further and further inside his descriptions, the observer remains outside them, to make them. Instead, accumulated in the act of interpretation, time is accumulated within the observer's self-system, within the observer's "I". To capture the form of the time generated in the observer's description-building process (construction), it is necessary to distinguish between the complementary open and closed phases of the oscillation. Let "I", according to (10) above show the closed and "I" : D show the open self-system (reflecting the distinction between the observer and his description). The form of the time thus accumulated, can be shown as:

(16)  $\begin{array}{c} 'I' \rightarrow ('I' : D) \\ \uparrow \quad \underbrace{\hspace{1.5cm}} \end{array}$

The rightward arrow represents an opening of the self-system, and the leftward arrow a closing of the self-system, and the brackets contain the description merged in the act of interpretation. With every closure of the self-system the observer's "I" accumulates time.

What independence the observer acquires in distinguishing himself, he loses in interpreting his description. The simple process of opening and closing the self-system requires the observer to accept

the descriptions he made in the act of interpretation. In this simple process he appears thus limited to an uncritical existence. He can discriminate only by choosing not to interpret his descriptions. The simple process of opening and closing the self-system allows the observer to build on his descriptions and in this sense it allows him to develop his descriptions. In this process of construction the observer accumulates time, and his "I" is ever-growing. It is in this construction that the observer has an existence.

## TOWARDS COMMUNICATION

In the process of construction the observer is quite alone. There is only one observer, and even he cannot sustain distinguishing himself. In the simple process of construction the observer cannot begin to conceive of others. The form of interpretation necessarily leads him to interpret everything ego-centrally, and treat the world as his own.

Hence, communication cannot simply be considered in terms of the interaction between two such observers. Being ego-centric, if not solipsistic, such observers would not and could not interact. For one observer to begin to communicate with another observer, he needs to distinguish himself, and distinguish the other. It is in the interaction between the processes of construction and communication that an observer can make the distinctions necessary to begin to communicate. This interaction needs to be considered before we can speak about communication.

The need to consider the interaction between construction and communication arises in the form of exposition and arises in the need to begin and to distinguish one process from another. There can be no separation between construction and communication. The notion that an observer begins to communicate arises in the expository beginning. The interaction between construction and communication is manifest where the exposition of the simple process of construction is also indicative of aspects of communication. In turn, this interaction is manifest in the notion of asking how the observer may come to 'speak to himself'.

The need to consider the form of exposition is not accidental. It arises in the coincidence between the form of exposition and what we address. It is in this coincidence that the paradox of means is overcome. It is in this coincidence that the interaction between arbitrarily distinguished processes can be captured.

The coincidence of the constructive form of exposition, in addressing construction, lies in the observation THAT there must be a beginning. In addressing construction the particular distinction by which we begin is arbitrary. The coincidence of the communicative form of exposition in addressing communication lies in considering HOW we begin. In addressing communication the intention in beginning is relevant. Similarly, the switch from the discussion of construction to the discussion of communication is a switch from observing THAT an observer interprets and describes to asking HOW he interprets and describes a particular.

The need to consider particulars pervades any discussion of communication. To communicate, an observer needs to say something in particular, rather than anything. He must have something to say. Where 'saying' involves making a point, it is only in particulars that he may or may

not be doing so. Only particulars can be relevant. But the discussion of communication cannot be concerned with this or that particular point the observer wishes to make. All that can be said is THAT he must have a particular thing to say.

The significance of the switch between the discussion of construction and the discussion of communication is manifest in that it is possible and necessary to posit THAT the observer constructs. To posit, instead, THAT the observer communicates is to evade the very question of communication. All that can be posited for occasions of communication is the observer's wish to communicate. Hence, the discussion of communication involves the observer's intentionality. It is just this intentionality which marks the switch between observing THAT and asking WHAT or HOW. In the simple process of construction, the observer has no choice in oscillating between opening and closing his self-system, which is why his intentionality, in doing what he does, need not be considered. Without choice, and without intentionality, communication is inconceivable.

Particularity, choice and intentionality are implicit in speaking of an act of distinction. This manifests the interaction between construction and communication. But where these notions are left to be accounted for in terms of an 'ability to interpret', such an account is excluded in the form of interpretation. Thus it becomes necessary to show how they arise naturally in the form of description and interpretation in the observer's use of the self-system.

\* \*

#### DISTINCTIONS

In the process of construction the observer can distinguish himself from his description while making a description, but he cannot sustain this distinction in the complementary act of interpretation. He accumulates descriptions within his self-system and remains unable to distinguish himself from his construction. Similarly, he accumulates the time he generates in the process of construction, unable to distinguish this time. To distinguish himself, and to distinguish himself from his construction, he needs to step out of the process of construction. To distinguish the time he generates, he needs to step out of his time, and again needs to terminate the process of construction. The notion of stepping out of the process of construction requires the observer to have an intentionality to stop doing one thing in order to do another.

To avoid inadvertently assuming the observer to have such intentionality, consider the case where the process of construction coincidentally constitutes a process of communication, seeing how this intentionality arises in the limitations of this case.

\* \* \*

NO DISTINCTION  
(OR SYNCHRONISATION)

For two observers to coincidentally communicate in the process of construction, they must be involved in the same process of construction, and hence they must be synchronised. Two observers cannot be distinguished in terms of this process. In the act of interpretation, they close one self-system, and hence they merge into one. To nevertheless speak of two observers is to ordain them distinct on grounds external to the process.

The case of complete synchronisation is of interest to the interaction between construction and communication. It is a case of complete communication or complete understanding. As such it shows that the extent to which two observers can understand each other depends upon the extent to which, in such understanding, they do not maintain their distinctness (identities). Moreover, in such synchronisation, the step in which the observer distinguishes himself from his construction coincides with the step in which two observers distinguish themselves from each other. It is thus in distinguishing himself as an other, that the observer can distinguish himself, and hence the possibility of distinguishing himself arises in interaction between two observers. It arises in the interaction between construction and communication.

The limitations of such coincidental communication in the process of construction are indicative of the nature of communication. These limitations are evident where such coincidental communication is commonly described as "thinking aloud" and "talking to oneself". Where I am accused of "thinking aloud", it is implied that

- (a) I don't know what I want to say or have nothing to say, and/or
- (b) I don't consider how I say what I want to say.

Where I am accused of "talking to myself" it is implied that

- (c) I don't consider how someone else can follow what I say, and/or
- (d) what I say is of no relevance to anyone but me.

In terms of the simple process of construction, the observer is far from equipped to venture into the domain of every day communication reflected in these two expressions. These objections however concern his ability to distinguish himself: (a) and (b) require the observer to step out of his time, and distinguish himself from his description; (c) and (d) require him to distinguish himself and an other, which in turn amounts to distinguishing himself from his construction. These distinctions arise in, and lead to, a de-synchronisation between two observers.

Thus, the simple case of complete synchronisation indicates the requirements the observer imposes upon himself with the wish to communicate. In the first instance he needs to distinguish himself. The need

to distinguish himself thus arises with the very wish to communicate. Why, in general, he should wish to communicate can only lead to speculations. What is of concern is THAT the wish to communicate motivates him to distinguish himself and thus motivates him to stop constructing and begin to communicate.

\* \* \*

### DISTINCTION

To begin to communicate the observer needs to be able to distinguish himself from his construction. To distinguish himself from his construction he needs to stop constructing and begin to communicate! But there is no paradox, as the distinction by which he distinguishes himself, the distinction by which he distinguishes an other, and the distinction which allows him to step out of his time, are one and the same distinction. The observer thus needs to draw a distinction across his process of construction (thereby distinguishing himself from his construction, stopping accumulating descriptions and time, distinguishing his time, and desynchronising himself from an other), i.e.

$$(17) \quad \begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array} \rightarrow \frac{D \rightleftharpoons D}{D} \rightarrow \boxed{\begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array}} \rightarrow \frac{D \rightleftharpoons D}{D} \rightarrow \begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array}$$

In drawing this distinction the observer terminates the process of construction (16) and thus reifies this process. Distinguished from the process of construction, the ever-growing "I" becomes an IT, which has accumulated, rather than is accumulating, the time which was generated in the process of construction before it termination, i.e. removing the arrow-heads to indicate that the process has been terminated,

$$(18) \quad \begin{array}{c} 'I' - ('I' : D) \\ \underbrace{\hspace{1.5cm}} \end{array}$$

Where the observer has stopped accumulating time, it appears that he can reverse the process of construction, unfolding the time he has accumulated, i.e. notionally,

$$(19) \quad \begin{array}{c} 'I' \leftarrow ('I' : D) \\ \underbrace{\hspace{1.5cm}} \end{array}$$

which suggests that the time accumulated within the "I" could be embedded within a description.


With this distinction the observer notionally begins to satisfy some of the requirements for communication. With the reification of his process of construction (18) the observer begins to have something to say (meeting the reproach (a)). Considered as a learning process, the process of construction is terminated by distinguishing what has been 'learned' (18)

and reversed in a process of explanation (19\*) explaining this to an other. This 'reversal' provides the observer with the possibility of explaining how he constructed IT and of considering how to explain what he has constructed (meeting the reproach (b)). By thus removing himself from what he explains, and not necessarily revealing how he constructed it, it becomes possible for the observer to maintain his identity in explaining his construction. Maintaining his identity, he can consider how to explain a thing to an other (meeting reproach (c)). He can consider whether or not it is of any relevance to the other (meeting reproach (d)).

\* \* \*

### DISTINCTIONS

However, these possibilities and the reversal illustrated in (19\*) remain notional, in that the observer needs to draw more than one distinction. With the single distinction (17) he distinguishes his "I" and everything he has constructed. If he were to unfold his construction as (19\*) suggests, he would run into an infinite regress of embeddings, i.e.

$$(20) \quad 'I' \text{ --- } ('I' : D(D(D(D \dots \infty$$


in which the observer's "I" would be totally consumed in the process of explanation (should he be able to overcome the difficulty of at once doing the unfolding and being unfolded).

In the simple reversal suggested in (19\*) the observer remains as unable to step out of the time he generated as in (16). To distinguish the construction he unfolds and be able to maintain his identity in explaining, the observer must thus draw two distinctions, distinguishing a particular segment of his process of construction, i.e.

$$(21) \quad \boxed{\begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array}} \xrightarrow{\frac{D \rightleftharpoons D}{D}} \boxed{\begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array}} \xrightarrow{\frac{D \rightleftharpoons D}{D}} \boxed{\begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array}}$$

With two distinctions, the observer can adopt the role of the reified "I" to unfold and explain the segment of descriptions distinguished, as if he were this "I". In explaining, the observer makes a description which in turn needs to be interpreted, and thus an explanation is a description he treats AS an explanation.



TIMES

To consider a segment of his process of construction, the observer needs to step out of this process and treat different times as the same time. He needs to accommodate time within his self-system. To consider a particular segment of his process of construction, he needs to close his self-system over this segment. To explain, and hence describe it, he needs to open his self-system. In closing his self-system he can treat different times as the same time. There is, and can be, no time in the form of interpretation. In interpreting, the observer merges with his construction and with his process of construction, i.e.

$$(22) \quad I : \begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array} : \begin{array}{c} I \rightarrow (I : D) \\ \uparrow \end{array}$$

In opening his self-system he can treat the same time as different times, as he does in treating a sequence of descriptions as one description, i.e.

$$(23) \quad \begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array} \begin{array}{c} \circlearrowleft \\ \circlearrowright \end{array} \begin{array}{c} D \rightleftharpoons D \\ \downarrow \\ D \end{array}$$

treating descriptions as token descriptions, i.e.

$$(24) \quad \frac{D \rightleftharpoons D}{D} : D$$

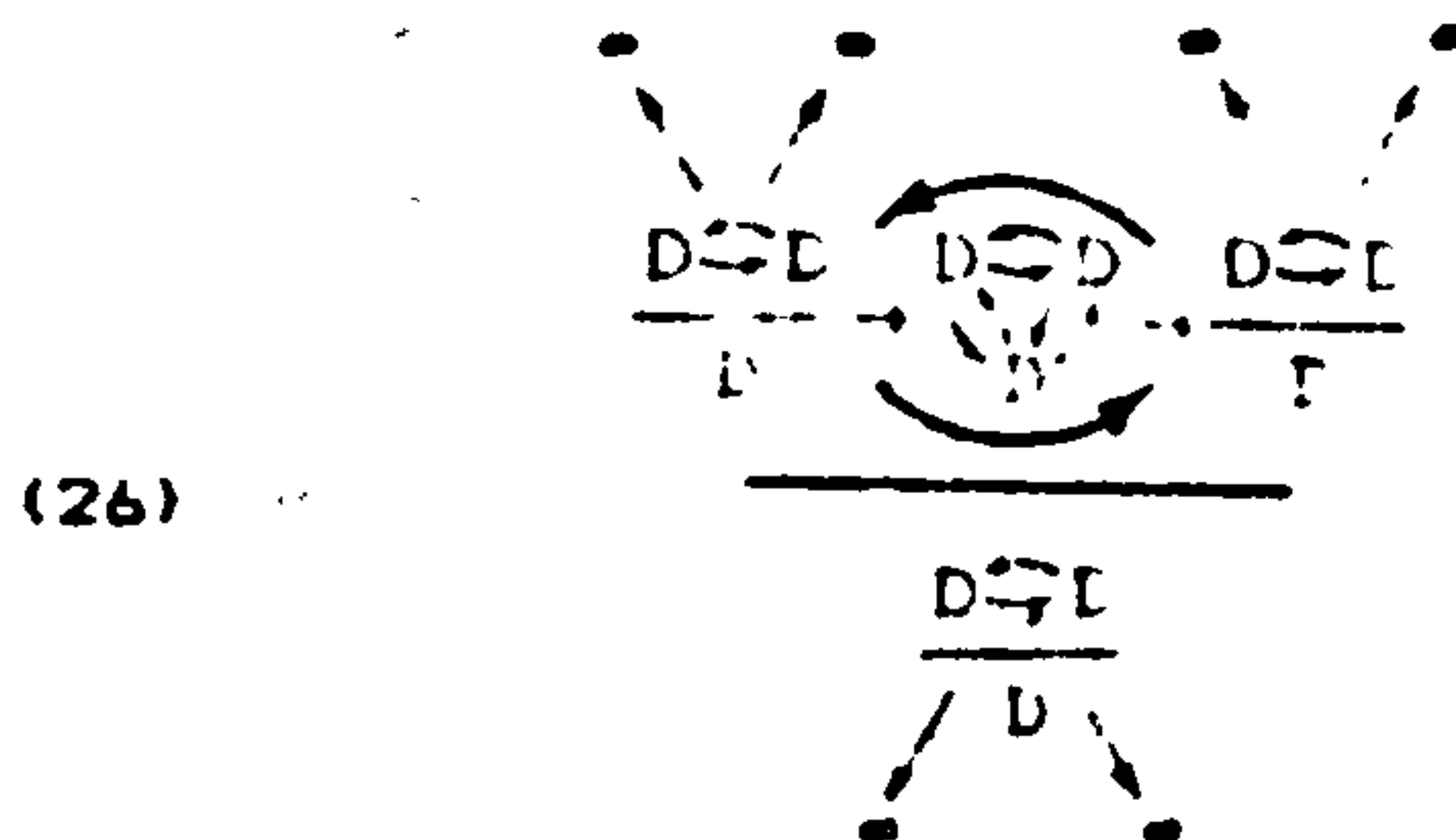
Thus the observer can treat a sequence of descriptions, as a description, and in turn treat this as a token description. For any two descriptions linked in a closing of the self-system, the observer can treat the closed self-system as a sequence of descriptions, and hence he can contemplate any length of segment he chooses.

But thus the two distinctions postulated in (21) arise in the distinction by which the observer opens an enlarged self-system (over a segment of his process of construction), as if it were a simple self-system, i.e.

$$(25) \quad \frac{\begin{array}{c} D \rightleftharpoons D \quad \circlearrowleft \quad D \rightleftharpoons D \\ \downarrow \quad \downarrow \quad \downarrow \\ D \quad \begin{array}{c} \circlearrowleft \\ \circlearrowright \end{array} \quad D \\ \downarrow \\ D \end{array}}{\frac{D \rightleftharpoons D}{D}} : \frac{D \rightleftharpoons D}{D}$$

The two distinctions postulated in (21) here correspond to the two descriptions which he treats as token descriptions in this enlarged self-system. The possibility of such treatment arises in the form of interpretation, in which the closure of an enlarged self-system is indistinguishable from the closure of the simple self-system.

Beyond particulars, the observer's ability to treat one thing as another (shown in (22), (24) and (25)), leads to a multidimensional temporal structure of possibilities, beyond description. If every token description were to be treated as a description, without considering the observer's intentionality, a structure of infinite regressions in every dimension would ensue, i.e.



This structure of possibilities arises wherever the observer's activities in general are considered (wherever generalisations and idealisations are invoked to avoid considering his intentionality).

To actually open and close an enlarged self-system, the observer has to choose between possibilities. It is in this choice that the observer's intentions are manifest in his activities. They are manifest in HOW the observer chooses to treat a particular form.

It is this choice which marks the transition between construction and communication. Within the time he generates, in the process of construction, the observer has no such choice, and all that can be said is THAT he constructs and generates his time. Instead, with regard to communication, the question does arise as to WHAT he wishes to communicate or HOW he chooses to treat a particular form. It is thus that the observer's intentionality has to be considered both in communication and in discussing communication.

\* \*

QUESTIONS RAISED  
(OR, A DOUBT)

The observer's ability to treat one form as another gives rise to questions. His intention in treating one form as another is subject to questioning. The question arises as to his motivation in enlarging the self-system as illustrated in (25). Where the observer chooses to distinguish himself, the question arises as to why he should choose to do so.

Descriptively, these questions are reflected in the questions as to how in the observer's use of the enlarged self-system differs from his use of the simple self-system, or how he can treat one form as an other. These questions call for an explanation of the enlarged self-system.

The observer's motivation to treat one form as another arises with a question, or doubt, concerning his construction. A question or doubt about his construction, calls for an explanation of his construction and leads the observer to unfold the time he has accumulated in the process of construction. The observer distinguishes himself in asking questions about himself.

In the simple process of construction, the observer and his construction are one. He cannot (set out to) question his construction. The question or doubt which leads the observer to distinguish himself must arise naturally, or accidentally, or the observer would need to have distinguished himself already.

Where the observer is unable to close his self-system, over a 'faulty' description he has made, he finds himself distinct from this description. Since he can only consider a description after he has made it, he can find himself distinct from a faulty description without having set out to distinguish himself. But this very complementarity presses him on in time to close his self-system over this faulty description. Once made, a faulty description thus leaves the observer in the predicament of having to close his self-system without being able to do so.

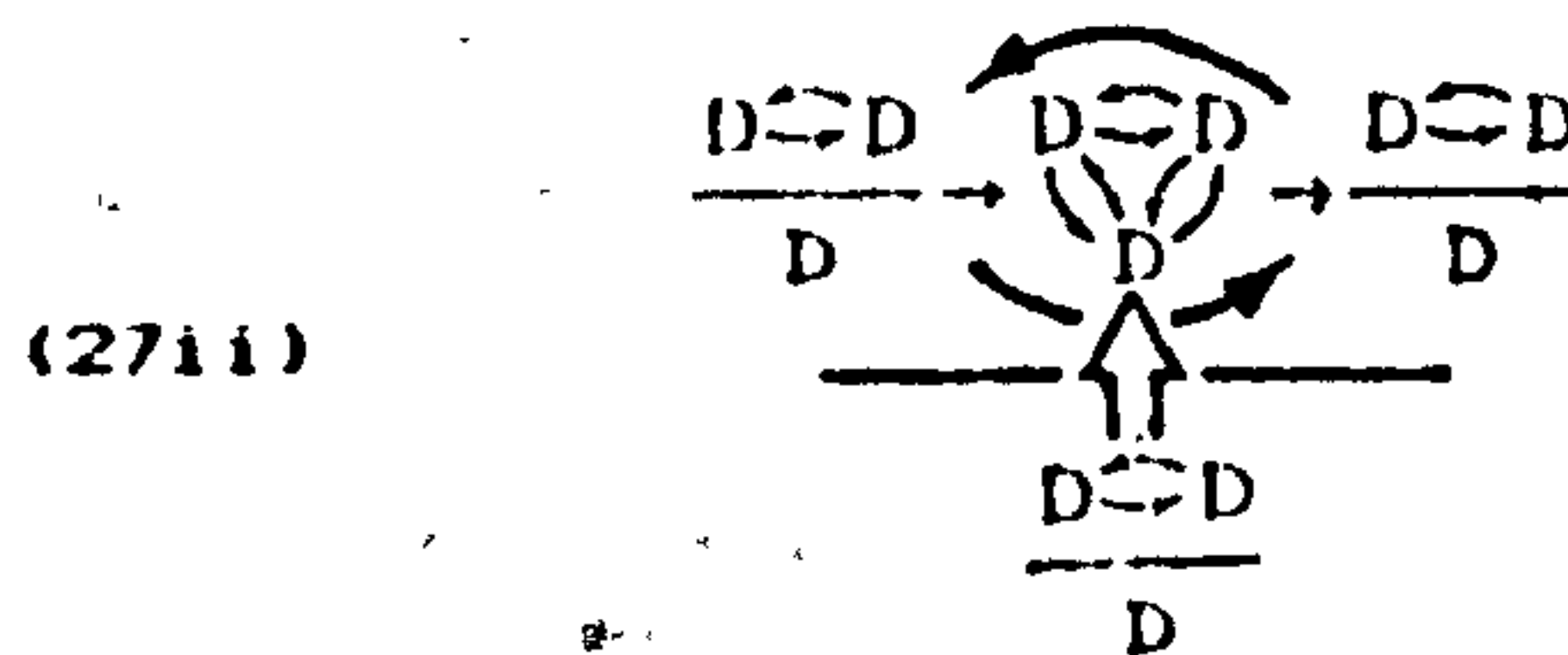
Due to the redundancy of the self-system (9), the observer's inability to close his self-system over a description must arise in an incongruity between its token descriptions. Where the observer can fail to close his self-system over a description, its token descriptions must be desynchronised. What he grasps in one token cannot coincide with what he grasps in the other. The desynchronisation arises as an incongruity between what the observer says he does and what he actually does.

To interpret a description its tokens must be synchronised. The form of interpretation cannot accommodate time. Hence the observer has to choose to close his self-system over either one of two desynchronised token descriptions. He can either accept (and later proceed to make

explicit) what he was doing or accept (and later proceeds to do) what he was saying he was doing, i.e.

$$(271) \quad \frac{D \supset D}{D}$$

To close his self-system over one of the two tokens he needs to enlarge the self-system, treat a token description as a description, and switch to the time in which he can close his self-system over this (token) description, i.e.



In terms of the simple process of construction, the observer's ability to treat a token description as a description thus allows for the correction of de-synchronised descriptions, and hence allows the observer to construct, or learn, by trying and changing descriptions. In view of the complementarity between description and interpretation this simple ability is essential.

Considering which of the two token descriptions to accept, the observer begins to raise questions. He may for instance wonder what he was doing, how he came to make a faulty description, and how what he was doing relates to this description. Formally the question raised by the faulty description is manifest in the distinctions resulting from the expansion of the token descriptions. These correspond to the two distinctions postulated in (21), and distinguish the segment of the observer's construction to be explained.

In terms of the requirements for communication, it is necessary to consider how the observer chooses between the two token descriptions, and how this choice reflects the his intentionality. To consider how he chooses one token in preference to the other it is thus necessary to consider the notion of relevance.

## RELEVANCE

In the process of construction the observer can have no notion of relevance, just as he can have no notion of time. Whatever he does is relevant. Where it not relevant, he would not be doing it (inasmuch as this can be said concerning a situation where we cannot consider what the observer could do, but does not). Relevance cannot be a criterion external to the observer's process of construction.

But, while there can be no notion of relevance in the process of construction, what relevance a thing may have it has with regard to this process. It is in the process of construction, and due to the form of interpretation, that the notion of saying is that of making a point, and making only one point at a time. Just as the observer can have no notion of time, in the process of construction he can have no notion of relevance, precisely because it is in this process that he generates his relevance. It is unnecessary to invoke a distinction between the time and the relevance the observer generates (except to show how the much-mystified notion of relevance arises).

To consider the requirements for communication, it is necessary to consider how the relevance generated in the process of construction is reflected in the form of this process. The complementarity between description and interpretation gives rise to a continuity in the process of construction. This continuity arises as a consequence of the form of interpretation. As all distinctions merge in the form of interpretation, any description can only be interpreted in terms of the previous construction as a whole. This single depth of interpretation is the complement of the notion of saying one thing at a time. Thus the continuity in the process of construction arises in that, at any one time, a description can only be accepted in terms of the construction so far, as a whole, and hence must cohere with this. It is in this coherence that a description must be relevant for the observer to close his self-system over it, for the observer to be able to interpret it.

To consider how relevance is generated in the process of construction is to ask how the observer puts descriptions together in his time. In the simple process of construction his relevance and his time are one. How he puts things together, and how he oscillates between opening and closing the self-system, are the same. As he can only say one thing at a time he can only put things together in how he deals with them, one at a time.

To consider how he puts things together the observer needs more than one thing. Formally, the possibility for putting things together in his time arises in the complementarity between the two token descriptions. The observer can choose to keep one token description constant while changing the other. Keeping a D SAY token constant, he can change what he does,

provided this remains within what he says he does. Keeping a D DO token constant, he can change what he says he does, provided the D DO describes what he does. By accumulating a number of descriptions, in which one token remains constant, the observer can thus put things together in his time, i.e.

$$(28) \quad \frac{D \rightarrow D}{D} \quad \frac{D \rightarrow D}{D}$$

The relevance thus generated in a particular process of construction, arises formally, where descriptions share a common token.

Where the observer extends what he does or says, beyond the point where it is described by the token he keeps constant, the two token descriptions become desynchronised (26). Unable to close his self-system, the observer must thus choose to close one of the two token descriptions (27). In choosing, considering how he put things together in his time, he thus 'uses' the relevance he generated in the process of construction (28). His choice is one between accepting an old token (kept constant), rejecting the new token, or accepting a new token and reconsidering the old one. In either case he needs to reconsider his description. Accepting the old token, the desynchronisation raises a doubt about his (recent) constructing. Accepting the new token, he questions the old and needs to consider the new, within his construction as a whole.

The intentionality in the observer's choice, to accept one of two desynchronised token descriptions, is manifest in the form in which the observer put things together in his time. To reconsider his descriptions the observer has to unfold his construction. Since all distinctions are merged in the form of interpretation, the observer's ability to unfold his construction involves intentionality. Like the process of construction, the process of unfolding is a step by step procedure (as a consequence of the single depth of interpretation). However, the observer cannot know, or have any memory of, how he put things together in his process of construction. Hence, he cannot simply reverse (as the term 'unfolding' unfortunately suggests) the process of construction. In any particular instance, ANY description may be unfolded (indeterminacy). To consider a doubt raised by the desynchronisation between token descriptions, the observer has to unfold particular descriptions (relevant to this doubt). To consider particular descriptions he has to look for, or re-invent, these, in the process of unfolding. It is in such 'looking for' or 're-inventing', that the observer's intentionality is manifest in the process of unfolding.

In unfolding, the observer can explore his construction, and reorganise how he puts things together. His intentionality is reflected in HOW he puts them together. His relevance remains simply determined by what he does, i.e. by what particular things he

puts together. In choosing to accept one of two token descriptions (in reorganising how he puts things together), the observer can have a notion of relevance, with regard to the particular descriptions he puts together. This notion of relevance is peculiar to the observer, and remains tied to his particular activity (his constructing or unfolding). It remains determined only in THAT the observer does a particular thing at a particular time. Relevance cannot be generalised. To consider how things can, in general, be put together, is to determine what intentions people may have on any occasion!

\* \*

#### THE COMPLEMENTARITY BETWEEN SAYING AND DOING

The complementarity between the two token descriptions reflects the form of interpretation in the form of a description. The observer can only close his self-system where the token descriptions are synchronised; where he can discern a common pattern between what he does and what he says he does. Hence, the complementarity between the token descriptions is one between what the observer does, and what he says in making a description.

A complementarity arises where two aspects of a whole are distinguished. The complementarity between saying and doing, only becomes apparent as such, where the observer distinguishes between the two token descriptions. It becomes apparent where he enlarges his self-system to distinguish between the token descriptions. It becomes apparent where aspects of the speech act as a whole are distinguished. It becomes apparent in communication, wherever one observer considers what another observer says or does. Similarly, it becomes apparent in considering what the observer does, rather than that he does it, and hence arises in the interaction between construction and communication.

The possibility of putting things together in his time arises in the

'redundancy' which allows the self-system to be closed. In closing or grasping the self-system (10) any one token describes the pattern the observer grasps in the other two. This 'redundancy' is reflected in the complementarity between the two token descriptions, where the self-system is opened. It only becomes perceivable as a redundancy where the observer distinguishes between the token descriptions, and hence it only becomes perceivable in the enlarged self-system.

Where the self-system is enlarged, the complementarity between saying and doing leads to an essential indeterminacy. This indeterminacy arises where aspects of the speech act are distinguished. It reflects the wholeness of the speech act, in which saying is in itself an activity and doing is in itself saying something (the act itself is indicative). Where the observer distinguishes token descriptions and enlarges a D(SAY) token, he makes explicit what he says, and in so doing describes what he does, namely, that he says it, i.e.

$$D(SAY) : D'I' \begin{array}{c} \leftarrow \\ \rightarrow \end{array} D(DO)$$

Where he distinguishes token descriptions and enlarges a D(DO) token, he makes explicit what he does, and in so doing describes what he says in doing it (the point in doing it), i.e.

$$D(DO) : D'I' \begin{array}{c} \leftarrow \\ \rightarrow \end{array} D(SAY)$$

As these enlarged tokens can in turn be enlarged, the extent of the indeterminacy is such that any D(SAY) token can be treated as a D(DO) and/or a D(SAY) token, and any D(DO) token can be treated as a D(SAY) and/or a D(DO) token. The indeterminacy arises in questioning (and hence distinguishing) which it is at any one time.

Due to this indeterminacy a token description distinguished, in turn has the form of a description, and hence it is this indeterminacy which enables the observer to treat one form as another. It is this indeterminacy which enables him to enlarge his self-system. But the enlarging of the self-system in turn arises in, and cannot be separated from, the complementarity between saying and doing. Where, in enlarging his self-system, the observer treats a token description as a description, he makes explicit (i.e. says) what he says or what he does. In contrast to the simple self-system, in which the observer does whatever he does, in the enlarged self-system he can thus say what he is doing. Where the observer enlarges the self-system treating one form as another (according to (24)), i.e.

$$(29) \quad D : \frac{D \rightleftharpoons D}{D} : \frac{\frac{D \rightleftharpoons D \quad D \rightleftharpoons D}{D \quad D}}{D \rightleftharpoons D}$$



he treats the description he makes in a simple self-system as a D(DO) token, i.e.

$$\frac{D \rightleftharpoons D^{\circ}}{D} : D_{\text{ow}}$$

and a description he makes by enlarging the self-system as a D(SAY) token, i.e.

$$\frac{\frac{D \rightleftharpoons D}{D} \rightleftharpoons \frac{D \rightleftharpoons D}{D}}{\frac{D \rightleftharpoons D}{D}} : D_{\text{w}}$$

The indeterminacy is moreover reflected in the circumstance that the enlarged self-system, as a whole, comprises both a description (-d) which the observer can treat as a D(SAY), and a description (=d) he can treat as a D(DO). Thus the wholeness of the speech act is reflected in the form of interpretation. But, where the observer must close his self-system over one or the other of these descriptions, the complementarity between saying and doing, thus generates a dynamic (a number of changes) in which the observer must switch between descriptions, treating one form as another.

The redundancy in the enlarged self-system arises as a redundancy only in severing the wholeness of the form of interpretation. The redundancy in the parts distinguished in making a description, reflects the wholeness of the form of interpretation. It reflects the form of the whole in the form of the parts. The complementarity between saying and doing becomes apparent where the observer distinguishes between the two token descriptions and enlarges the self-system. The ensuing redundancy allows a token description to be treated as a description of what the observer is doing or saying. In distinguishing between what he does and what he says, the observer can make what he says or does explicit, he can begin to say something.

To say something is to make a point. The very possibility of saying something arises in the redundancy in the enlarged self-system. This redundancy underlies the notion of relevance. The complementarity between saying and doing, the complementarity between the two token descriptions, enables the observer to put things together in his time, and thus generate his relevance in the process of construction.

To communicate, the observer must have something to say. Formally the possibility of having something to say arises in the closure of the self-system, where any token is the pattern the observer discerns in the remaining two tokens (the 'redundancy' in the simple self-system which gives rise to the redundancy in the enlarged

self-system). In remaining the same, the token which is kept constant over a series of descriptions in (28), is redundant. This redundancy allows the observer to begin to say something even in the simple self-system. To close his self-system, the new token must be the pattern the observer discerns between the old token and D "I".

(28i)



Due to the 'redundancy' in the simple self-system, the observer can use this pair of token descriptions as a description, or recipe, for making new descriptions. Thus the 'redundancy' in the simple self-system allows him to look for new descriptions, and provides a form in which the observer's intentionality can become manifest. If he were to make this recipe explicit, he would be saying how he goes about making new descriptions. The redundancy of descriptions thus provides the form for the observer to have something to say.

To have something to say, there must be a point in saying it. The relevance in saying something can only arise in the observer's activities. The point of making explicit how he goes about making new descriptions, can only arise in the activity in which he is combining new tokens with a token he maintains constant. The relevance of new descriptions arises in that they are new relative to old descriptions. The particularity in making points lies in the relation between the new and the old. To make a point is to make a particular point. The relevance of a description lies in its particularity. The possibility of saying something in particular (the possibility of making a point) arises in the redundancy of descriptions. The point of saying something lies in saying something new about something old.

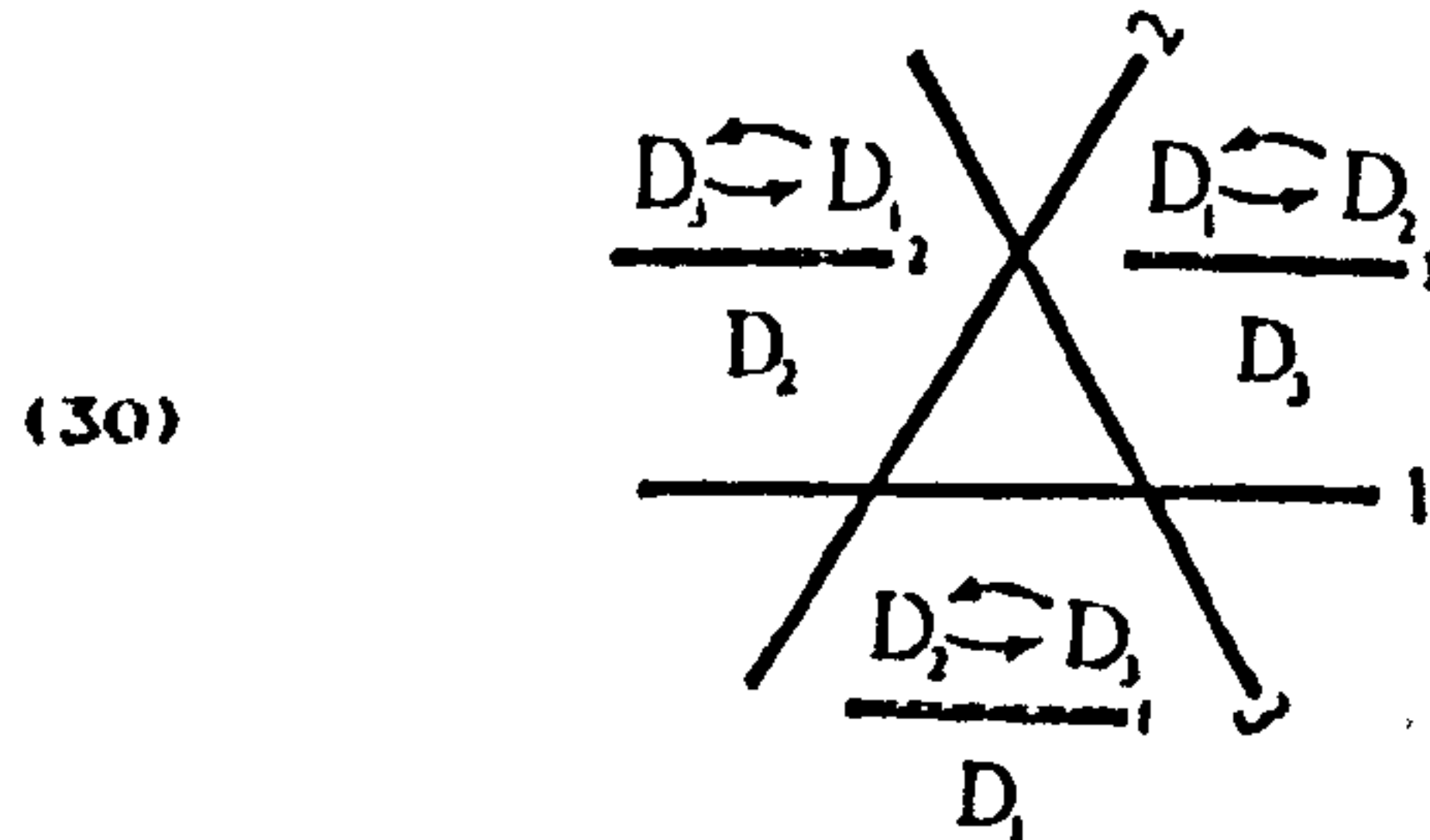
The point in making explicit how he goes about making new descriptions, thus arises where the observer wants to consider a new way of going about making descriptions. It arises with the wish to change a recipe or description of what he is doing (in (28)). The recipe itself becomes an old token maintained constant in a new recipe. The relevance of making a recipe explicit, thus arises where the observer perceives the redundancy he is using in making new descriptions. In making the recipe explicit the observer is saying something about what he is doing. To make a recipe explicit he thus needs to distinguish himself.

Let the redundancy in the enlarged self-system be shown by numerals reflecting aspects of the speech act (where it cannot be known which tokens are saying-, doing- or "I"-tokens). Thus let the numerals 1, 2, and 3 each represent one of the three tokens, i.e. D1, D2, D3. Let the indeterminacy in the enlarged self-system be reflected in the use of these same numerals with regard to descriptions and enlarged descriptions, such that each numeral represents one aspect of the speech act throughout one ideogram. Corresponding

to simple self-system



the indeterminacy and redundancy in the enlarged self-system is shown (statically) in the general relations between descriptions and token descriptions, i.e.



Let  $\approx_1, \approx_2, \approx_3$  and in general  $\approx_d$ , show small descriptions distinguished by  $\approx_d$  distinctions (there is no need to distinguish between descriptions and the distinctions by which they are made).

Let  $c=1, c=2, c=3$  and in general  $c=$ , show closures of the small self-systems opened by  $\approx_d$  distinctions (show interpretations of  $\approx_d$  descriptions).

Let  $-1, -2, -3$  and in general  $-d$ , show the larger (or the only) descriptions distinguished by  $-d$  distinctions.

Let  $c-$ , show the closure of the larger (or the only) self-system (show the interpretation of  $-d$  descriptions).

Let  $D_1, D_2, D_3$  and in general  $D$  show the tokens as used in the ideogram.

Let  $-d(\approx_d=d)$  or  $-d(D,D)$  show  $-d$  descriptions, where the content of the brackets specifies the tokens involved in the description and similarly let  $\approx_d(D,D)$  show  $\approx_d$  descriptions,

Let  $-d(\approx_d=d)=d$  or  $-d(D,D)D$  show the whole of the self-system in which a  $-d$  description is made, where the  $\approx_d$  or  $D$  outside the brackets indicates the third  $\approx_d$  description, or the third token not involved in the  $-d$  description. Similarly, let  $\approx_d(D,D)D$  refer to a small self-system, and within this notation let  $c-$  and  $c=$  indicate the closures of the whole, or parts, of the enlarged self-system.

The indeterminacy in the enlarged self-system is reflected in that  $-d$  distinctions show the larger, or the only, distinctions, and hence  $\approx_d$  distinctions arise only relative to  $-d$  distinctions. Beyond this the indeterminacy extends in the observer's treatment of tokens  $D$ , as token descriptions  $\approx_d$ , and in further enlargements in which he treats  $-d$  descriptions as token descriptions  $\approx_d$ , or tokens  $D$ . However, the indeterminacy shown is sufficient to capture these extensions.

The redundancy in the enlarged self-system is such that, the large  $-d$  descriptions are explicit versions of the

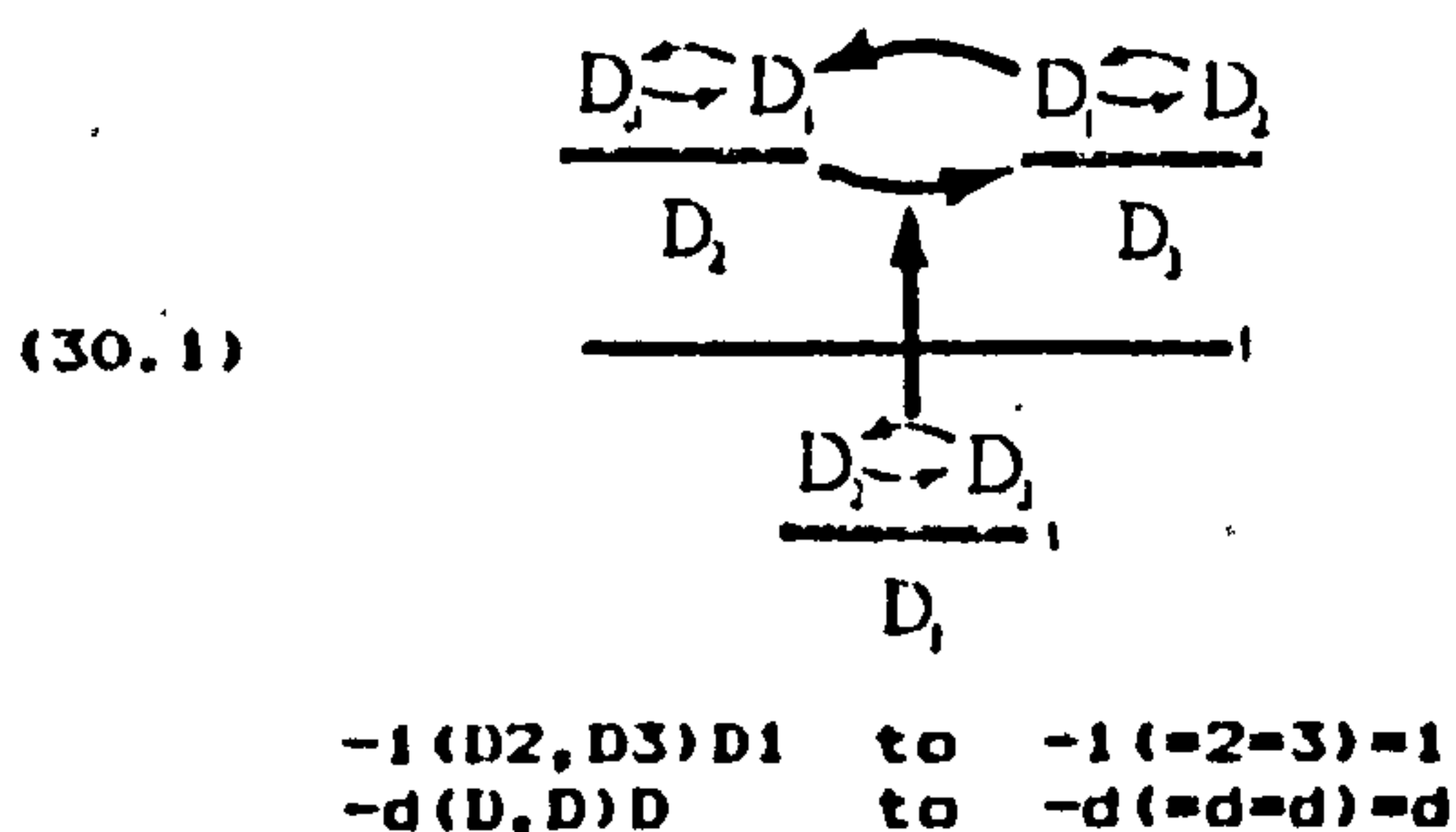
small =d descriptions. Similarly, for each closure c= over a small =d description, the tokens reflect how every small self-system is closed, by grasping the common token in the remaining two descriptions, i.e.

D1 (in =2 & =3),  
 D2 (in =3 & =1) and  
 D3 (in =1 & =2).

It is thus that the observer can use a -d description to make the corresponding =d description explicit, and/or to explain how he goes about making this =d description.

Both the indeterminacy, and the redundancy, in the enlarged self-system arise in the complementarity between saying and doing. Hence they only become manifest in the observer's activities. In using the indeterminacy and the redundancy, the observer can distinguish between what he says and what he does. In turn, his process of making and interpreting descriptions, using this indeterminacy and redundancy, is formally governed by the complementarity between saying and doing.

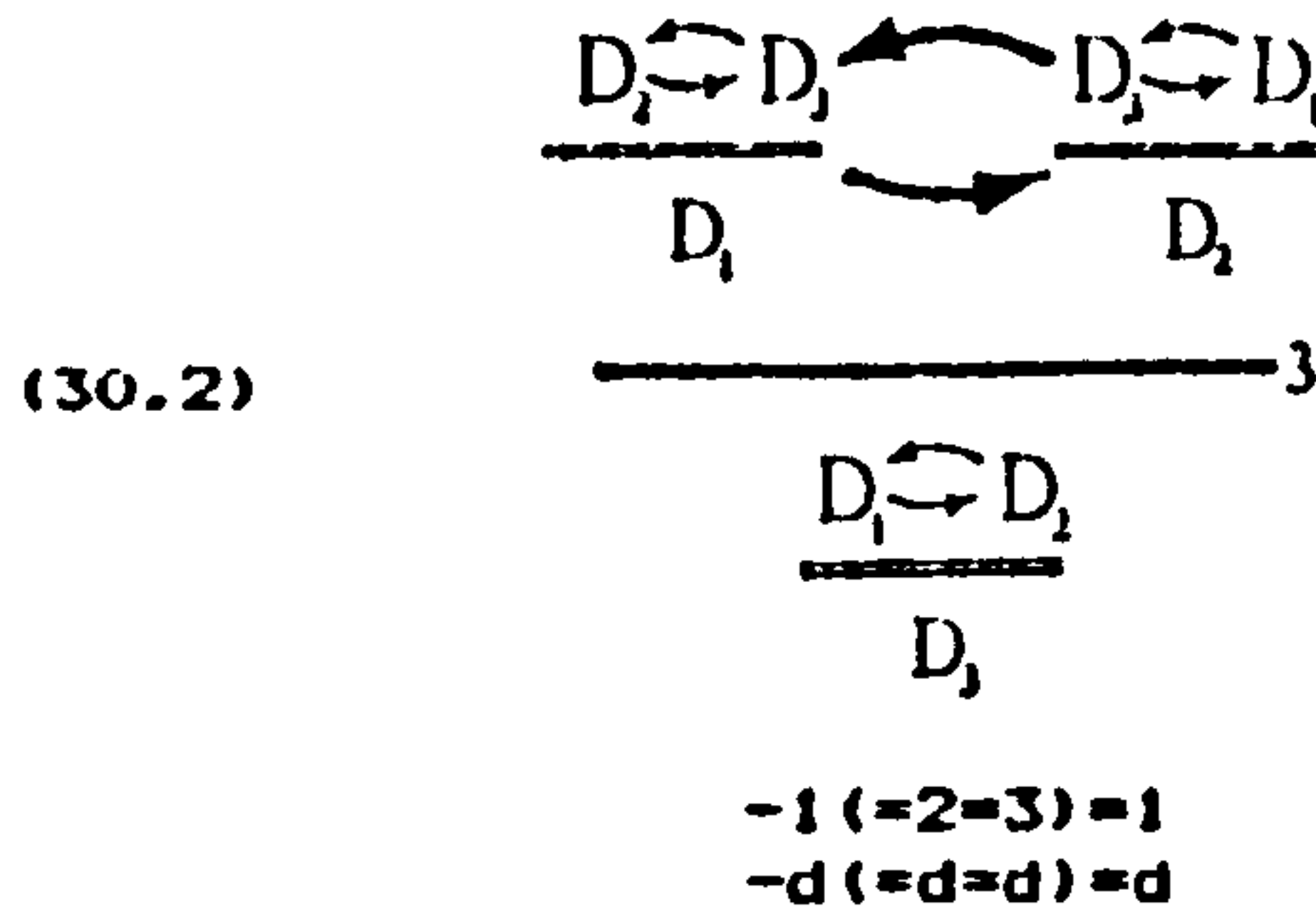
Where the observer cannot close his self-system over a description he has made, he can step back as in (27) to consider how he made it and switch from the simple to the enlarged self-system, treating a -d(D,D) description as a -d(=d=d) description, eg.



In so doing he makes explicit what he is or was doing, using the complementarity between saying and doing to enlarge the self-system. The difference between making explicit what he is, or was, doing is temporal, and hence can only arise in the observer's process of making and interpreting his descriptions. It arises as a difference in the subsequent closure of his self-system. Due to the complementarity between saying and doing, the observer must close his self-system over one particular description in the enlarged self-system, i.e. over the -d choosing to say, or over a =d choosing to do.

Where in making a -d description the three small self-systems are open, the observer is at once DOING something (making a description) and SAYING what he is doing (making an explicit description of the description he is making). For instance, in making  $-1(=2=3)=1$ , what the observer is DOING is making =1, and what he is SAYING makes explicit how he is making =1, i.e.

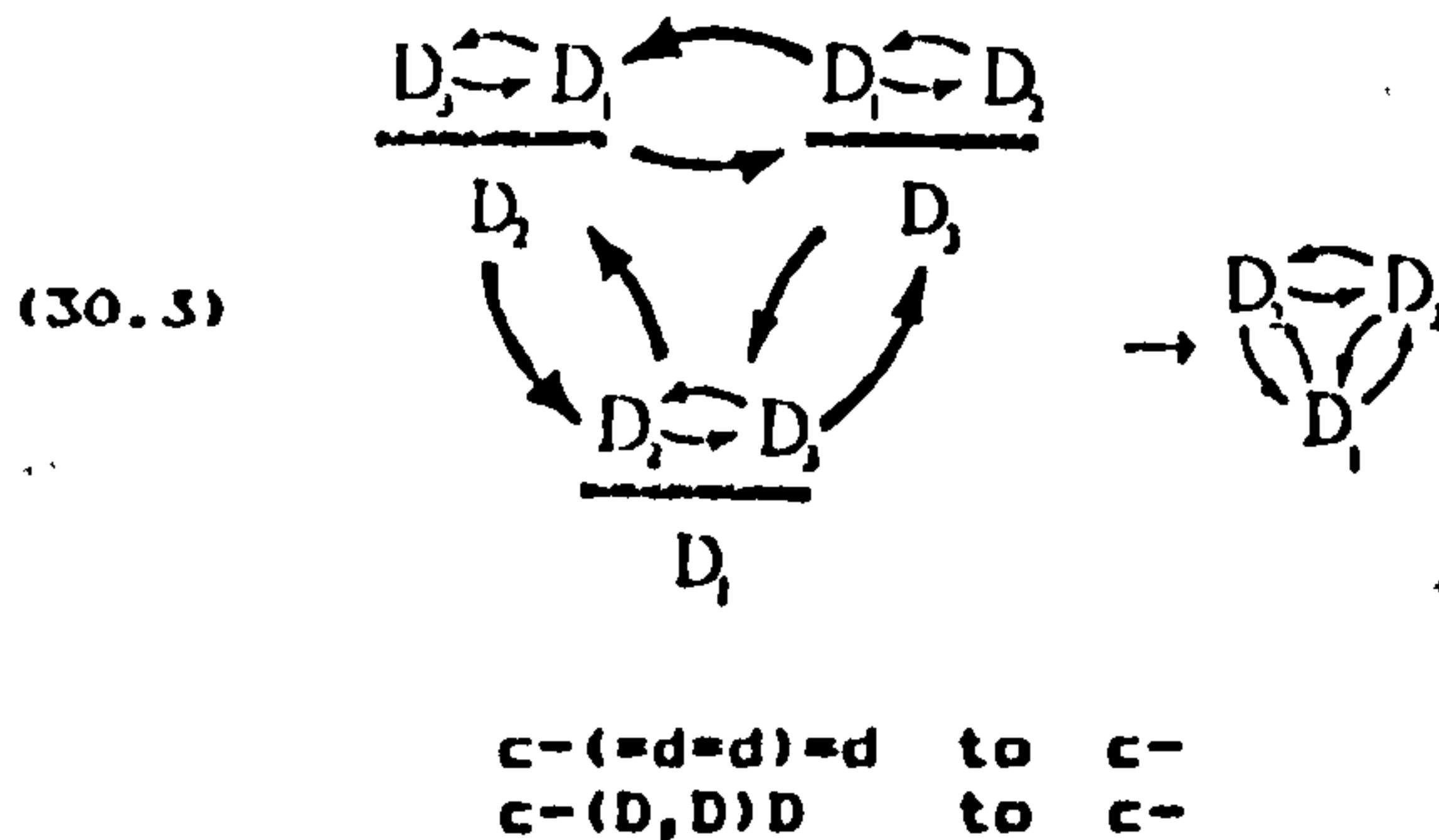
-1(=2=3). eg.



Here the observer makes explicit what he is doing, and hence (30.2) describes a state in the observer's process of opening and closing his self-system. The possibility of saying what he is doing, while at the same time doing it, arises in the wholeness of the speech act, and hence in the form of interpretation. Any speech act can be treated as having this form, and to treat it as such is to consider the speech act in terms of the complementarity between saying and doing. It is to consider the possibilities of interpreting a speech act. To actually interpret a speech act, the complementarity between saying and doing requires the observer to close his self-system over a particular description. A number of choices arise.

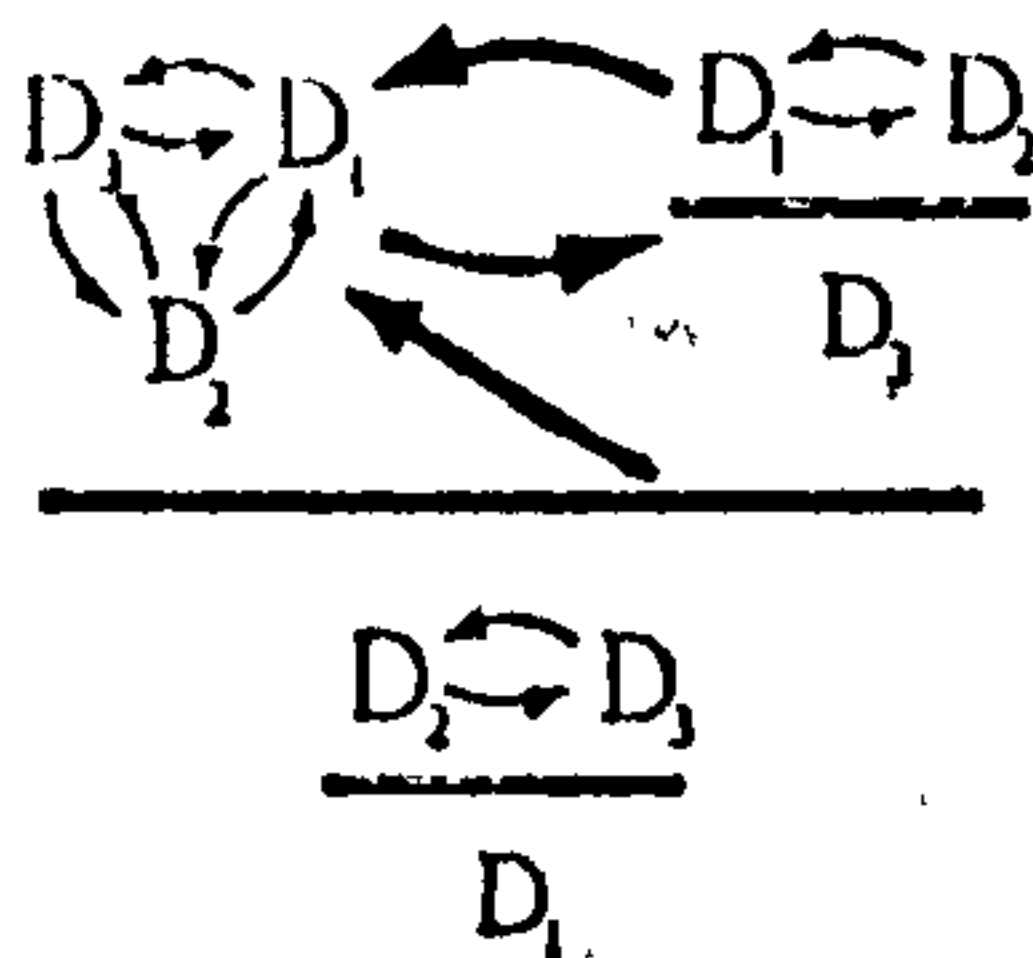
In the form of interpretation, all distinctions merge. Hence in the first instance, any closure over a description which the observer treats as a -d description leads the enlarged self-system to collapse to the simple self-system. Thus collapsing the enlarged self-system in the act of interpretation, the observer switches from saying (making explicit) to doing.

In a closure over any of the enlarged -d(=d=d) descriptions, the form of interpretation cannot sustain the =d distinctions and thus the closure of the enlarged self-system c- is indistinguishable from, and the same as, a closure of the simple self-system c-, i.e.



Similarly, where the observer treats a =d description as a -d description, closing his self-system over any of the =d descriptions, treated as -d descriptions, the enlarged self-system collapses, eg.

(30.4)



-1(c-2=3)=1 to c-2

-d(c=d)=d to c-

-d(=dc-)=d to c-

-d(=d=d)-c to c-

Here the observer's choice arises in which of the three =d descriptions he treats as a -d description. In the act of treating a =d description as a -d description, the observer chooses to DO rather than SAY. The choice between the three tokens is a choice between aspects of the speech act. Thus, what the observer is DOING (and proceeding on the basis of doing) is closing his self-system either over

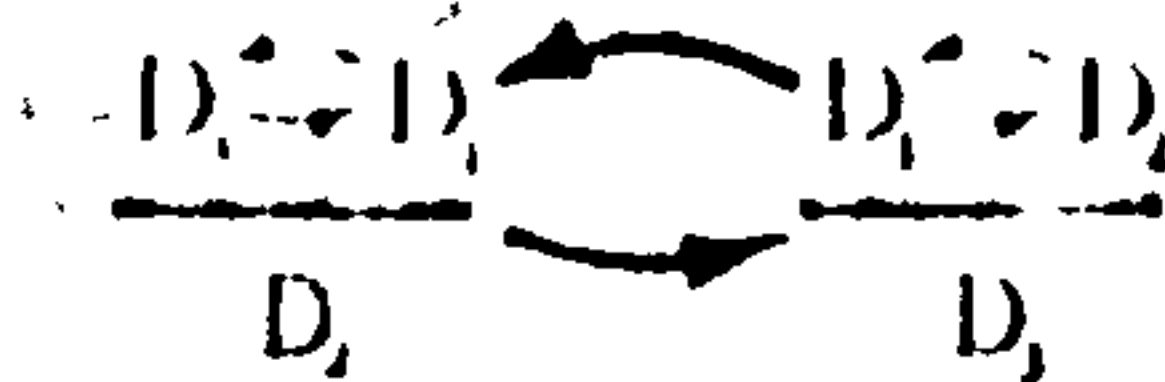
a description of what he is DOING or  
 a description of what he is SAYING or  
 a description of his "I".

Thus the enlarged self-system provides the observer with a twofold choice between aspects of the speech act. Firstly, treating a =d description as a -d description, and/or collapsing the enlarged self-system, he switches from saying to doing. Here the aspect of the speech act, i.e. his choice to DO rather than say, is manifest. In thus using the indeterminacy to treat one form as another, the observer removes this indeterminacy. Secondly, in choosing to close one of the small self-systems, the observer's choice between aspects of the speech act remains indeterminate.

This twofold choice between aspects of the speech act provides the observer with the possibility of closing a small self-system as a small self-system, within the enlarged self-system. It is thus, that the observer can maintain the enlarged self-system and begin to say something, accepting that he has said or done something.

Where the observer closes a small self-system c=, while maintaining a -d description, he accepts what he DID so as to be able to consider SAYING something about what he did. By enlarging the self-system (30.1) and by distinguishing between -d and =d descriptions, the observer chooses, in the first instance to SAY rather than do. In the second instance, the difficulty arises that, able to say something only by enlarging the self-system, the form of interpretation leads the observer to collapse the self-system, and hence to doing. The difficulty of maintaining an enlarged -d description, given the complementarity, however reflects on the nature of saying. Where the complementarity requires the observer to do something, the nature of saying requires him to accept the thing he is

saying something about. Hence, what the observer does in closing a small self-system =c is accepting what he did or said, accepting the aspect of his speech act about which he wishes to say something. Such acceptance thus allows him to accept THAT he made a description without accepting the description itself, eg.



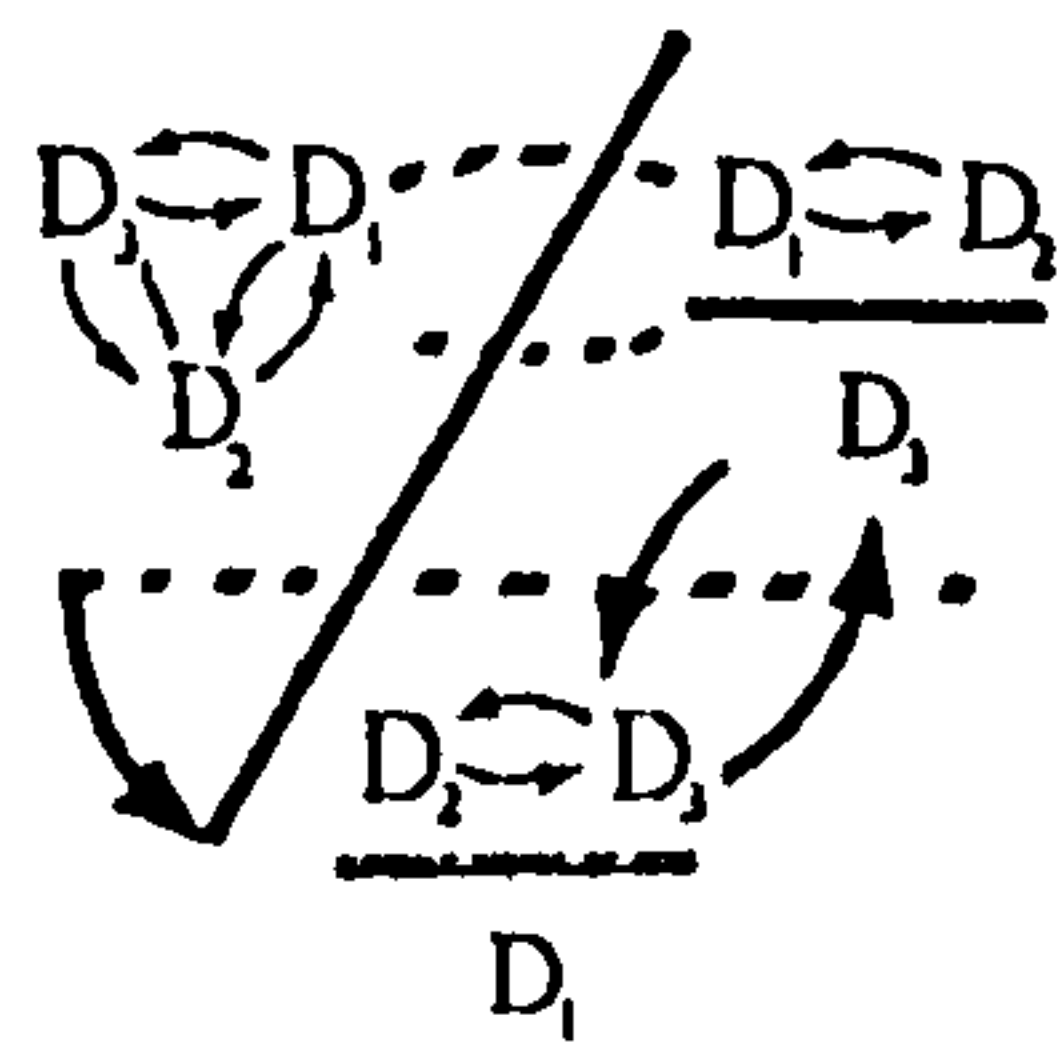
(30.5)



-1(=2=3)c=1  
-d(=d=d)c=

For instance, in making -1(=2=3)c=1, in closing the small self-system c=1, while making explicit what he did in it, -1(=2=3), the observer can accept that he has made =1, so as to be able to consider what he did in making =1.

Where the small self-system he closes is within the -d description, the observer accepts part of what he wishes to say. In accepting part of what he wishes to say, the observer changes his curiosity. In terms of (28) he changes how he goes about making new descriptions, and hence changes what he is doing. Thus, closing one of the c= self-systems within a description, leads to a switch in the -d distinction he is considering. He is accepting the -d description corresponding to the c= self-system he closes, and hence switching to this -d description from the initial -d description containing the =d he closes. For instance, the closure c=2 within -1(c=2=3) will lead to a switch to -2(=3=1)c=2, eg.



(30.6)

-1(c=2=3)=1 to -2(=3=1)c=2  
-d(c=d)=d to -d(=d=d)c=

\* \* \*

QUESTIONS ASKED

The ability to accept, by closing a small self-system within an enlarged self-system without collapsing this, enables the observer to actually come to say something. The need to enlarge the self-system arises where the observer finds a difficulty in closing his self-system (27). It arises in form of the doubt raised by his inability to interpret a description he has made. The ability to accept that he has made such a description thus enables the observer to address this doubt, and to ask himself a question about this difficulty. Where, in the process of construction, he finds a difficulty in closing his self-system over a description he has made, i.e.

-d(D,D)D,  
eg. -1(D2 D3)D1,

wondering about this description, he enlarges the self-system according to (30.1), i.e.

-d(D,D)D to -d(=d=d)=d,  
eg. -1(D2D3)D1 to -1(=2=3)=1,

Here the observer can choose either to proceed in doing or saying. Where he chooses to do, rather than say, he opts for the correction discussed in (27). This is captured by (30.4), where the observer treats one of the three =d descriptions as a -d description and closes his self-system over this description c-. Thus collapsing the enlarged self-system, he can switch back to the simple process of construction, deem a part of the initial -d(D,D)D a mistake, and return to doing whatever he was doing before he ran into this difficulty, i.e.

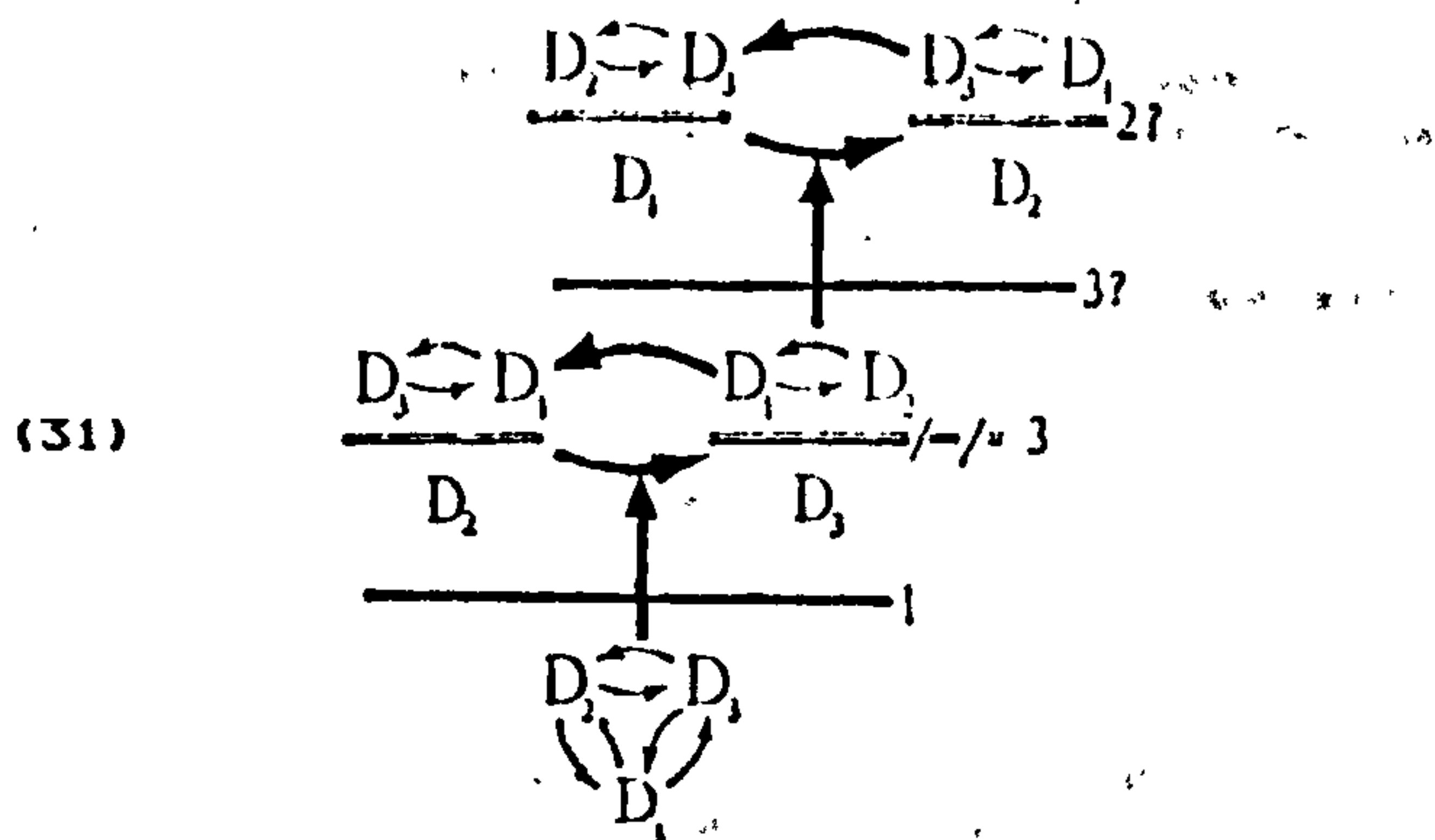
-d(=d=d)=d to -c  
(via -d(c=-d)=d,  
or -d(=dc-)=d,  
or -d(=d=d)c-)  
eg. -1(=2=3)=1 to c-123.

Instead, choosing to say rather than do, he chooses to address the doubt raised by his difficulty and ask a question. Before being able to question a description he has difficulty with, he has to accept THAT he made it, according to (30.5), i.e.

-d(=d=d)=d to -d(=d=d)c=,  
eg. -1(=2=3)=1 to -1(=2=3)c=1.

To address the doubt raised by a faulty description, and ask himself a question about it, the observer has to further expand the enlarged description -d(=d=d), in turn enlarging one of the =d descriptions to a -d(=d=d) description, according to (30.1), i.e.





-d(=d=d)c= to -d(=d='-d? (=d=d?)=d)c=,  
 eg. -1(=2=3)c=1 to  
 -1(=2='-3? (=1=2?)=3)c=1.

In thus enlarging one of the =d token descriptions the observer chooses to SAY, rather than DO (29). He chooses to make explicit the doubt -d(=d=d) raised by his difficulty with -d(D,D). In thus expanding the enlarged self-system, the observer explores the redundancy of the enlarged self-system. This redundancy in turn governs what he can say. Where to say something is to make a point, the expanded -d? description must be a question to be said, or it would be redundant. In terms of the example shown, =2 and =3 in are explicit versions of what the observer said, and did in making -1(D,D). Accepted, they can notionally be paraphrased, eg. (assuming 2 to be the DO aspect, and 3 to be the SAY aspect,)

c=2 as 'I said such and such' and  
 c=3 as 'I did such and such'.

Considering only =2?, the accepted c-3, can notionally be paraphrased

c-3 as 'I did such and such,  
 saying such and such',

(and similarly, had =2 been expanded, considering a similar =3?, paraphrasing

c-3 as 'I said such and such,  
 doing such and such').

Thus, unless -3? is a question, allowing for a further expansion, its closure would merely amount to accepting what the observer already accepted in closing c=1, i.e. THAT he DID say or do whatever he did. Hence, we can similarly paraphrase,

-3? as 'What did I do,  
 saying such and such?'

(and similarly

-2? as 'What did I say,  
 doing such and such?'),

The redundancy (whereby in all cases 'such and such' paraphrases =1) thus shows why c=1 needs to be closed in order to ask the question, eg.

"What did I do, saying -1?" (or  
 "What did I say, making -1?").

Seeing that the observer's difficulty in closing his self-system over -1(D2,D3) arises in the de-synchronisation between the D(DO) and D(SAY) tokens, the observer

could be predicted to attempt to resolve his difficulty by asking such a question. A question of this form, arises in the very form of the self-system, due to the redundancy of the enlarged self-system and the complementarity between saying and doing.

\* \*

SELF AND I  
OR  
THE REVERSAL OF SAYING AND DOING  
FOR ONE AND THE OTHER

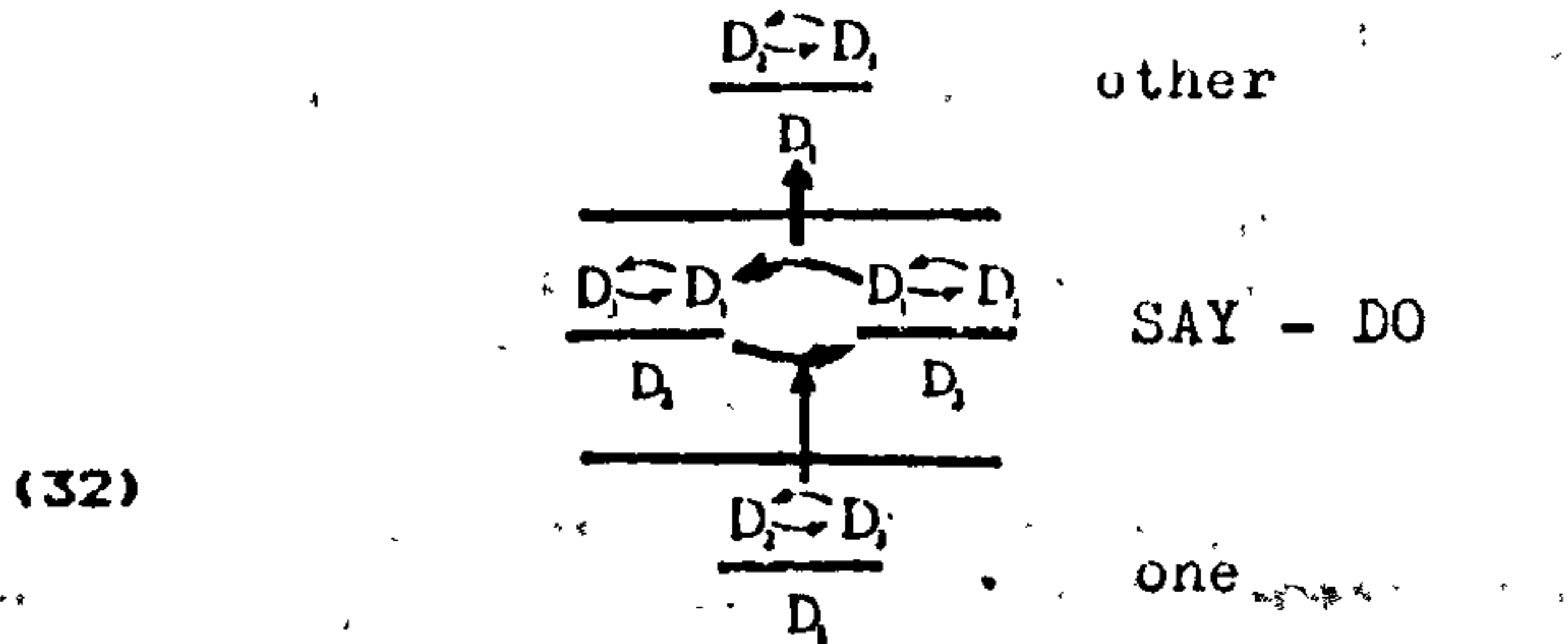
Where the observer is able to ask a question, he begins to fulfil the requirements for communication. In the process of asking himself a question, he distinguishes himself as another. The closing of  $c=1$ , accepting that he made the description he questions, enables him at once to ask and subject himself to his question.

The observer distinguishes himself where, accepting  $c=$ , he expands upon the enlarged self-system, treating a  $=d$  token description as a  $-d(=d=d)$  description, from which he in turn distinguishes this as a token description  $=d$  in  $-d(=d=d)=d$ . Thus switching  $='-' =$  (eg.  $='-' = 3$  in (31)) between treatments of this token description, the observer switches between treating himself as an "I" and treating himself as an other, as though he were switching between himself and an other. This switch is manifest, in the reversal of saying and doing between one and an other, as a reversal between how one and an other perceive what is said and done.

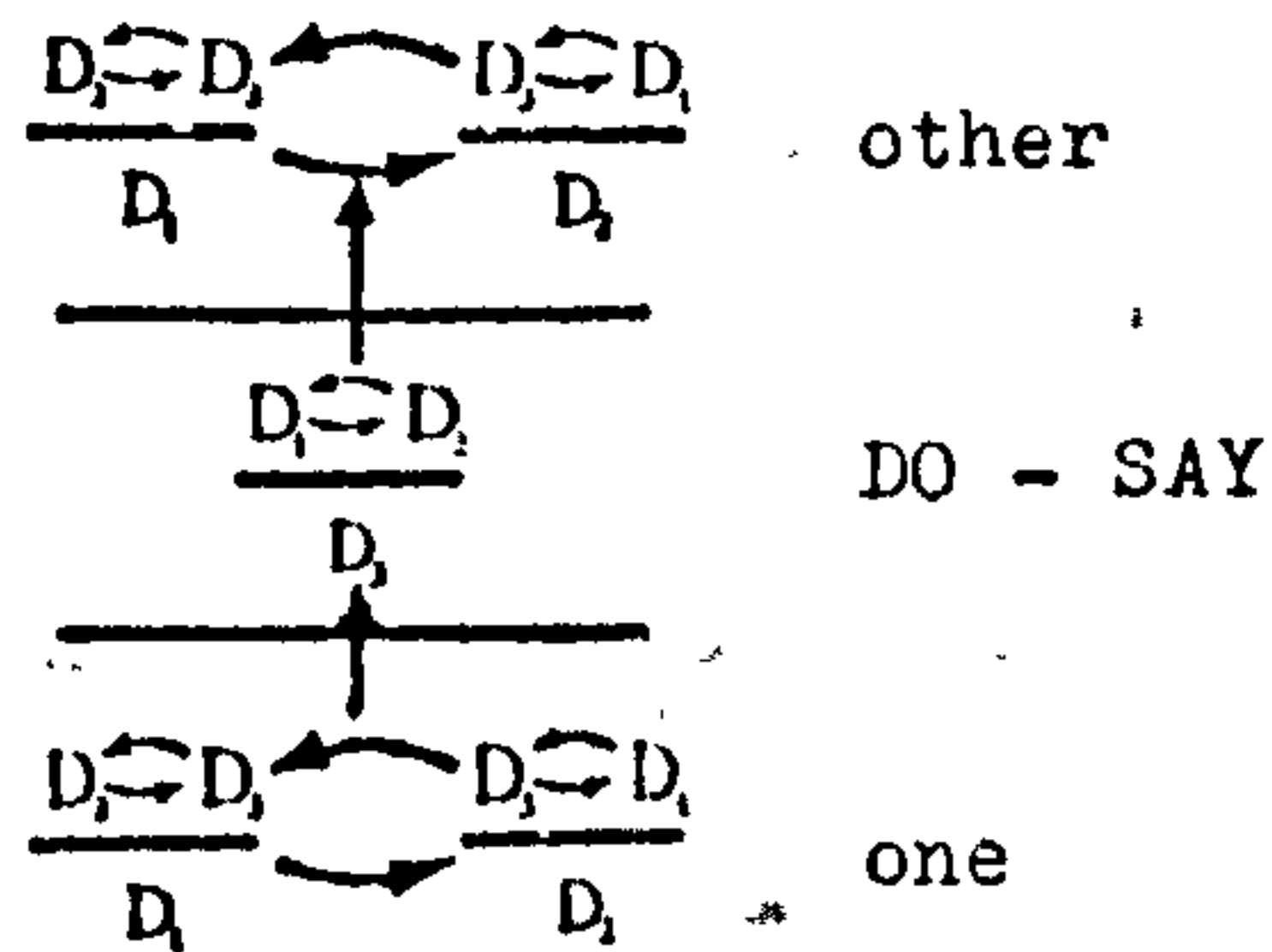
The complementarity between saying and doing in turn arises with the distinction between one (speaker or doer) and an other (listener or observer). Where the one says something, the other in the first instance perceives what he is doing, i.e. saying something. Where the one does something, the other in the first instance perceives what he saying, i.e. what his doing indicates. The first case anchors the act of saying something. It anchors the 'speech act', and is reflected in the notion of 'making an utterance'. The second case provides the basis for treating actions (including speech) as indicative, without which there could be no meaningful interaction. Without the first, the one could not observe what, or that, the other said. Without the second, the two could not begin to wonder about each other.

The reversal between saying and doing for one and another captures the very 'problem' of communication: what is a description, for one, must remain but a token of a description, for the other. What is an explicit description  $-d(=d=d)$ , for one, is but a description of tokens  $-d(D,D)$ , for the other. But, with the use of the indeterminacy (29), the complementarity in turn provides the dynamics for communication: where one does something about which the other wonders. Like the observer, the other is bound to ask a question about what the observer did, accepting that he did it.

Thus the reversal is one between expanding according to (30.1) and collapsing according to (30.5): where the one says (expanding his self-system), the other perceives him as doing, (and collapses the one's expanded description), eg.



Where the one does, collapsing his enlarged self-system, the other perceives him as saying something, expanding on the one's act.



In distinguishing each other's descriptions, the two distinguish an interface, from which they distinguish their "I" and across which they distinguish each other.

In asking a question, the observer similarly treats the intermediary description in one instant as the one, in another instant as the other. As the one, making it explicit he expands it, as the other, distinguishing it, he expands one token, treating this as an act made by one and perceived by the other. Thus, as the one, he distinguishes himself as an other, and as the other, he distinguishes himself as the one.

## ABOUT

In distinguishing himself as an other, the observer treats himself as someone he can speak and ask questions about. He can do so as a consequence of accepting that he did something (i.e. as a consequence of closing  $c=$ ), accepting that he made a faulty description  $-d$ . In thus being able to distinguish and speak to himself, asking himself a question about himself, the observer begins to satisfy some of the requirements for communication.

Accepting that he made a faulty description, the observer accepts something he can wonder and ask questions about; he accepts something to speak about. What he speaks and asks questions about, he must accept, and can only accept.

In such acceptance, the observer has something to say. In terms of (28) he treats his acceptance  $c=$  as the fixed token. In making new descriptions, only acceptance allows him to treat a token (description) as constant, and hence as given (for instance his difficulty with  $-d$ ).

Where, the observer needs a curiosity, a plan, or an intention, to unfold his construction, his acceptance of his difficulty with  $-d$  provides him with something to look for. His curiosity is implicitly represented in the token description  $=d(D,D)$  over which he closes  $c=$ . It is made explicit where he wonders and enlarges this description to  $-d(=d=d)$ . With this intention he can ask about his difficulty in interpreting  $-d$ , and pursue his particular curiosity. Thus, his acceptance of  $c=$  renders his questions particular, with regard to his curiosity.

In asking a question, the observer draws the two distinctions postulated in (21), i.e. distinguishing a segment of his process of construction, to secure his identity (or prevent his construction from being consumed in an infinite regression). In distinguishing himself as another, accepting that he cannot accept  $-i$ , the observer restricts his questioning to his difficulty with this description. In leaving  $-d(=d=d)$  open he frames what he may find out, and in thus framing his curiosity, he focuses his unfolding on a particular segment of his construction. In unfolding, he may change his curiosity and go beyond this frame, speaking and asking questions about something new.

\* \* \*

PACKAGING TIME  
(OR EXPLANATIONS)

Having asked a question as in (31), the observer can pursue his curiosity and unfold his construction. To do so he needs to accept that he asked the question, or accept part of what he has asked. Where he thus needs to close one of the small self-systems  $c=$  in the expanded self-system, his choice leads to a number of possibilities.

In closing a  $c=$ , the complementarity can lead him to collapse the enlarged self-system, and hence to proceed constructing. Thus, in order to pursue his question, the observer also needs to maintain the two distinctions which frame his curiosity, while closing one of the small self-systems  $c=$ . In thus maintaining the enlarged self-system, the observer further enlarges it, accomodating more distinctions, and thus more time, within his self-system.

His choice (in closing either of the three small self-systems involved in his question (31), while maintaining the expanded self-system) characterises three formally distinct processes. The significance of these processes arises in why the observer maintains the distinctions of the expanded self-system (i.e. in his intentions).

In his question (shown in (31), the observer can thus close either one of the two token descriptions  $=1$  or  $=2?$ , or he can close the token description  $='-'=3$  he expanded in asking his question. Closing either of the token descriptions within his question, i.e.  $c=1$  or  $c=2?$ , will lead to a switch in distinction (according to (30.6)). Closing the token description he expanded, i.e.  $c='- '=3$ , leads to a collapse of the expanded self-system (according to (30.4)), unless the observer re-opens the small self-system  $c=1$  he had to close to ask his question.

\* \* \*

REMINDING

Consider first his choice to close  $c=1$  within his question (31), notionally paraphrased above as

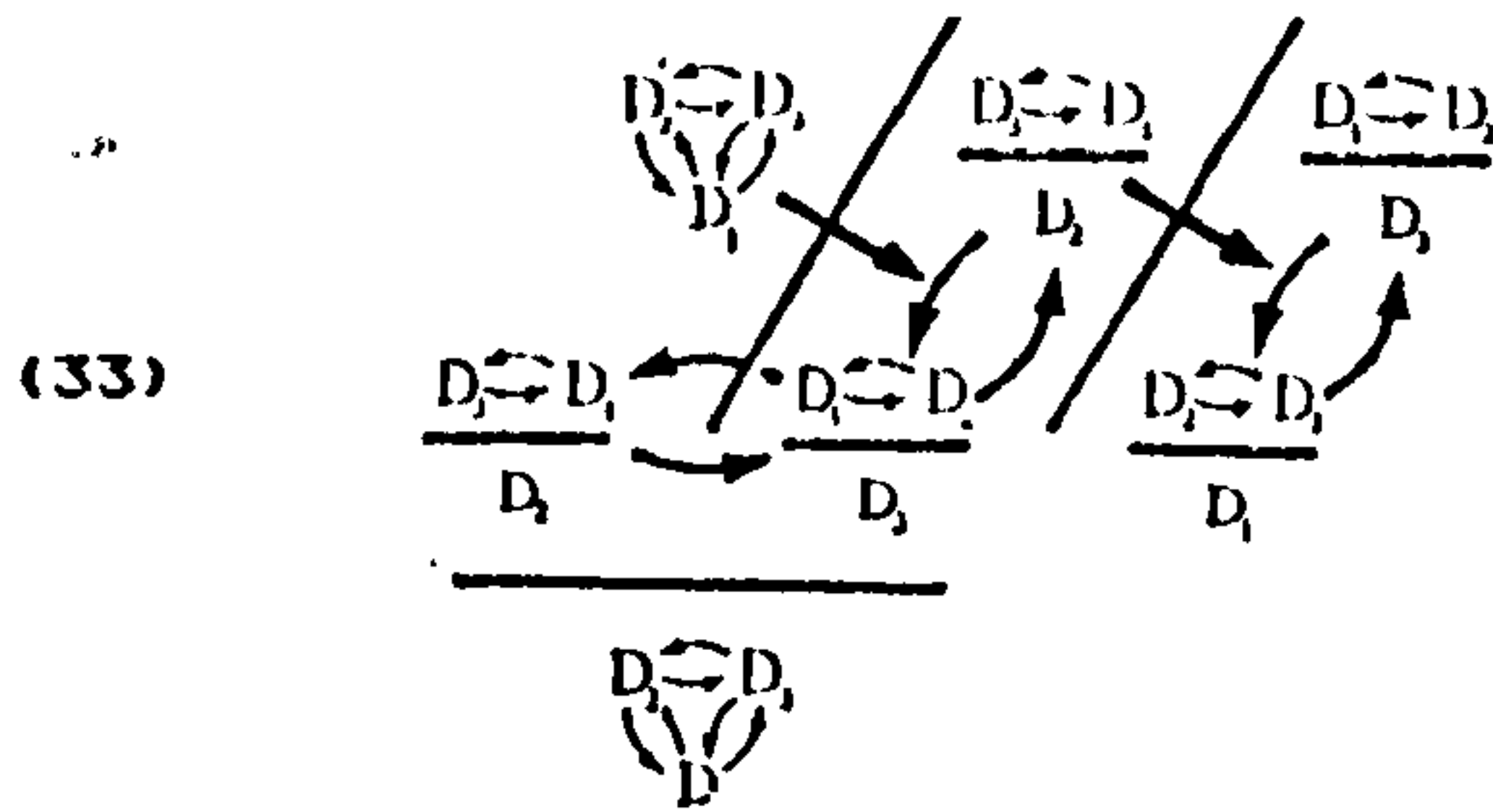
'What did I say, making  $-1?$ '  
respectively,  
'What did I do, saying  $-1?$ '.

Formally, the closure  $c=1$  within his question leads to a switch from the question

$-3?(c=1=2?)$  to  $-1(=2?=3)c=1$

and enables the observer, in turn, to ask a question by expanding upon either  $=2?$  or  $=3$ . Expanding on the latter  $=3$ , the redundancy would lead him to re-ask his question. Instead, expanding on  $=2?$ , the

observer can use the complementarity between saying and doing to re-trace (ask questions in an attempt to re-construct) his construction, i.e.



$$-1(=2\neq 3)c=1 \text{ to } -1(=2-2\neq(=3=1)=2=3)c=1$$

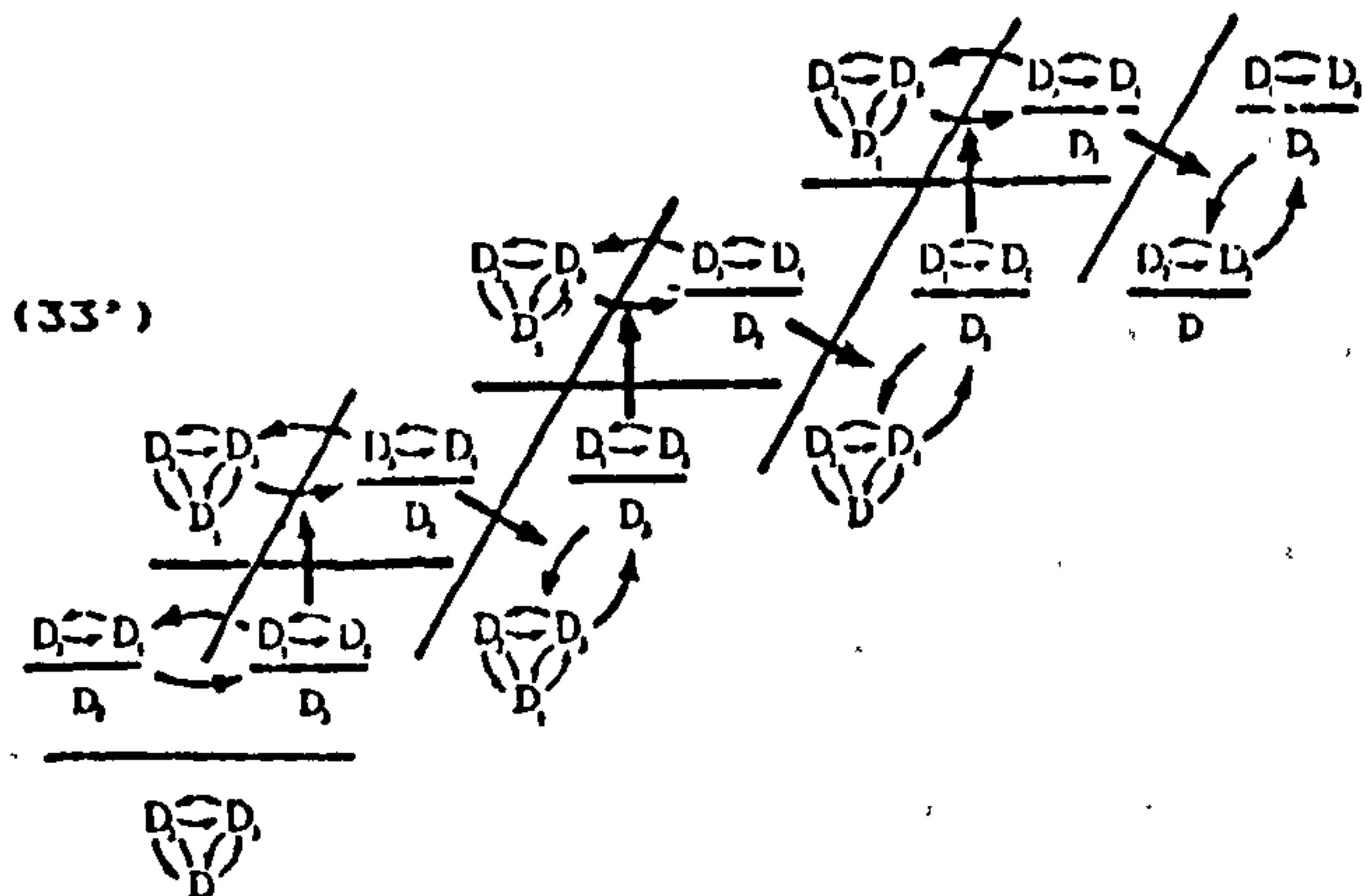
In closing the  $c=1$  within his question, the observer accepts a part of his question. This  $c=1$  corresponds to the  $c=1$  he accepted in order to ask his question. To ask his question, the observer accepted that he said, or made,  $-1$ , as the ONE. In accepting  $c=1$  within his question, he accepts whatever he may have said, or made, (in making  $-1$ ), as the OTHER. In other words the relation between the two  $c=1$  closures  $c=1$  corresponds to the reversal between saying and doing between one and the other. Thus, where the observer chooses to accept part of his question in closing  $c=1$ , he accepts what he asked about himself as an other, and does so as if he were an other. His question can similarly be notionally paraphrased as

'What could I have done, saying whatever I was saying (making  $-1$ )'

or

'What could I have said, doing whatever I was doing (saying  $-1$ )?'

Thus conversing with himself as another, the observer can use the complementarity between saying and doing in an attempt to reconstruct his construction. Accepting the description he made, i.e. the first  $c=1$ , he can use one aspect of the speech act to wonder about the other, and accepting what he gathers he may have said or done, proceed, in turn, to use this to wonder about the next, and so on. Having accepted one he can use this to remind himself of the other, i.e.



\* \* \*

TESTING

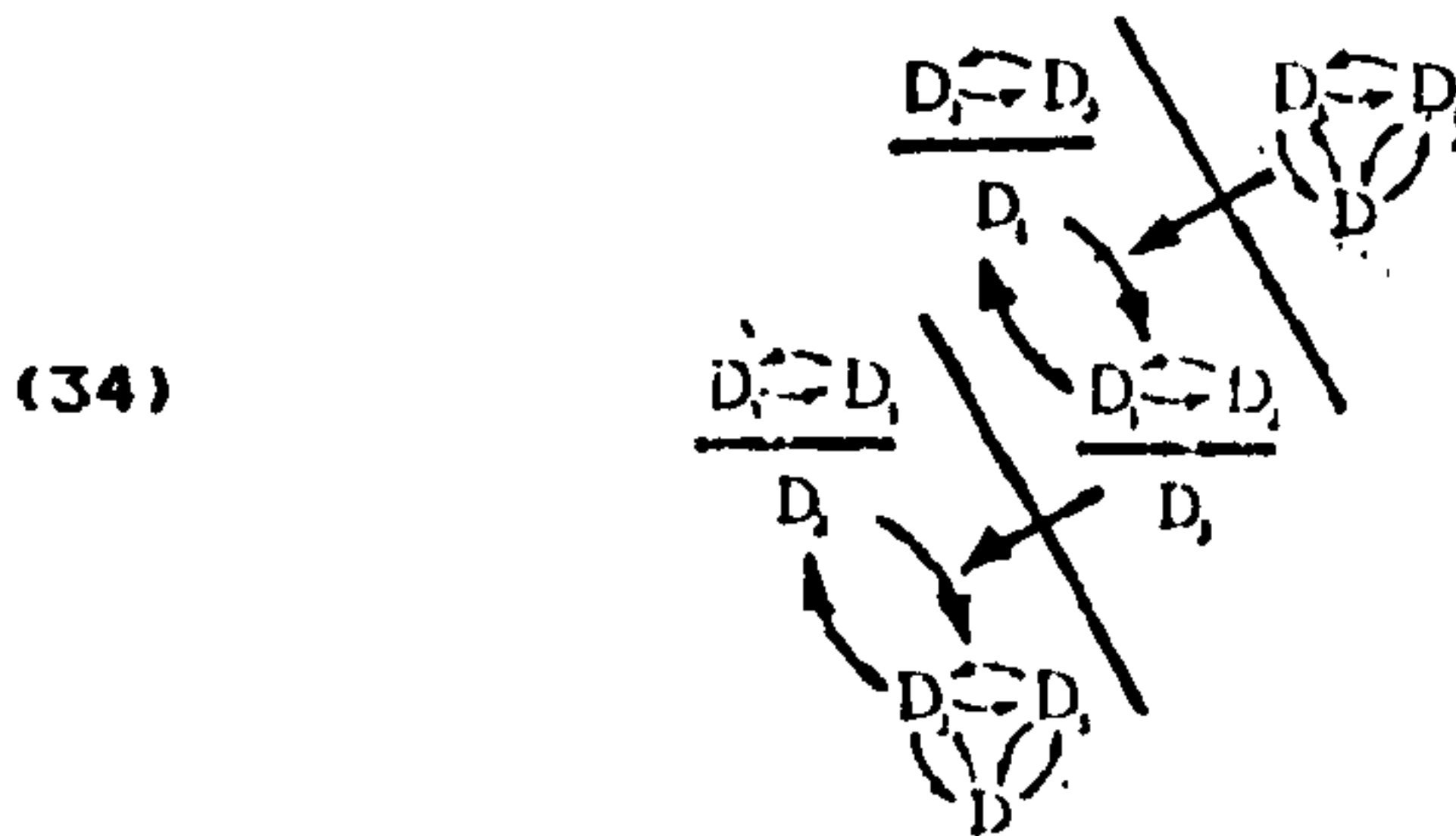
Consider next the observer's choice to close  $c=2?$  within his question (31). As above, the closure  $c=2?$  of a token description, within his question, formally leads to a switch from the question

$$-3?(=1c=2?) \text{ to } -2(=3=1)c=2?,$$

and enables the observer, in turn, to ask a question by expanding upon either  $=3$  or  $=1$ . In either case, the redundancy leads the observer to reconsider his initial closure of  $c=1$ . Where he expands  $=1$ , i.e.

$$-2(=3=1)c=2 \text{ to } -2(=3='-1(=2=3)=1)c=2,$$

he cannot at once accept and question the same  $=1$ . Hence the  $=1$  he maintains open and expands must be distinct from the  $c=1$  he accepted initially. Where he expands  $=3$ , i.e.



$$-2(=3=1)c=2 \text{ to } -2(='-3(c=1=2)=3=1)c=2$$

the  $c=1$  he initially closed, forms part of the new question. The complementarity prevents a description from being at once open and closed, and hence the  $=1$ , he maintains open, must be distinct from the  $c=1$  he initially accepted.

The distinction between these two  $=1$  arises in the observer's process of unfolding, eg. in the process (33) of retracing what he could have said or done. It is a distinction between a  $c=1$  he initially accepts and a  $c=1$ , or  $=1$ , he reconstructs. Thus, this enables the observer to check what he has reconstructed against what he had accepted. Such testing can notionally be paraphrased as

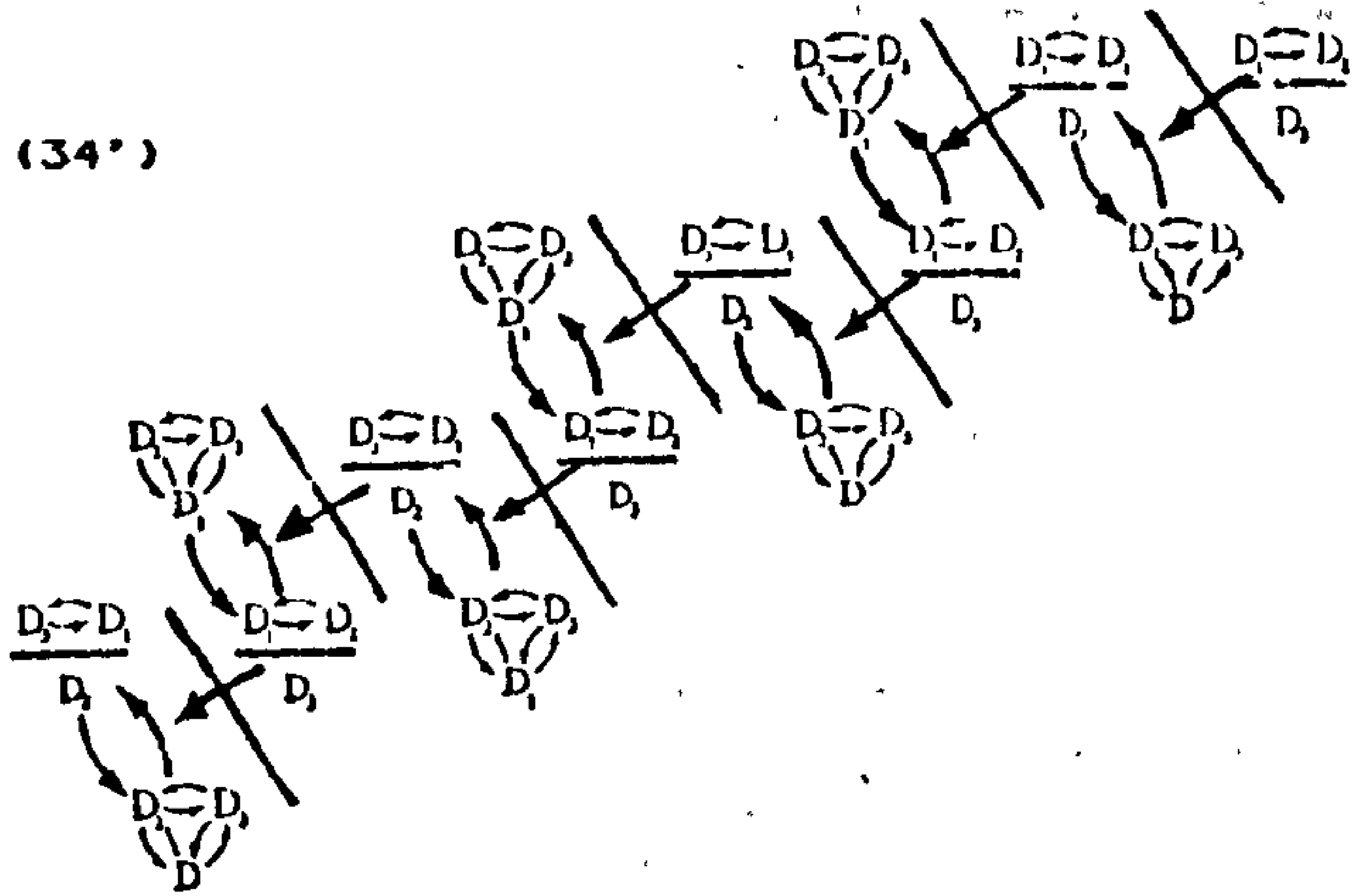
'Could I have been doing such and such, assuming I said such and such, in making -1?'

or

'Could I have been saying such and such, assuming I did such and such, in saying -1?'

Reversing the process of retracing (shown in (33')), by closing  $=2?$ s, the observer can thus check a description he reconstructed back to his initially accepted  $c=1$ . Where the tests are successful the observer can close his questions. In so doing, he accepts what he gathered he may have said, or done, and assumes that he did say this, or did do that, and thus proceeds to reconstruct what he questioned, i.e.

(34')



Where instead, the test fails, and the two =1 do not correspond, the observer can expand =1 as above. In so doing, he deems the description he initially accepted, a mistake. Alternatively, he may return to his acceptance of c=1 by expanding =3, and in so doing deem his re-construction a mistake. He can then re-iterate his question (31), and his re-tracing (33), and attempt another re-construction.

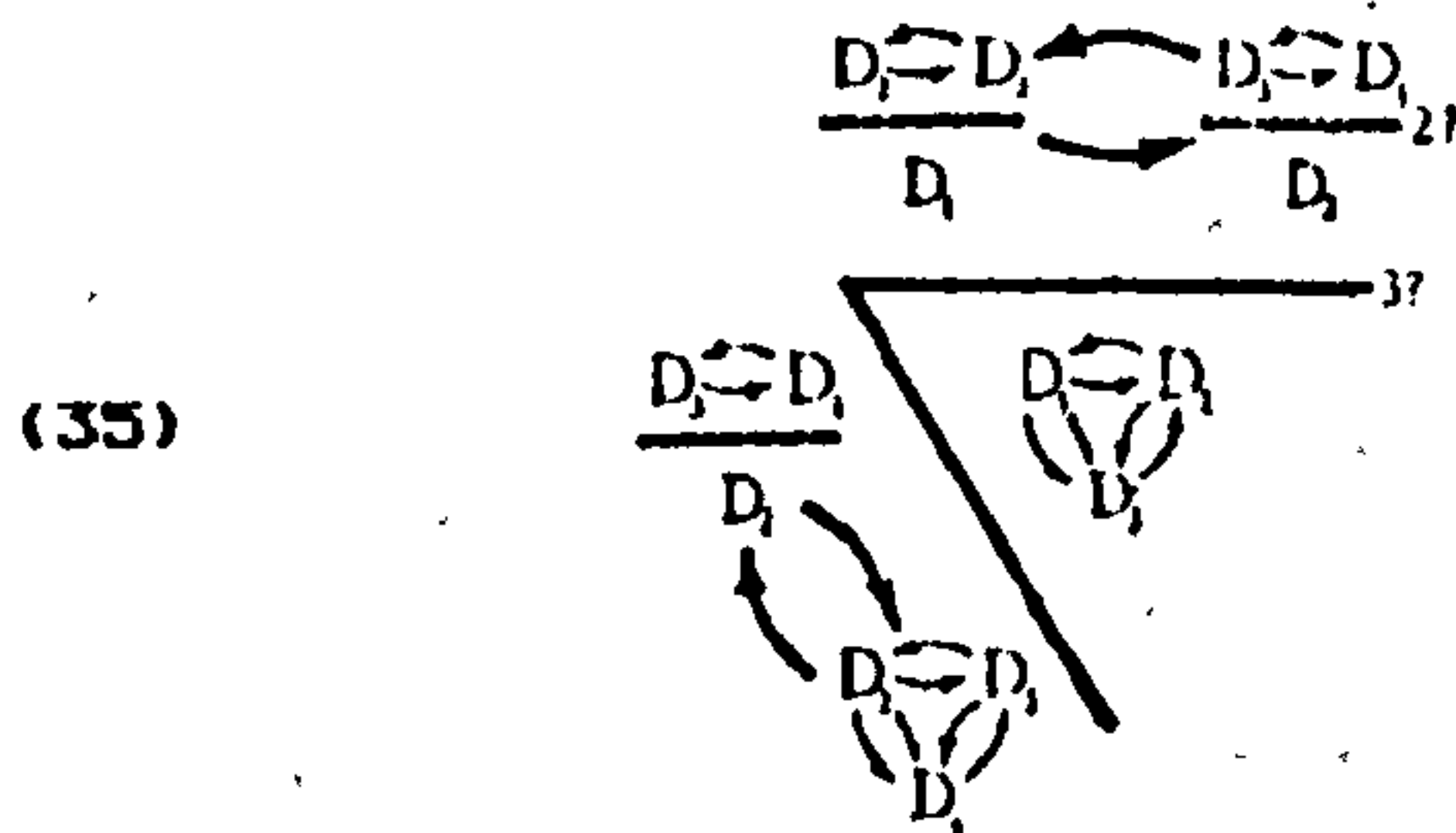
\* \* \*

EMBEDDING OR EXPLAINING

Where the observer chooses to close the token description c='-'=3, he expanded to ask his question (31), he accepts that he asked his question, which can notionally be paraphrased as

'I asked: 'What did I say, making -1?''  
or  
'I asked: 'What did I do, saying -1?''

But since =3 is a token description within his initial wonder about -1, its closure leads to a switch i.e.



...-1(=2c=3)c=1 to -3(c=1=2)c=3,

between two unstable forms. Either of these forms, in turn, leads to a switch to -2.



Unless the token descriptions =2 and c=3 or c=1 and =2 in the resulting descriptions are desynchronised, the enlarged self-system collapses. Formally, the distinctions -1 and -3 preclude each other: the complementarity here manifests itself in the need for the observer to choose between either

$$-1(=2c=3)c=1 \text{ or } -3(c=1=2)c=3.$$

The desynchronisation of tokens within an enlarged description  $-d(=dc=d)$ , enables the observer to embed time in such a description (embedding the time which separates the desynchronised token descriptions). Such a desynchronisation arises in the expanded  $-3(=2c=1)$  in (34). It enables the observer to test what he has re-constructed (the open token) against what he had accepted (the closed token). Beyond such testing the de-synchronisation of tokens within an enlarged description allows the observer to say something, (the open token) about something he has accepted, (the closed token) within one description.

The embedding which arises with the desynchronisation of tokens within an enlarged description is manifest in the circumstance that while all distinctions are merged in the closed token, i.e.

$$c=,$$

the tokens of the open token description can be specified, i.e.

$$=d(D,D).$$

The time embedded in an enlarged description where the token descriptions are desynchronised can thus be shown in terms of this difference, i.e.

$$-d(=d(D,D)c=)c=, \text{ eg. } \\ -3(=2(D3D1)c=1)c=3.$$

By expanding the open token description, the observer can further and further embed descriptions (time) within a description, oscillating between -2 and -3, i.e.

(35')

$$-3(=2(D3D1) \quad \quad \quad c=1)c=3 \\ (-2(=3(D1D2) \quad \quad \quad c=1)c=2) \\ (-3(=2(\dots)c=1)c=3)$$

ie.

$$-3(-2(-3(=2(\dots)c=1)c=3)c=1)c=2)c=1)c=3$$

The brackets show the desynchronisation between the descriptions he thus embeds. Such embedding enables the observer to postpone the act of interpretation, and hence enables him to make distinctions within his descriptions. Embedding time within one description, the observer can unfold the time he accumulated in the process of construction, and explain his construction.

In the act of interpreting such a description, the descriptions embedded within it are synchronised. The distinctions embedded within such a description collapse in the form of interpretation. Thus, the form of interpretation requires the observer to be able to synchronise the descriptions embedded within a description. Formally, the coherence of a description or explanation arises the in possibility of

thus synchronising the descriptions, obliterating the distinctions embedded within it.

Where the observer can only synchronise parts of a description or explanation, he can interpret only these parts. Where he can synchronise a  $c=c$  configuration, this switches into a  $-d$  description  $-d(c=c)$  which collapses into  $c-$ . The apparent difficulty, in using ordinary brackets to show the embedding of time within descriptions, thus shows that the ordinary use of brackets suggests a step-by-step process of interpretation, i.e.

(35")

$-3(-2(-3(=2(\dots)c=1)c=3)c=1)c=2)c=1)c=3$   
( c-2)  
( c-3)  
( c-2)

However, to speak of a process of interpretation, proceeding from the interpretations of parts to that of the description or explanation as a whole, is to speak of a process of oscillation between descriptions and interpretations. It is only in such a process that such steps can be distinguished.

To conclude, we have shown how, by using the complementarity between saying and doing, the observer begins to satisfy some of the requirements of ordinary communication. In asking a question he distinguishes himself. In pursuing a curiosity, or constructing on the basis of an assumption, he has a plan or intention. In unfolding his construction, he has something to say with regard to his intention. In embedding descriptions within descriptions, he can begin to consider how he says what he says.

The redundancy of the enlarged self-system provides the observer with a multiplicity of choices. While we have only explored the basic patterns, the observer can at any point choose to switch from one to the other, eg. pursue a question, test an assumption, return to pursuing his question, construct with an assumption, and embed descriptions within descriptions.

## COMMUNICATION

### TOWARDS ARGUMENTATION, OR THE "I" OF LANGUAGE

Where the discussion of the interaction between construction and communication was concerned with how the observer can distinguish himself as an other, the discussion of communication itself concerns the interaction between construction and argumentation, and how an observer can distinguish himself from an other and, eventually, from a language. Where the observer's existence depends on his ability to distinguish himself, as an other, the existence of a language depends on being similarly distinguished, by one or more observers.

Just as the need to unfold the time accumulated by the "I", and embed it within descriptions, arises only in connection with the requirements for communication, so the need to distinguish, unfold, and explain, a language, and embed IT within another language, arises only in arguing. The possibility of doing so arises only where such a language is constructed and communicated. The construction and communication of an ever-growing language of things we convey in silence, is continuous in form with the ever-growing, time accumulating, "I". Thus, the discussion of construction and communication concerns the living "I" of language, while the discussion of argumentation involves languages as ITs (languages as they (!) are normally considered). While the "I" of language is continuous in form with the "I", with the self-system, and with the ever-growing "I", the IT of language is continuous in form with token descriptions, descriptions, and explanations. This continuity underlies the paradox of means, which arises where the "I" of language is overlooked in using, and hence reifying, a language.

To distinguishing 'the "I" of language' is to reify it, and hence treat it as an IT. Just as in the process of construction, the observer generates his time, unable to distinguish it, the discussion of communication can only explore the "I" of language from within, without distinguishing it. It is due only to the continuity in form between the discussion of communication, and that of the process of construction, that the "I" of language can be mentioned here.

WHERE TWO MUST BE ONE:  
UNDERSTANDING,  
OR THE EVENT OF COMMUNICATION

Distinctions proliferate in saying, doing and questioning. They proliferate, in the complementarity between saying and doing (in the redundancy of the enlarged self-system), with the opening of the self-system, with the severing of a unity, with the raising of a doubt. All distinctions merge in the form of interpretation. In the closure of the self-system there can be no distinction. Whatever distinctions are made between closures are obliterated in the act of interpretation.

If one observer or communicator is to understand another, it is not in proliferations of distinctions, but in the closure in which two communicators merge into one. No matter to what extent something has been explained, no matter to what extent communicators distinguish between each other, or between understanding and knowing that they understand each other, - in understanding, in the event of communication, all such distinctions are obliterated. They merge into one. In events of communication, the communicators are synchronised in the simple oscillation between description and interpretation, i.e.



In terms of the form of interpretation, the problem of communication is one of distinction or independence between communicators. In terms of the form of description, the problem of communication is one of overcoming such distinction or independence. The two come to one, where these forms require any distinction to be a particular distinction, made by a communicator involved.

To take a distinction between communicators as given, is to overlook their ability to distinguish themselves, and each other. It is to deprive them of the possibility of understanding, i.e. closing the self-system over this distinction. To take a distinction as given (on external grounds) renders the event of communication impossible. To take interpretations as given, similarly renders the event of communication impossible. In so doing, the distinctions by which given interpretations are distinguished, are taken as given, disallowing communicators to close their self-system over such distinctions.

Instead, to take only the forms of description and interpretation as given, is to ask how communicators can come to distinguish each other. It is to consider how a communicator can distinguish himself from an other. It is to consider how he can become independent and maintain his independence by communicating with an

other, only as an other. It is also to consider how he may come to treat descriptions, interpretations, and things, as given, and distinguish himself from them in using them to communicate with an other.

Where, in the event of communication, communicators are one, this is not to say that the one is not a mystery to the other. In the form of interpretation, one is a mystery to himself, should he care to ask, since there are no distinctions and since any distinction needs to be made (by an observer asking about himself). Where, in communicating to an other, an observer may come to know this other, he comes to know himself in the same way, if not in the very same process.

\* \*

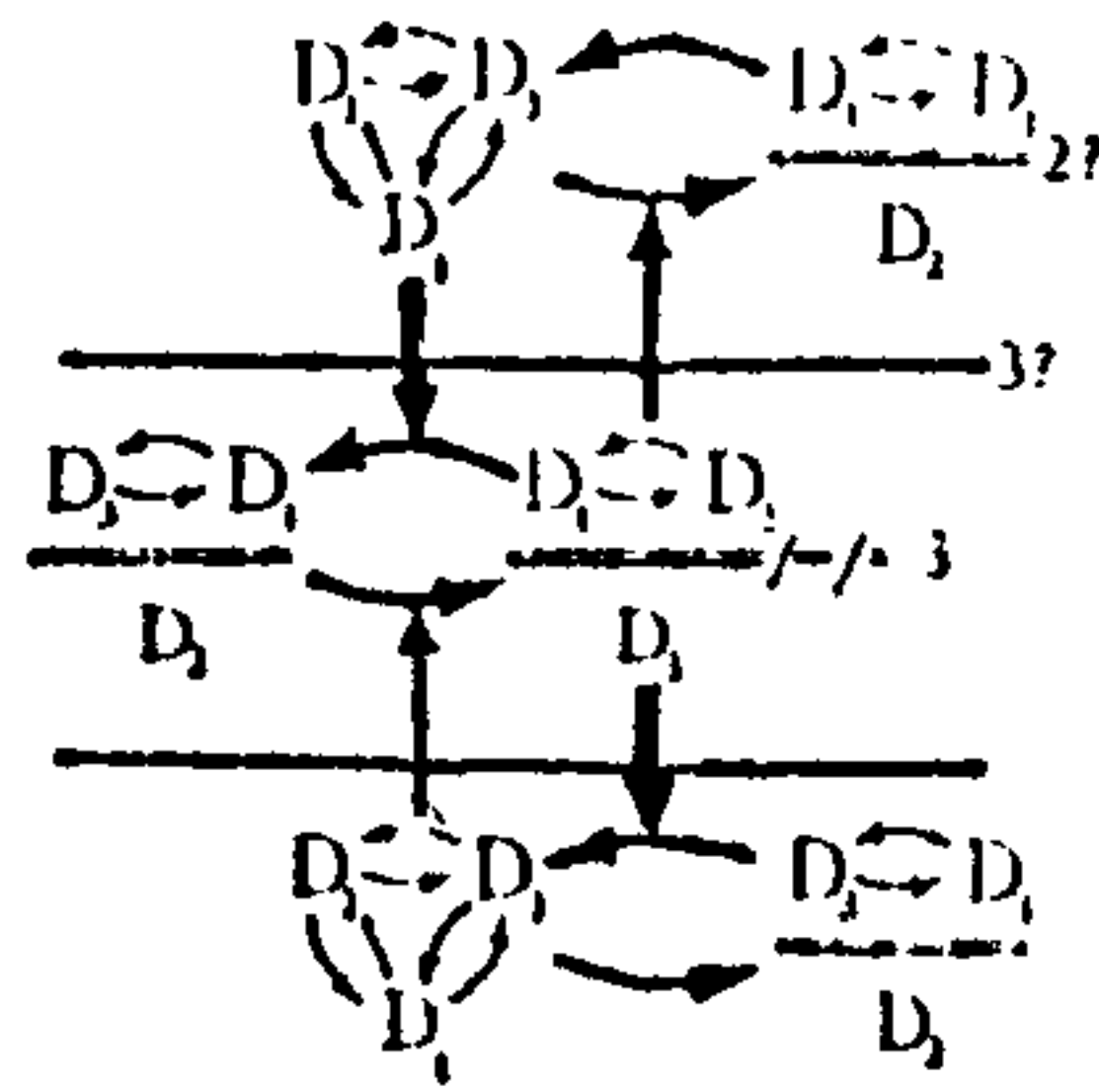
#### TO BEGIN TO COMMUNICATE

To begin to communicate (with himself) an observer needs to distinguish an other (or himself as an other). He distinguishes (himself as) an other in distinguishing a beginning and, in distinguishing a beginning, begins to communicate.

To begin is to distinguish an other where two become desynchronised. Thus, the observer may have begun by distinguishing a beginning in -1 above. But except by being the other (distinguished), there is no way of knowing. If thus the observer may have communicated all along, this manifests the interaction between construction and communication. All that can be known concerns the form in which one begins by distinguishing an other; the form in which two begin by distinguishing themselves in a beginning. In the interaction between construction and communication, this form is continuous with the form in which an observer accepts what he did (as one) and distinguishes himself as an other.

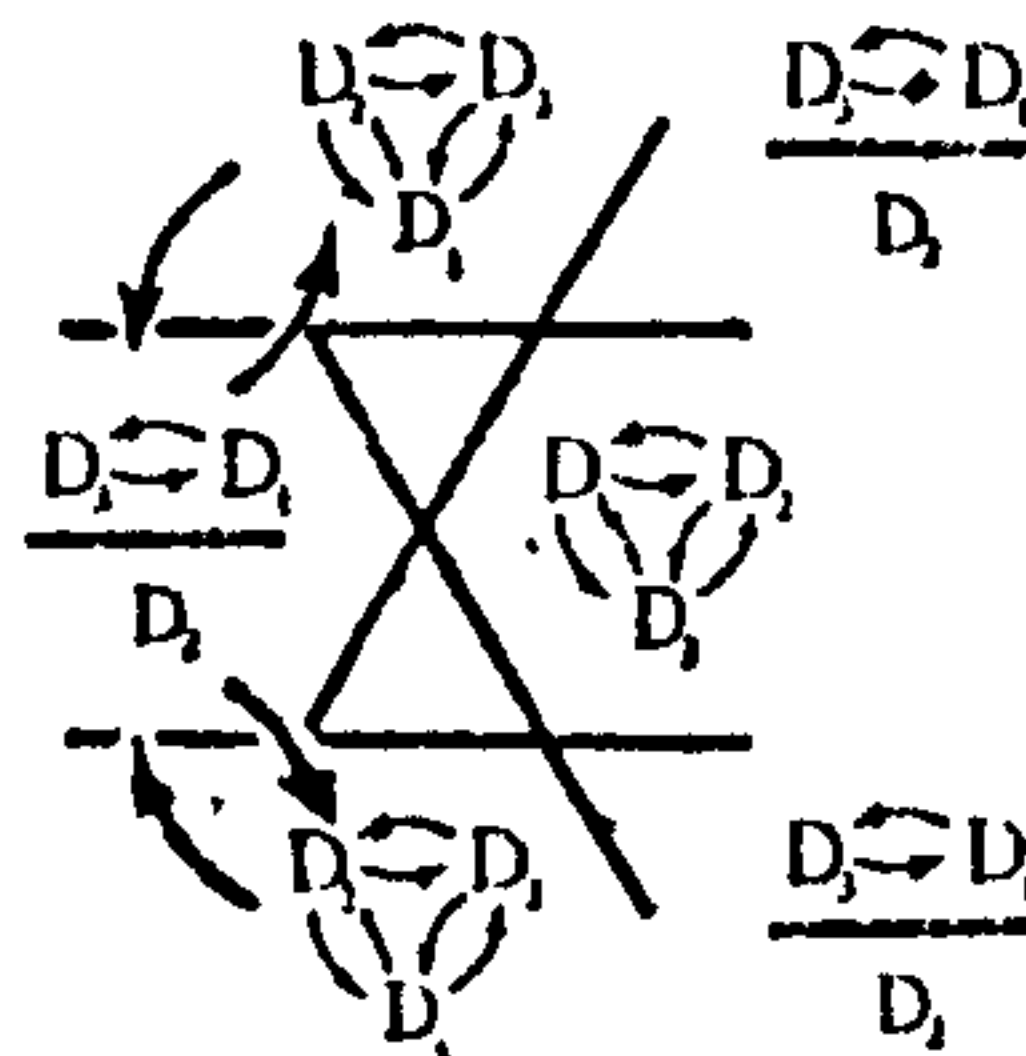
Thus, one can begin where a difficulty in closing his self system leads the one to distinguish themselves as two, i.e.

(36.1)



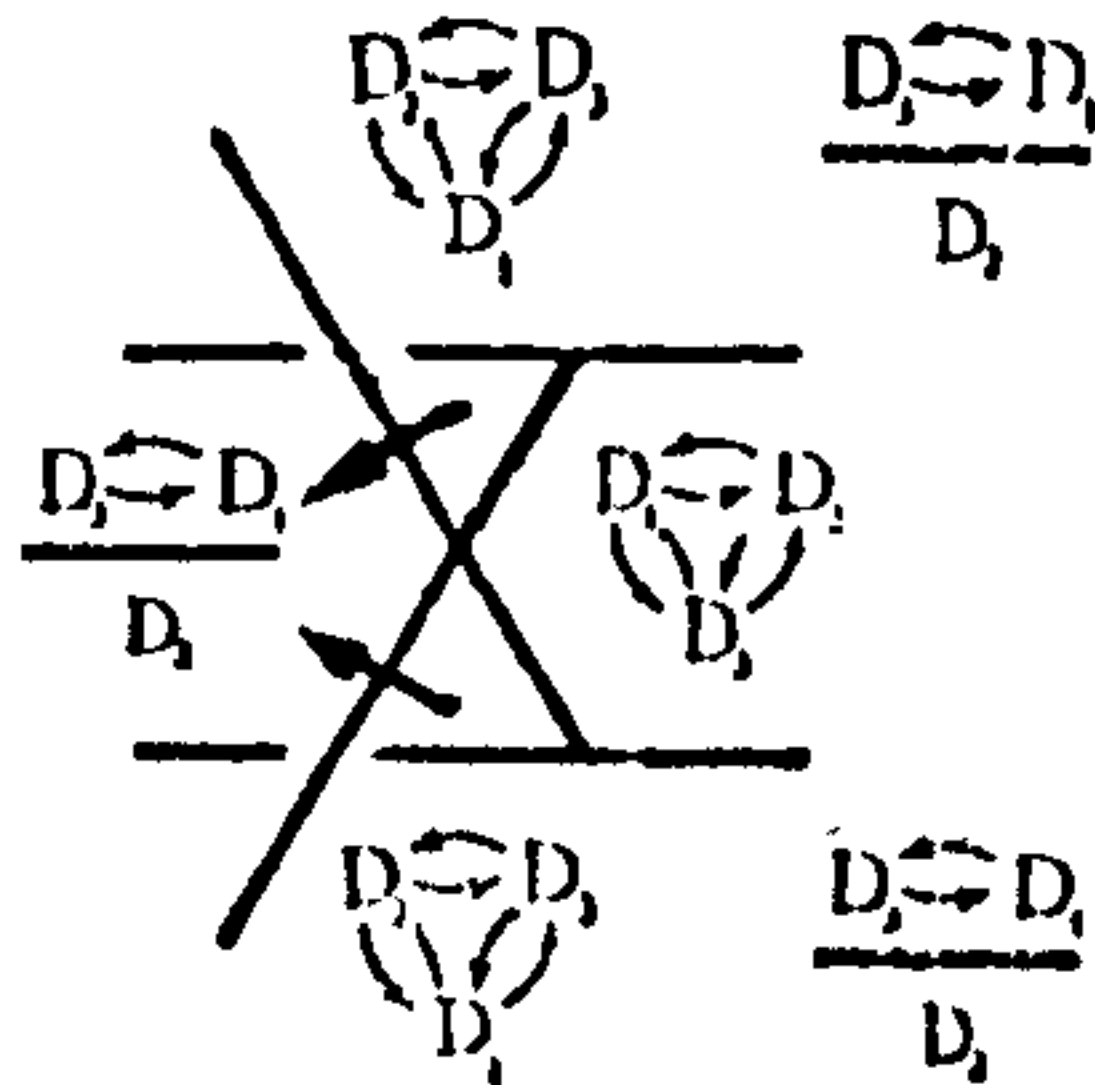
which is a reflexive version of the form of asking a question ((31) above), in which the other (as which the observer distinguishes himself), in turn, distinguishes, and asks questions of, the one. Where as in (35) above,  $c=3$  is closed, i.e.

(36.2)



a pair of desynchronous descriptions, sharing the open  $=2$  token description, result. One distinguishes an other as an other, where he can synchronise his own description, but remains unable to collapse the enlarged self-system as a whole (i.e. synchronising his own description would lead to a switch, and collapse  $c=1$  and  $c=3$  into  $c=2$ ). Two merge into one where each synchronises his own description, leading the pair of desynchronised descriptions to switch and collapse into  $=2$  or  $c=2$ , i.e.

(36.3)

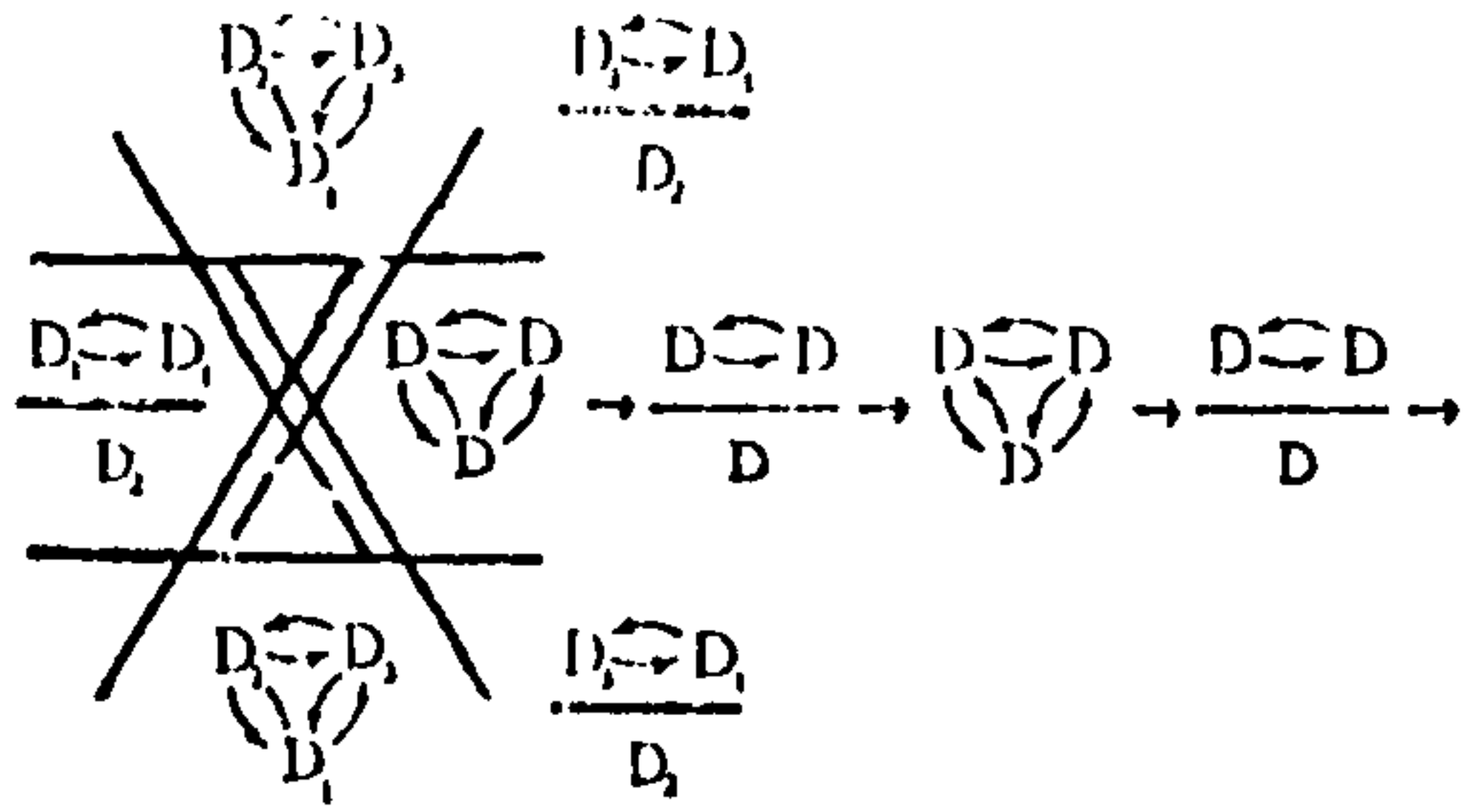


Two are synchronised in a common co-operative action  $-2$ , for instance in lifting a rock. Here each of the  $c=1$  is synchronised with the common  $=2$ . The desynchronous descriptions collapse and the two merge into one, unless they distinguish themselves and each other in the  $-1$  distinctions. Thus, where  $-2$  is a common action, the  $=1$ s distinguish the "I" and the other, the  $=2$ s are doing tokens and the  $=3$ s are saying tokens. Where (in 36.1) a question is raised, eg.

'What did you do, in making  $-1$ '?

the  $=1$  is a 'you' and the  $=2$  concerns the doing aspect of the speech act. For the case of doing things together, the two can be synchronised in such a common action and carry on doing as one, i.e.

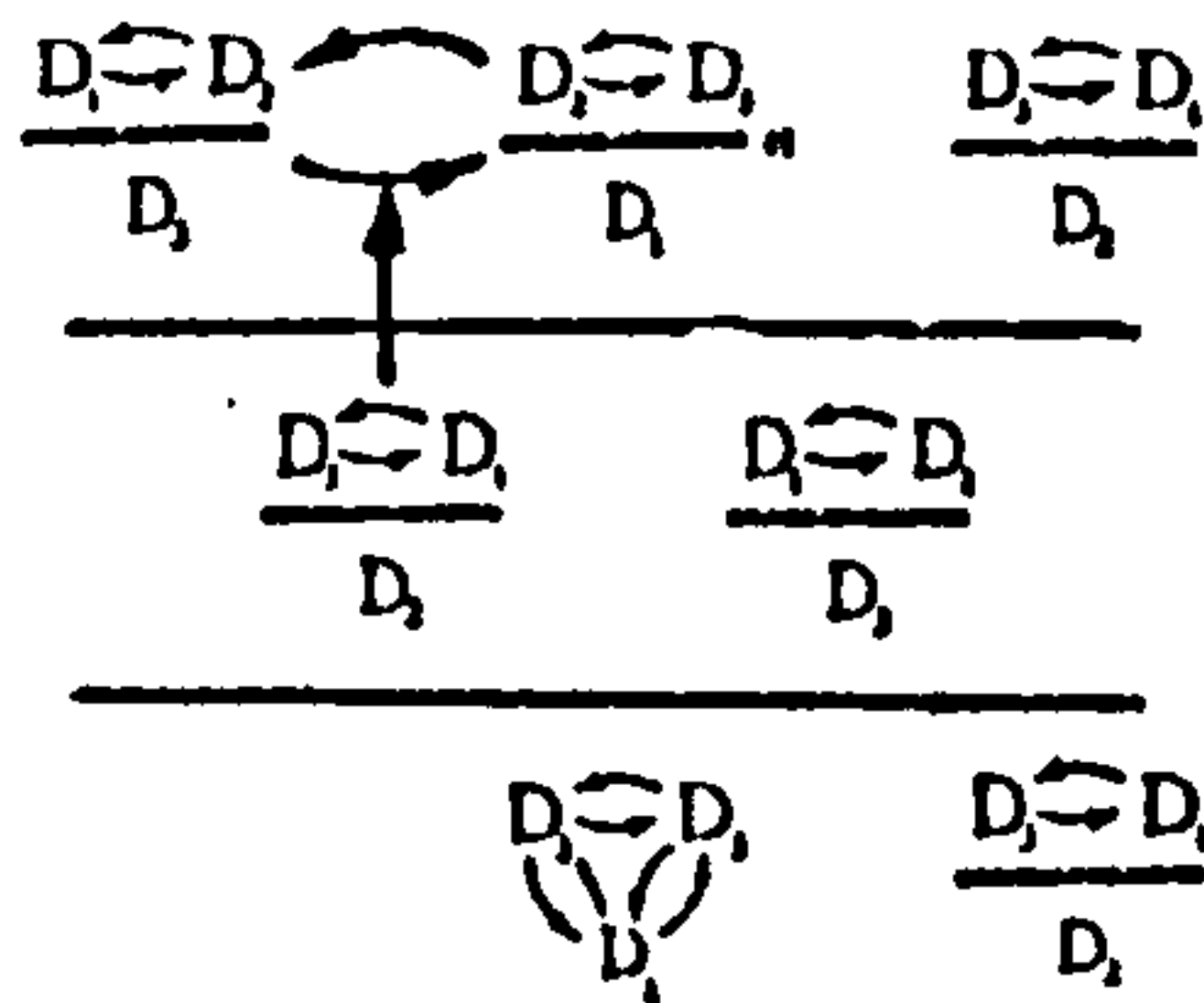
(36.4)



oscillating between opening and closing their self-system. In the first closure, c-3, the two coincide in seeing their own, and each other's, part in the common action, and hence they no longer distinguish each other.

Where two are synchronised only in the common act =2, and one or the other in turn expands =2, he proceeds from the common act, to make and embed descriptions within a description of the other, pursuing questions about the other. In so doing one or the other uses -1 as the distinction by which he distinguishes himself from the other i.e.

(36.5)



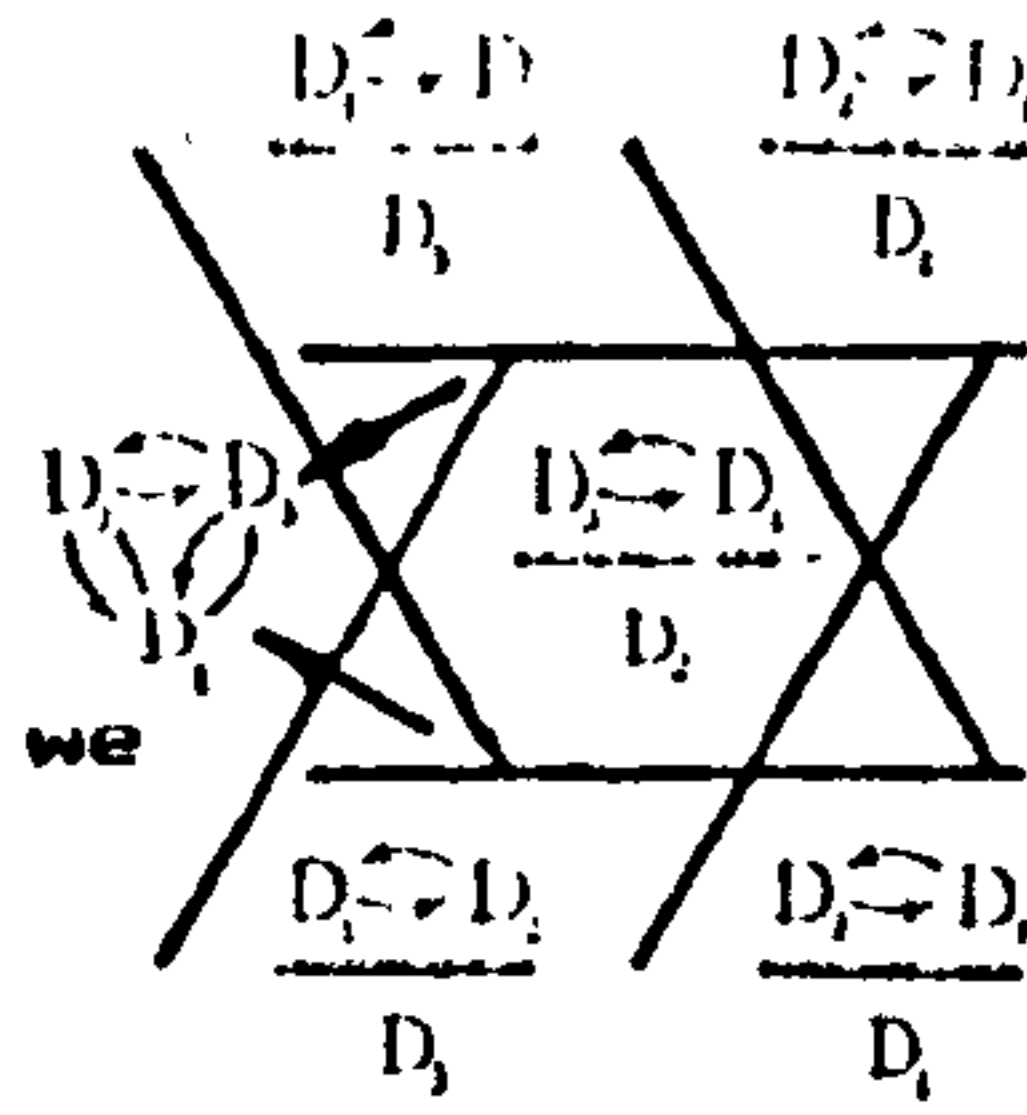
In so doing, one, and/or the other, uses the common act =2 as a beginning.

To begin to communicate, two need to explore their de-synchronisation together. They begin by expanding on their common act, each expanding

=2 to -2? (=3=1?).

As =1? is a question about the other, in asking it they accept the common act =2 together, and hence the closure c=1 represents a "we", and the question -2? concerns the desynchronisation between them, in terms of what they DID, wondering how, having done something together, they are nevertheless distinct, i.e.

(36.6)



In turn expanding

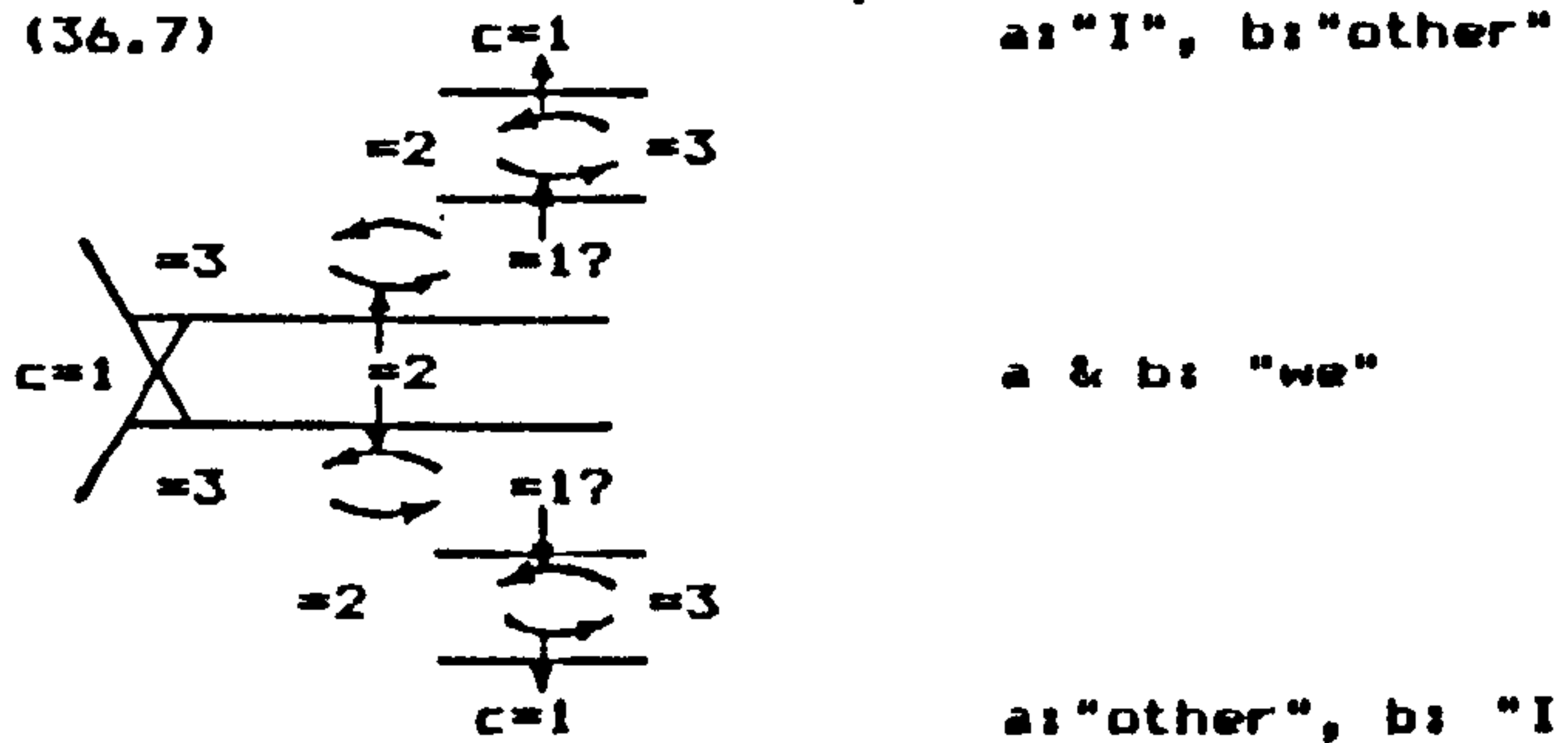
=1? to -1(=2=3),

each one distinguishes what he, or the other, DID, and, in turn, accepts this in closing

c=1.

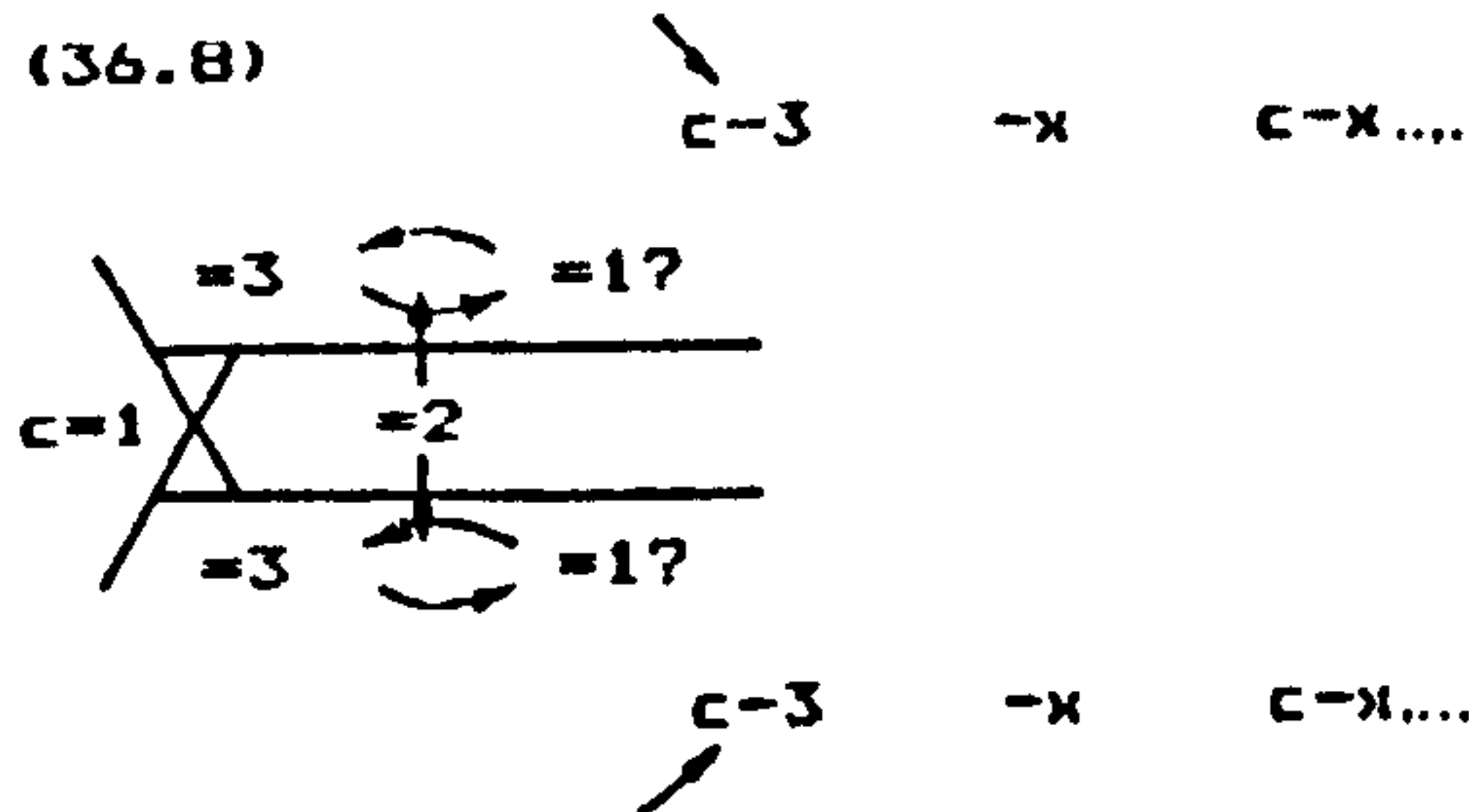
Where one (a) closes the small self-system over his "I", the other (b) closes it over the "other", and vice versa, i.e.

(36.7)



For either one, and/or the other, the act =2 and the c=1, in which he distinguishes himself ("I"), are synchronous. Where one, and/or the other, does not wish to maintain the distinction -1, by which he distinguishes himself, this synchronicity leads to the collapse of his enlarged self-system into c-3. One, and/or the other, can thus proceed to open and close his own self-system separately, in a process of construction, about which the other can know nothing, i.e.

(36.8)



Alternatively, where one, and/or the other, maintains the distinction -1, maintaining c=1, he can in turn expand

=3 to -3(=1=2),

and in turn ask a question about the common act =2, by expanding

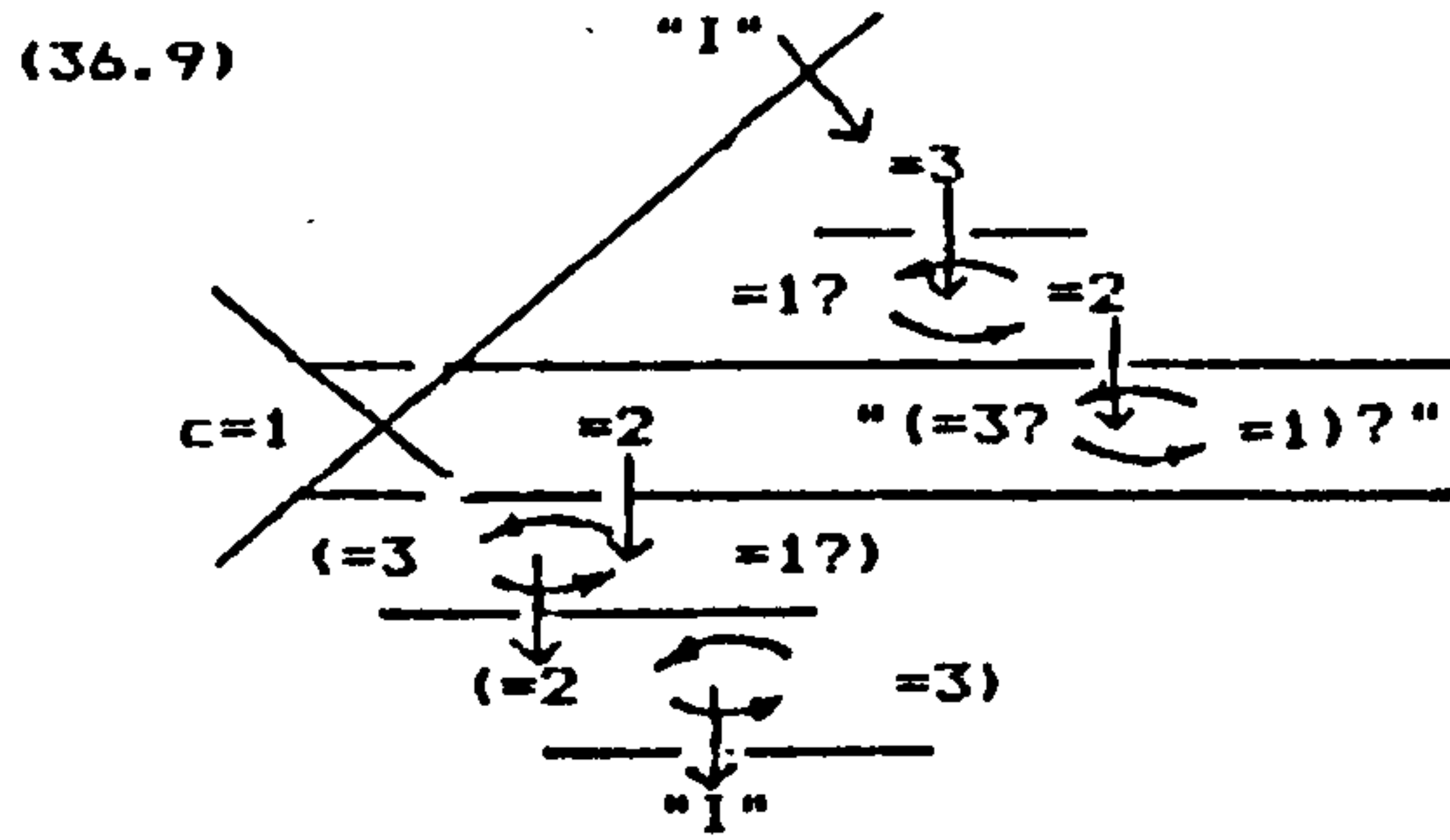
=2 to -2(=3?1)?.

Since =3 here shows the saying aspect of the speech act, this question concerns what was indicated (or 'said') by his own, and/or the other's, part in the common act



(=3?), eg.

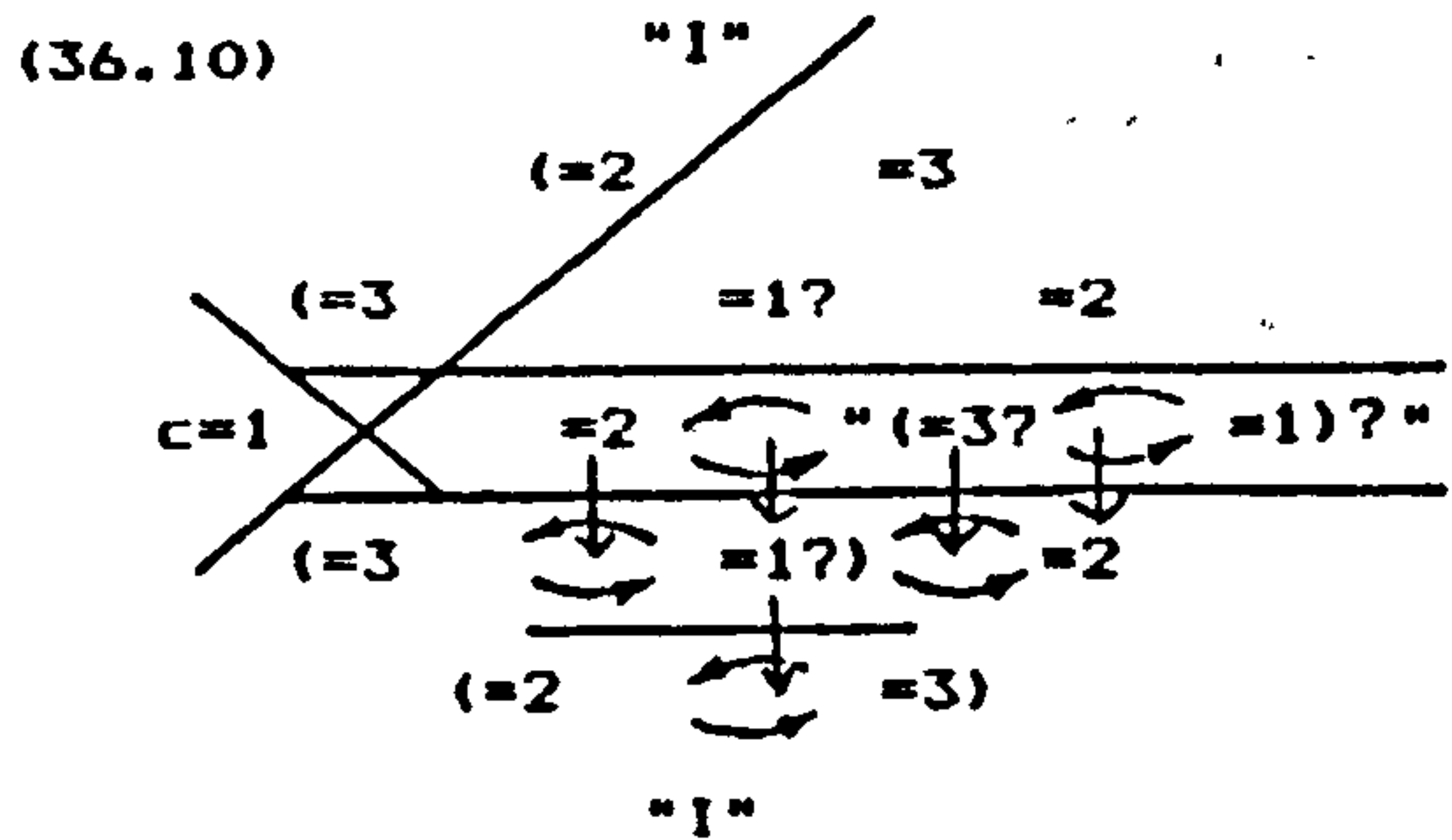
"What did you (I) indicate in doing that?"  
or  
"Why did you (I) do that?", i.e.



Due to the reversal of saying and doing between one and the other, the other will in turn see this question as an act, collapsing

$-2(=3?=1)?$  to  $=2$ ,

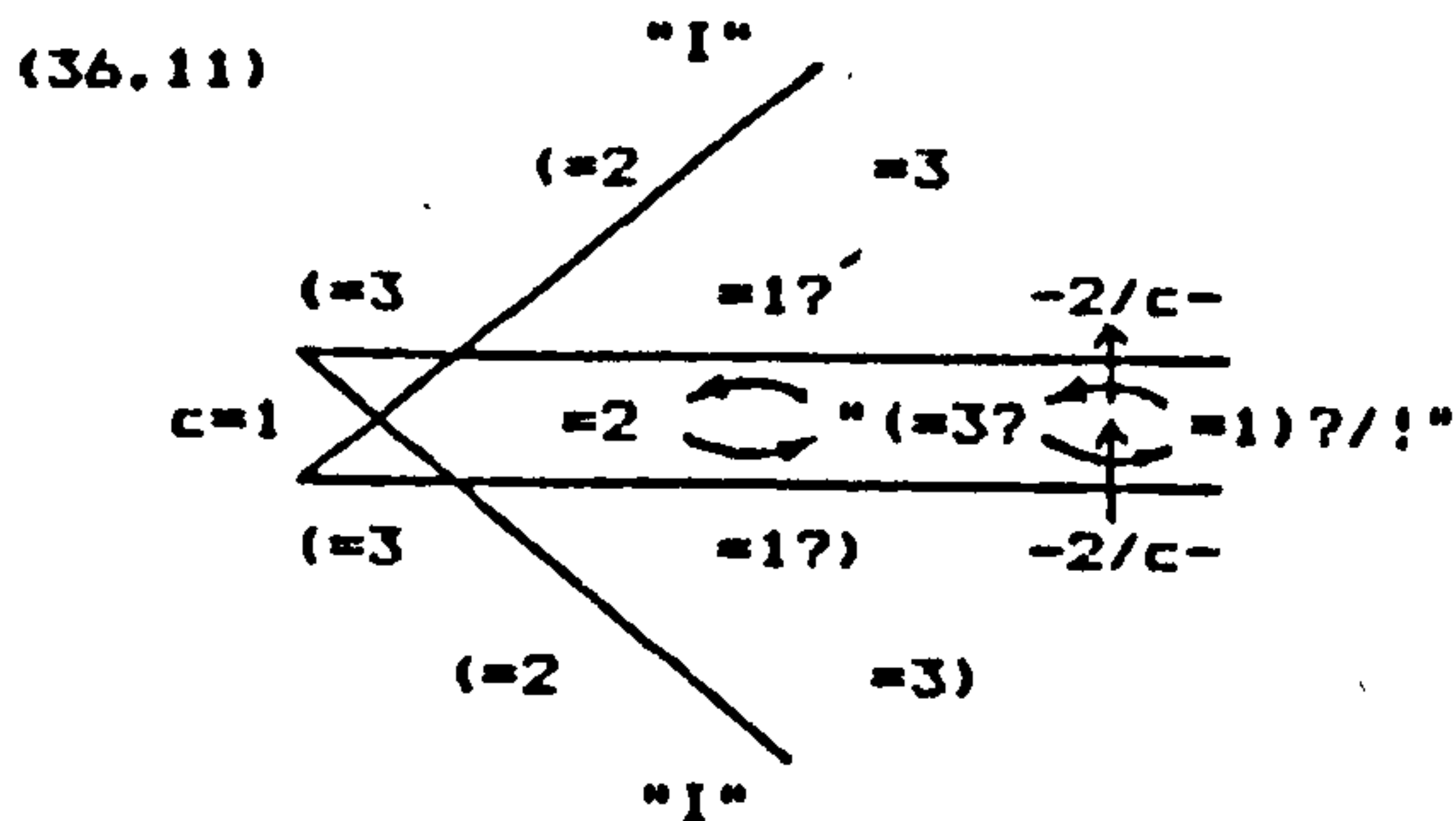
seeing what the one does in asking a question, i.e.



The other may 'recognise' the initial common act in the act  $=2$  (eg. he might himself have tried to ask this question). He may in turn expand

$=2$  to  $-2(=3=1)c=2$ ,

in answer to the one's question. In closing  $c=2$  the whole structure will collapse, if the one in turn distinguishes the common act in the other's answer, i.e.



Thus, beginning in a common act, one and another distinguish themselves ("I" and the "other") and their common act ("we"). They merge into one, in the event of communication, by coinciding in how they distinguish their act and each other. Where they continue as one, it is now the "we" which accumulates time, i.e. the time of their common construction.

ACCEPTANCE

Where one thus asks about, and the other thus distinguishes, a common act (=2), two communicate. They communicate in being synchronised in their common act. In terms of the simple oscillation between description and interpretation, their act, together with their question/answer (?/!), constitute one description, i.e.

(37.1)

$$D2 \rightleftharpoons D3(=1? =3)?/!$$

This comprises one opening of the self-system which is closed in the event of communication, in which all distinctions collapse. Such a description is asynchronous only with regard to the distinctions by which one and the other distinguish themselves ("I?"), and each other ("you?"). These distinctions are obliterated where such a description is synchronised with the inclusion of c=1 ("we") in the token description of the common act. As a consequence the description collapses, i.e.

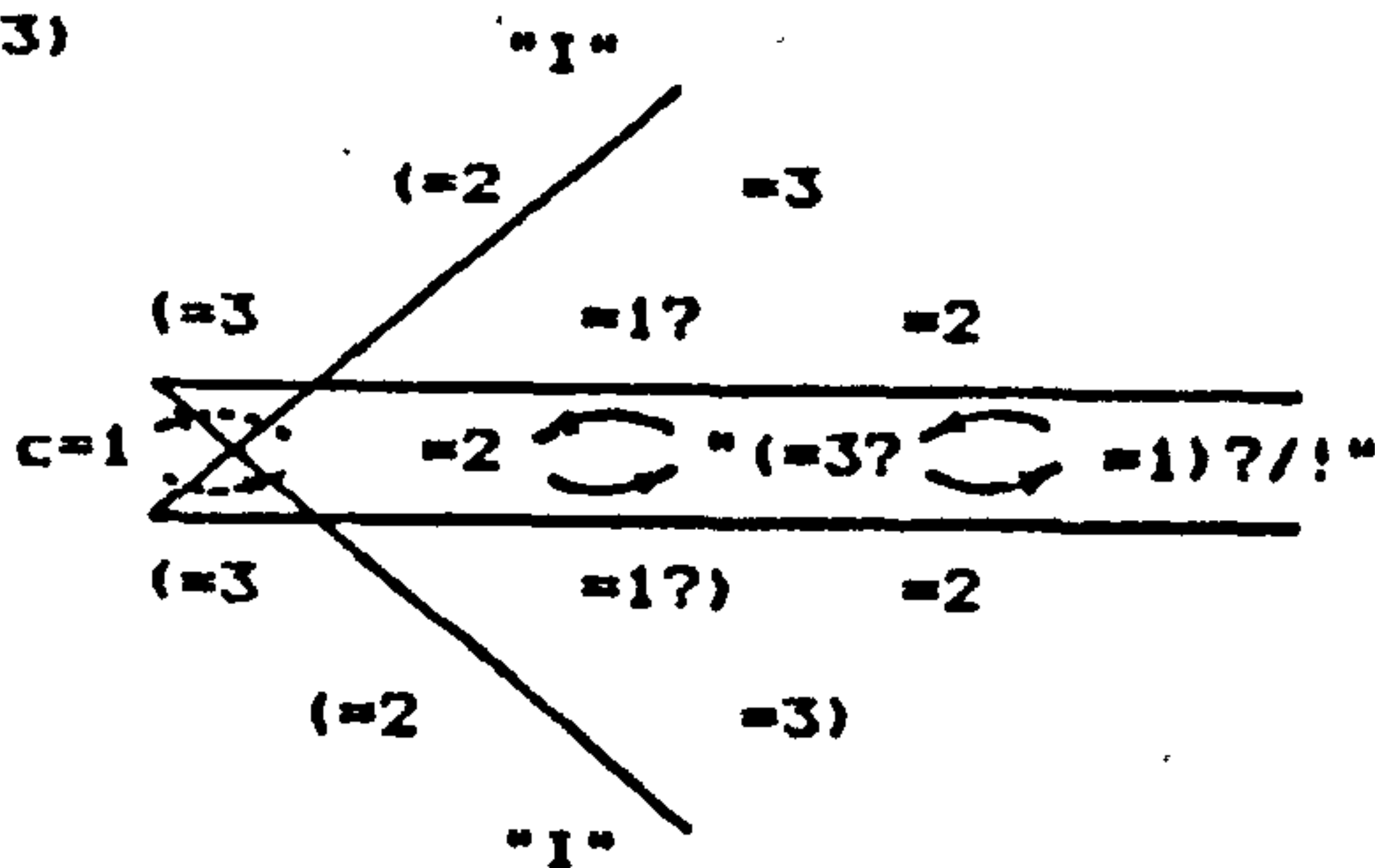
(37.2)

$$D2(c=1=2) \rightleftharpoons D3(=1? =3)?/!$$

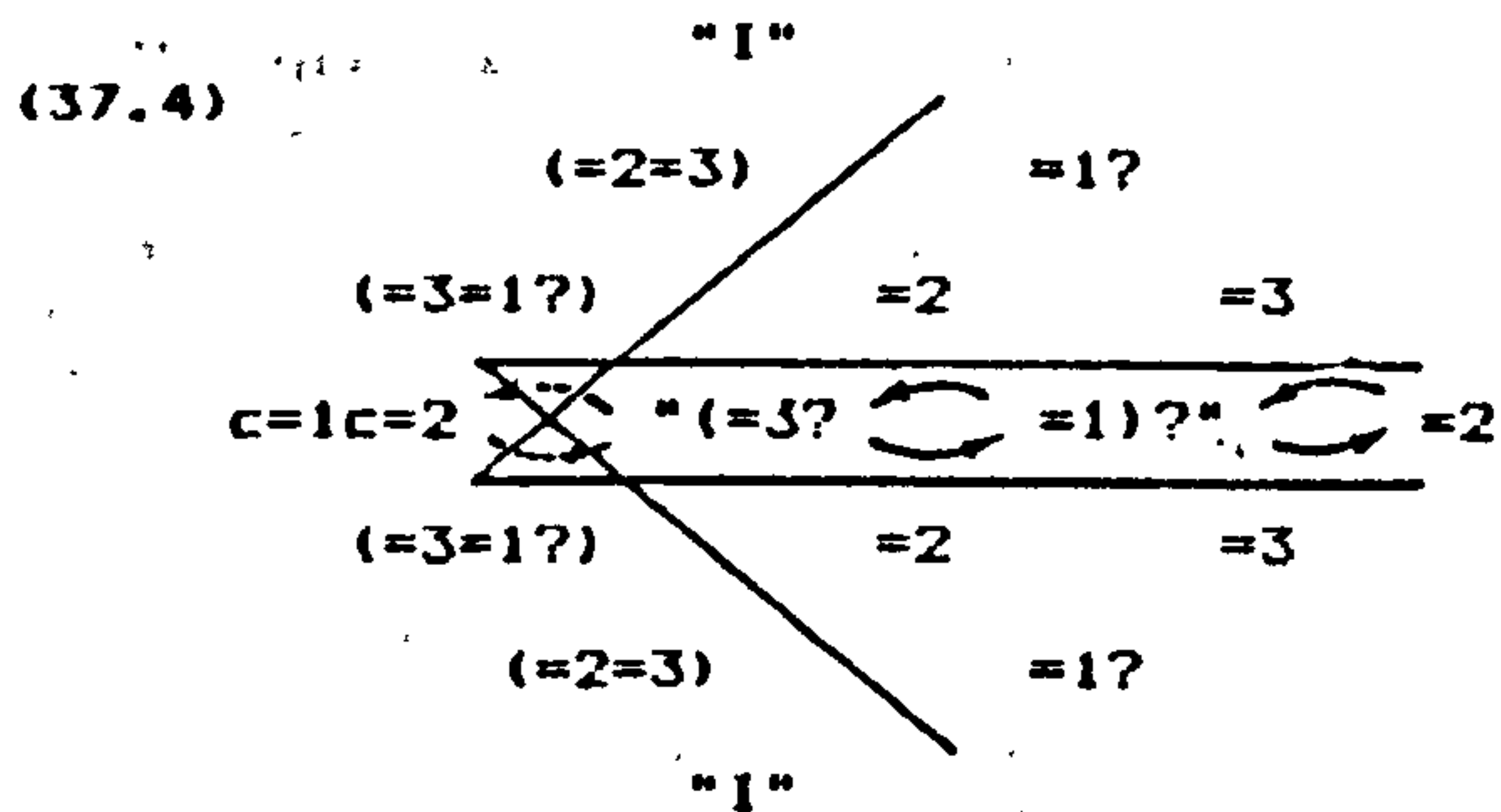
Where communicators are to remain distinct in the process of communication, a description is thus essentially asynchronous. This asynchronicity arises in, and is maintained by, an arbitrary distinction, whereby c=1, the "we", is maintained outside the description or the common act. It is arbitrarily maintained by one and the other, where they remain distinct in the event of communication. It maintains a description in its asynchronous form, where, beyond merging in the event of communication, one and the other wish to confirm that they communicate.

Where two remain distinct, in the event of communication, they communicate in the roles of one and an other, in which they thus distinguish themselves. In the instance shown above, they thus communicate as =3's, i.e.

(37.3)

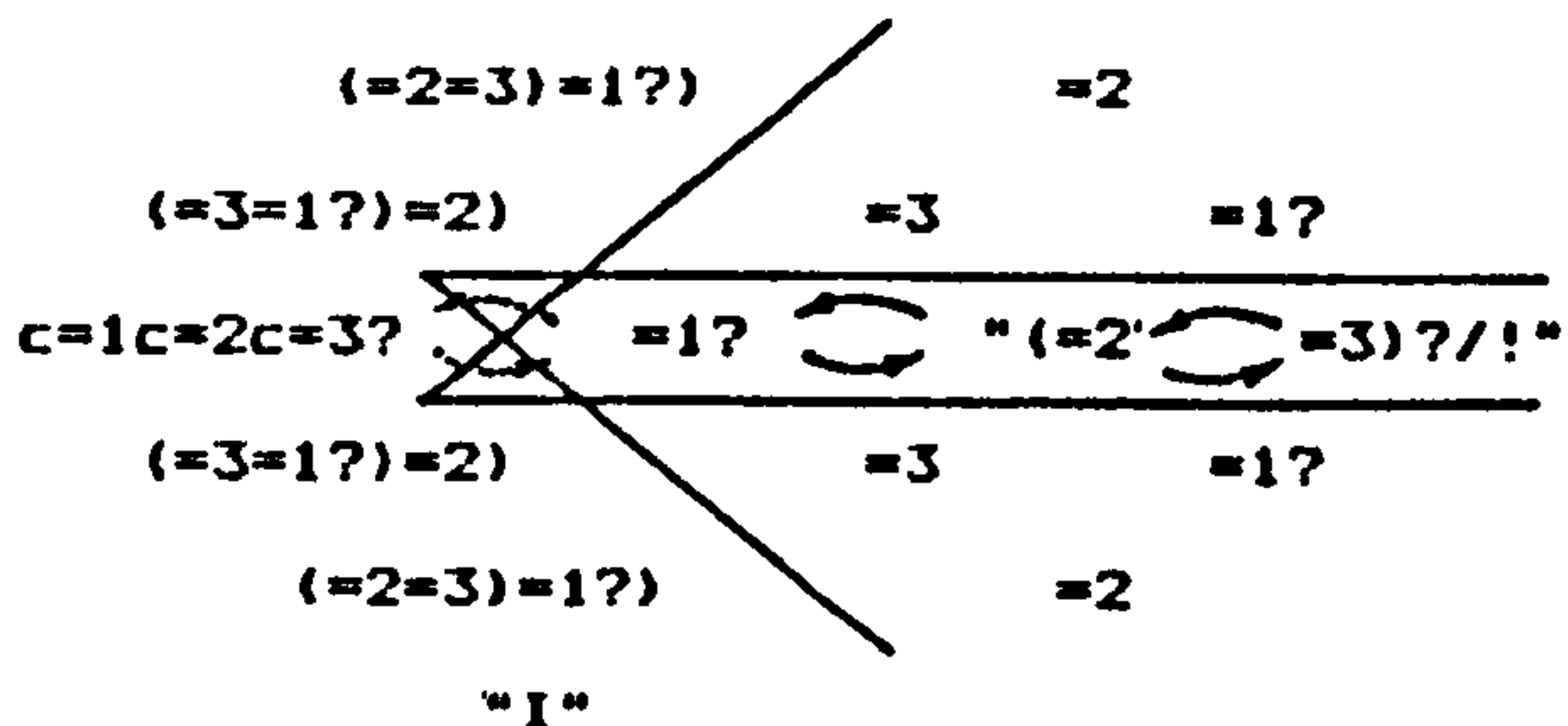


With regard to a new common act (=2), they can adopt the roles they attribute to each other, communicating as =1?'s, i.e.



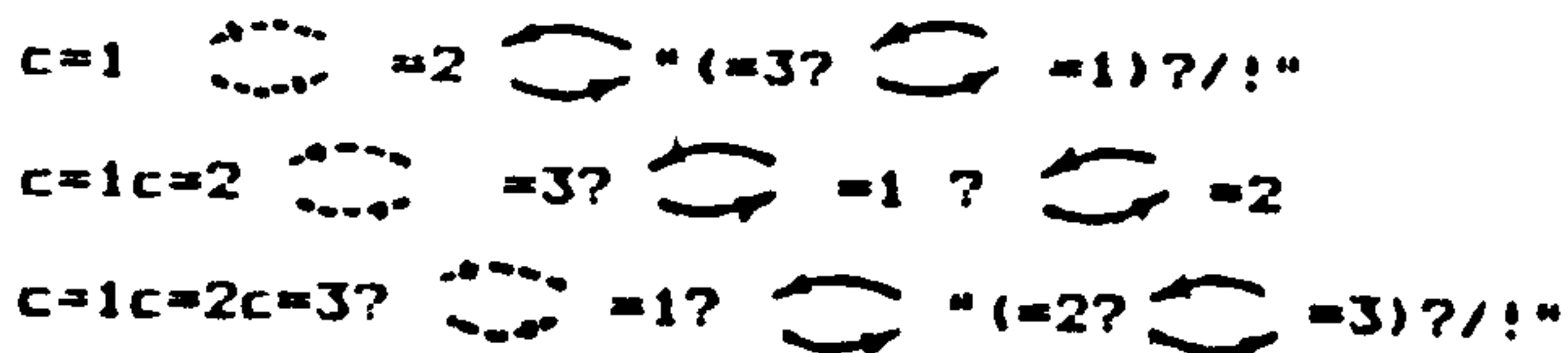
which in turn, as does =2's, they can now question in terms of the previous "we", i.e.

(37.5)

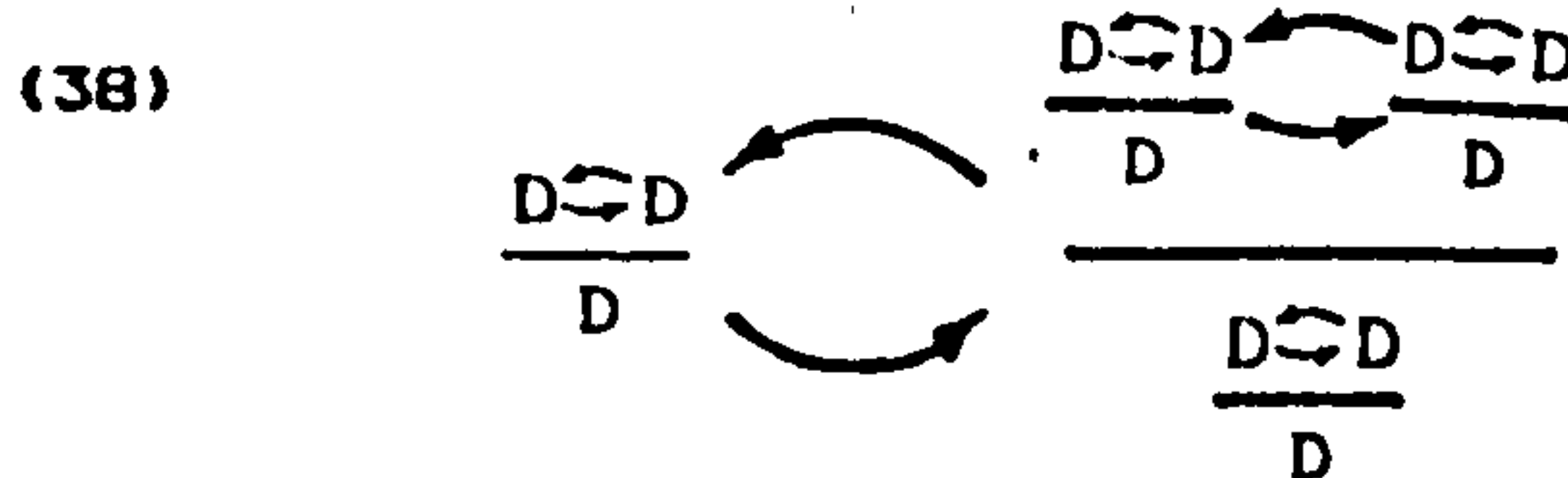


Where two remain distinct, this essential asynchronicity thus allows one and an other to link new descriptions to old ones. In the process of so doing, the "we" accumulates time in just the same manner as does the "I", in the process of construction, i.e.

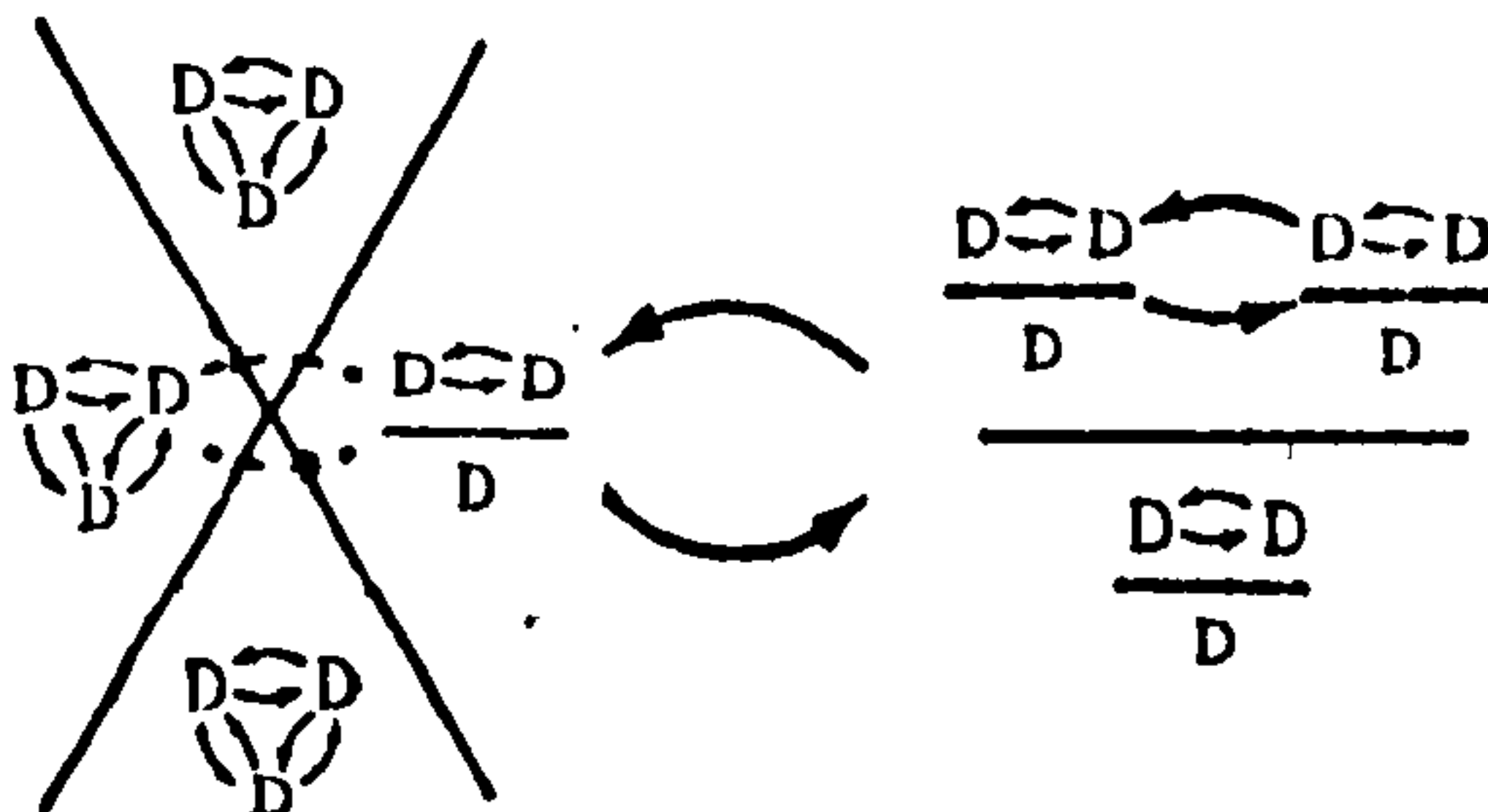
(37.6)



Where two remain distinct, a description in communication is thus of the general form



in which the smaller token description arises in the acceptance of the ever-growing "we", i.e.



The general form of a description, where two remain distinct, thus comprises a D(DO) and a D(SAY) token description (see (29)), no matter what aspects of the speech act are related within these tokens. In the form of a description where two remain distinct, the complementarity between saying and doing thus reflects the acceptance of the ever-growing "we". The possibility of linking new to old descriptions thus arises in the act of acceptance. In the act of relating one thing to an accepted or assumed other.



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### "WHY IS A RAVEN LIKE A WRITING-DESK?"

Where thus the outermost saying and doing aspects of the speech act are determined in the general form of a description where two remain distinct, it is for the first time possible to give an example. An example of the act of acceptance. Due to the form of interpretation, however, the act of acceptance becomes apparent, as such, only where one negates what he is assumed to accept, and hence the all-pervasiveness of acts of acceptance, in which two begin to communicate, can only be shown indirectly. Consider the exchange between Alice and the Hatter in Lewis Carroll's account of A Mad Tea-Party,

"Your hair wants cutting," said the Hatter. He had been looking at Alice for some time with great curiosity, and this was his first speech.

"You should learn not to make personal remarks," Alice said with some severity; "it's very rude."

The Hatter opened his eyes very wide on hearing this; but all he SAID was, "Why is a raven like a writing-desk?"

In making his comment, the Hatter expects Alice to allow him to comment on her hair, which (only) becomes apparent in Alice's refusal to accept this assumption (presumption). She objects to the outermost doing-aspect of the Hatter's speech act. In so doing, Alice in turn expects the Hatter to allow her to comment on his manner, which the Hatter in turn refuses to accept. Where his reply is not taken as a riddle, he too questions the outermost doing-aspect of Alice's speech act, objecting to Alice's presumption in commenting on his rudeness; objecting perhaps to any assumption about what he will accept.

In their refusal to accept each other's assumptions, Alice and the Hatter show the importance of an act of acceptance in beginning to communicate. In objecting to each other's acts (i.e. to what the other does rather than to what he says), they illustrate the form of a description (38) where two remain distinct, in which it is the outermost doing-aspect of the speech act which links what is, or here is not, accepted, to what is said.

The form of a description (38) applies to all occasions where two remain distinct. Thus, two who have been doing things

separately (eg. 36.8) need to accept, or invoke, the acceptance of something to begin to communicate. Where two begin, one or the other invokes a structure of the form of (38) in which two distinguish each other and accept or assume a common "we". Any speech act can thus be taken as the act by which to begin. Where two remain distinct, the form of a description is such that two begin to communicate with every one thing they say (and hence any speech act can be interpreted locally).

In the form of a description where two remain distinct, the outermost aspects of the speech act are determined in their role in allowing two to begin. In general, the complementarity between saying and doing renders it impossible to determine (without participating in an exchange) what is said rather than done, and done rather than said, in any particular comment. This is reflected in the tokens embedded within tokens, in the continuity in which one form can be treated as an other. What is said rather than done, and what is done rather than said, is a matter of choice in interpreting a description. But, where two remain distinct in beginning, the outermost aspects of the speech act are determined, in that they use the complementarity between saying and doing to accept or assume a beginning. Since it is the outermost doing-aspect which links whatever IS said or done, to what is accepted or assumed (i.e. the "we"), to question this act, is to question the beginning proposed; is to deny that beginning as a beginning.

In denying a beginning as a beginning, another beginning is invoked. This beginning, in turn can be questioned, invoking another beginning, and so on and so on. But, while every beginning thus assumed can be questioned, the need to accept or assume one thing or another in beginning, cannot be questioned. Where the need to accept a beginning is itself questioned, the conversation is disrupted, precisely because it cannot begin.

In asking why a raven should be like a writing-desk, the Hatter may indeed be questioning any beginning, and thus question the need to begin. If it were not for Alice treating this as a riddle, their conversation would be disrupted. The Mad Tea-Party, if not the whole of Carroll's story, is an exploration of the extent to which we are prepared try and give beginnings. It shows the pains we take to defy such questioning, to find something acceptable.

Where one attempts to find something acceptable in an other's questioning the need to begin, he reveals more and more of his person. He reveals the distinctions by which he tries to maintain his distinctness, revealing the fact that the distinction by which one distinguishes himself, and the distinction by which he distinguishes what he assumes or accepts, are ultimately one and the same distinction.

\* \*

## NEGOTIATION

Beyond acceptance, the event of communication can arise in a processes of negotiation.

Two begin to communicate with every one thing they say. In any beginning, something (a "we") is accepted or assumed. It is in terms of a beginning, that what is said can be questioned and negotiated.

What is said and done can be questioned, and negotiated, due to, and in terms of, the basic asynchronicity in the form of a description where two remain distinct (38). This asynchronicity arises in the beginning; in the acceptance of a "we".

Since in the asynchronicity of the form of a description where two remain distinct, the roles of the outermost aspects of the speech act are determined, it is possible to distinguish two types of questions, in the negotiation of what is said, or done. The outermost D(DO) arises in beginning, and connects what is accepted with what is said. Thus, to question what is done, expanding the outermost D(DO), is to question the beginning invoked; is to question the "we", or what is assumed or accepted in beginning. To question what is said, expanding the outermost D(SAY), is to accept the beginning and question what is said, in terms of this beginning. Due to the complementarity between saying and doing, to question the outermost D(SAY) is to accept the beginning, to question what is done with it.

\* \*

## CO-OPERATION

In a beginning, where two remain distinct, the form of a description thus indicates the direction in which the one beginning wishes to proceed, or he would not begin where he begins. An other co-operates, where he accepts the beginning proposed, and questions only what the one says or does with this beginning, i.e. where he expands the outermost D(SAY). But he also co-operates in questioning the beginning proposed. To question where the one begins, expanding the outermost D(DO), an other must at least accept that the one made a description; that he did what he did or said what he said. In so doing, however, the other in turn proposes a beginning, and asks for the one's co-operation, in accepting this beginning.

Without co-operation, two cannot begin to communicate. Thus, to begin to communicate, is to propose what might be accepted, and ask for its acceptance. To co-operate is to accept a beginning proposed, or to propose another beginning IN the beginning proposed. Two co-operate in communication whenever there remains some link between what one and the other do and say. To co-operate with an other is to do or say something with, or in terms of, what he said or did.

It is thus, that to begin to communicate, there must be a common act. Two can distinguish each other in any act. Where one cannot co-operate with an other, he cannot distinguish an other. Where two do not co-operate, they can only be distinct with regard to some external distinction. In each other's constructions they are not distinguished, and hence do not exist. They are neither dependent nor independent of one another, since independence involves co-operation in accepting a "we", accepting the distinction in which two distinguish themselves and each other.

Where in the act of co-operation two remain distinct, any description is of the form of (38). Any description where two remain distinct proposes a beginning. Due to the form of interpretation, all distinctions merge in the acceptance of a "we", no matter what one accepts in an other's beginning. Where two co-operate in accepting a beginning, all distinctions concerning previously proposed beginnings are merged.

The Hatter, for example, does not, and need not, return to insist that Alice's hair needs cutting; Alice does not return to insist that the Hatter was rude. It has been said that her hair needs cutting, it has been said that he was rude, but the failure to co-operate on these points, leaves it open, whether her hair needs cutting or whether he was rude. Where a point is not taken, it is not accepted, and has no existence in the "we", eg. the Hatter's possible point about questioning beginnings. Where Alice invokes the game of riddles as the Hatter's beginning, and the March Hare accepts this beginning, whatever beginning the Hatter may have proposed, remains of no significance; at least until the Hatter himself accepts this beginning:

"Have you guessed the riddle yet?" the Hatter said, turning to Alice again.

"No, I give it up," Alice replied: "what's the answer?"

"I haven't the slightest idea," said the Hatter.

"Nor I," said the March Hare.

Alice sighed wearily. "I think you might do something better with the time," she said, "than waste it in asking riddles that have no answers."

He then has to deny it, as a beginning proposed by him, knowing no answer to such a riddle. The exchange shows, that the need for co-operation is such that a beginning may be accepted (eg. that there is a riddle) simply in order to begin and carry on. What is thus accepted, in an attempt to co-operate, can later be questioned or denied.



"WASTING TIME"

Where all distinctions concerning previous beginnings are obliterated, in accepting a beginning, it is only the intentionality with which a beginning is proposed which distinguishes what beginning is accepted. All that can and need be known about the intentionality with which a beginning is proposed, is manifest in the form of a description where two remain distinct (38). The only intentionality which can and need be considered, is that manifest in the directionality were two remain distinct. This directionality allows one to indicate the direction in which he proposes that the "we" shall proceed to accumulate time.

In making a description where two remain distinct, one's intentionality is that of asking acceptance of what he does (D(DO)), and putting forth for discussion what he says (D(SAY)). Abbreviating the form of a description where two remain distinct (38) as

(38.1)  $D \frown D \frown D$

and (38.2)

$$D \frown D \frown D \frown D$$

the intentionality with which a beginning is proposed can simply be shown with an arrow in the direction in time in which the one proposing the beginning proposes to proceed, i.e.

(38.3)  $D \frown D \frown D \rightarrow$

What he intends the other to accept, accepting what he says into the common "we", is shown with a dotted bracket, showing the larger self-system which is closed where what he proposes is accepted, i.e.

(38.4)  $D \frown D \cdots D \frown D \rightarrow$

The event of communication in such acceptance is shown with the brackets showing the closure in which these self-systems collapse, i.e.

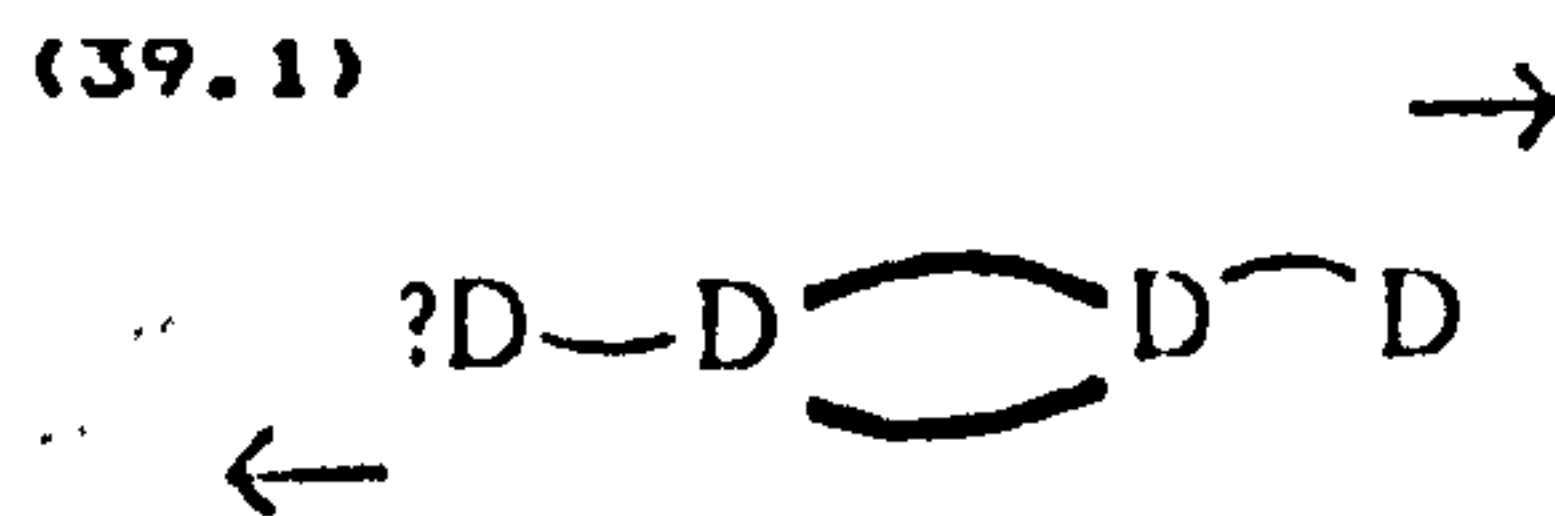
(38.5)  $D \supseteq D$

While (38.2) to (38.3) thus show the basic asynchronicity of a description where two remain distinct, (38.5) shows the synchronisation in which they understand, close their self-systems, and hence merge into one, in terms of the description they thus accept or understand.

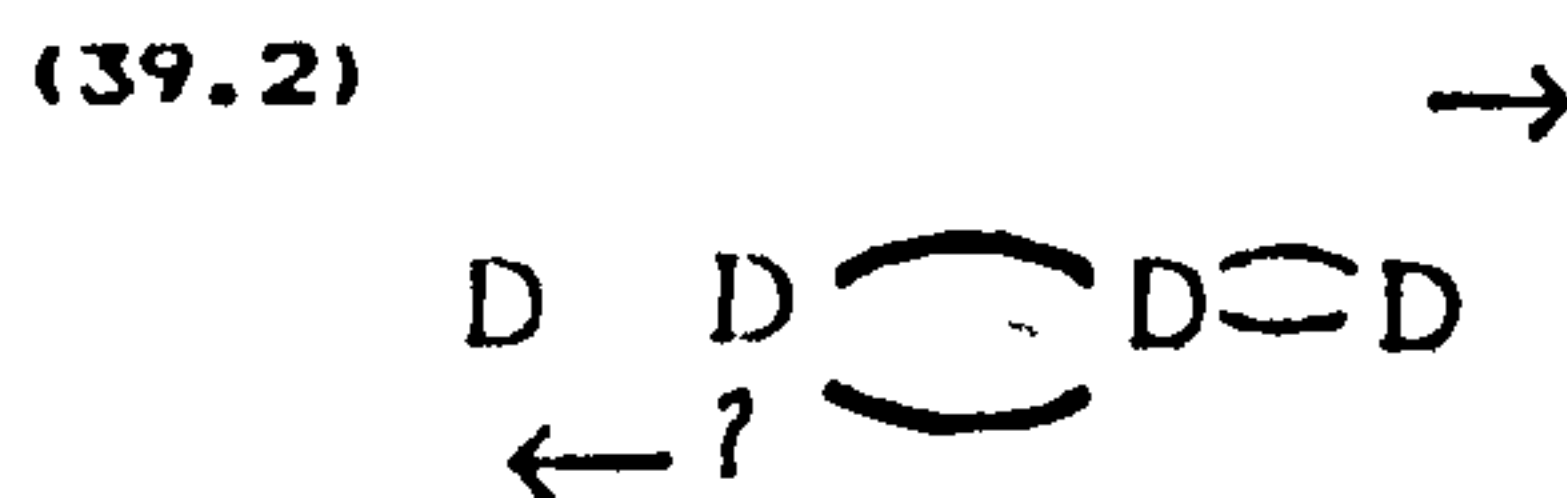
Where the form of a description thus manifests the intentions with which one proposes a beginning, and an other accepts and/or questions it, it is possible to speak about how the interaction between their intentions increases, decreases, or removes, the asynchronicity of a description where two remain distinct.

For something to be said, for a point to be made, two must be distinct and hence an asynchronicity in the description is necessary. For a conversation to be constructive, two must co-operate to the extent that their overall intentions coincide in direction, allowing for an event of communication in which their "we" accumulates time. Where two are at odds, in the directions in which they propose to proceed, to the extent that no overall coincidence in intentions appears possible, they may cease to co-operate altogether, feeling that they are "wasting time".

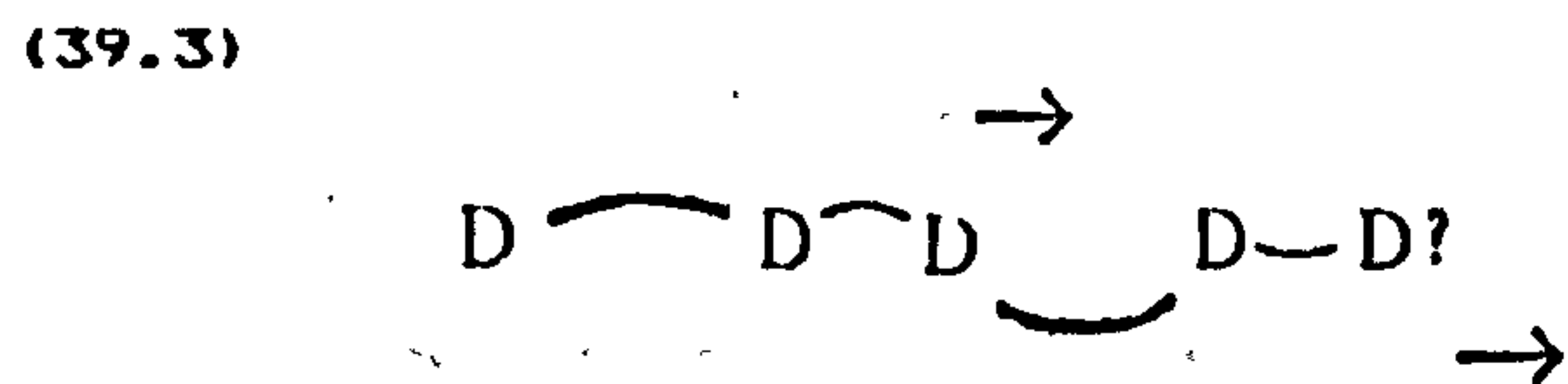
In order to question either what the one said (D(SAY)), or did (D(DO)), the other needs at least to accept that the one has indeed said or done whatever he said or did. Where the other chooses to question what the one did, expanding the outermost D(DO), he proceeds to cross purposes with the one; the direction of his intention is the opposite of that of the one. He can either question what the one assumes or accepts (the assumed "we"), i.e.



or question the relation between what the one does (the outermost D(DO)) and what he says (the outermost D(SAY)) i.e.



Where he chooses to question what the one is saying (the outermost D(SAY)) he proceeds in the direction in which the one intends him to proceed, i.e.



In all cases the other accepts that the one said whatever he said. Thus he can leave the outermost D(SAY) open (just as the observer can question a -d distinction by accepting c=d that he has made it). Where what the one said thus remains open, the one can accept what the other assumes in questioning, and can accept a change in the direction in which they proceed, -

trusting that, as a result of such questioning, they will eventually return to, and accept, this description. The one will begin to see time wasted where the desynchronisation, between such questioning and the description left open, increases without prospect of returning to his beginning. Where one takes the outermost D(SAY) in a beginning as left open, he will begin to see questioning which has no prospect of closing his description, as being irrelevant.

A beginning is taken to be left open. Where a beginning is not accepted, it does not exist in one or the other's construction, unless it is taken to be left open. Only one who takes a beginning to be left open can know it to be so. A beginning proposed has no existence beyond the act in which it is proposed, unless its distinction is re-made by one or the other. In the indeterminacy of the form of interpretation, the distinctions by which something was said, or done, collapse. A conversation finds a new beginning in every one thing said.

Due to the redundancy of a description where two remain distinct, it is unnecessary, and at best pedantic, to ensure that nothing is left open. To be explicit about what is accepted, is to waste time. To insist on negotiating everything is to disrupt a conversation.

In questioning what one did or said, the other is bound to accept enough to collapse a description to a token description, or a token description to a single token. To question what the one did or said, the other has to choose to expand one of two token descriptions. Expanding one token, he will appear to have accepted the other token, unless he specifically denies accepting it. In questioning, and thus proposing a new beginning in an other's beginning, more appears to be accepted than questioned. Let what thus appears to be accepted, where one questions another's beginning, be shown with dotted brackets, i.e.

for (39.1)

$$?D - D \overbrace{\dots\dots D \dots\dots D}$$

for (39.2)

$$D \dots\dots D \underbrace{? \dots\dots D \dots\dots D}$$

and for (39.3)

$$D \overbrace{\dots\dots D \dots\dots D} \dots\dots D - D?$$

Thus, the redundancy of descriptions allows for the apparent collapse of distinctions in the very act of questioning of what is said and done. Where such apparent acceptance is not explicitly questioned, it is treated as accepted. Alice's weary sigh shows that such apparent acceptance is assumed to be used co-operatively, to save, rather than to waste, time. To fail to question what appears to be accepted, but is not, is to

mislead, and hence to waste time. In turn, such apparent acceptance allows two to co-operate in the construction of worlds, as if they accepted them, and play games in which they accept to pretend.

It is in the asynchronicity of a description where two remain distinct, that something can be said. Where time is wasted, this asynchronicity is increased. Thus, the wasting of time, the asynchronicity between one and another where they are at odds in the directions of their intentions, can be taken as saying something. To accept time being wasted, is to take something as said, or implicated, in an apparent wasting of time. The need to accept, the need to co-operate, is such that time cannot be wasted. Where one appears to be wasting time, the other seeks the point of so doing. To co-operate, he seeks a beginning in the wasting of time.

\* \* \*

## RELATIONS

The terms in which an exchange takes place are negotiated within that exchange. Such negotiation need not be either exhaustive or explicit. The terms in which an exchange takes place are negotiated implicitly, within the exchange. The redundancy in the form of a description where two remain distinct, allows their negotiation to go unsaid; allows the terms in which the exchange takes place to be taken as accepted, unless they are explicitly questioned.

To speak of things, and to use descriptions to indicate things, one and another need to relate descriptions. Descriptions are related in the form of a description where two remain distinct. It is in the asynchronicity of a description where two remain distinct, and possibly proceed at cross purposes, that they establish relations between descriptions.

The form of a description where two remain distinct comprises three or four tokens, or token descriptions. The first remains unsaid in the description, as the "we" which accumulates time in the event of communication. The second, constitutes the outermost D(DO), and together, the third and fourth constitute the outermost D(SAY).

Thus, it is the second token (description) in a description where two remain distinct, in which descriptions are related. It relates what is assumed to what is said, relating descriptions which are no longer distinguished to a new description. It can be expanded to reveal any assumption made in the making of the description. It is thus a token for the act of acceptance. A token for an act of relating.

Being relational, the form of a description where two remain distinct is indicative. It is indicative of the direction in which the one proposing a beginning intends to proceed, by virtue of the form, in which it is as if the second token (the outermost D(DO)) were expanded in the third and fourth tokens (the

outermost D(SAY)). It is indicative in that the outermost D(SAY) is an explicit version of the outermost D(DO). It is thus, in raising a question about the second token, that the form of a description where two remain distinct is indicative. It is indicative of the direction in which the one proposing it intends to proceed.

The form of a description where two remain distinct, is indicative of what the one proposing a beginning relates, or indicates, by virtue of the reversal of saying and doing between one and the other. The second token (the outermost D(DO)) is expanded to a D(SAY) in the reversal, while the third and fourth tokens are collapsed to a D(DO). What, in proposing a beginning is indicative for one, is but a token for the other, and what, in proposing a beginning is but a token for one, is indicative for the other.

The indicativeness of the form of a description where two remain distinct, cannot be negotiated. It arises in the form where two remain distinct. It arises with the very distinction by which they distinguish themselves and each other.

In thus combining a token, taken to be indicative, with a description, taken in the first instance as a token, the form of description where two remain distinct can be used to make indicative relations between descriptions. Where two remain distinct, one can take a description made by an other as indicative that the other made the description  
said that he made the description,  
made the description to say something  
said something about something  
by making the description  
and so on.

Thus using the complementarity between saying and doing, one can proceed to explore a continuity of another's indications and intentions, eg. what in making his description the other intends to be considered, and what he intends to be accepted; what the other is saying, and what he is saying it about.

Where two remain distinct, the indicativeness of a description lies in the form of a description, and hence it arises within every description made. Something can be taken as indicated in terms of the form of the a description, in which it is indicated. Where two remain distinct, a description thus carries it's own indicative structure. The possibility to make indications arises within the description, that is locally, - with every beginning.

§ § §

#### RELATIONS NEGOTIATED

If a description could not be taken as indicative in its own form, it could not be interpreted at all, where the "I" of language is concerned. Where all distinctions merge in the event of

communication, a description cannot be interpreted in terms other than itself.

The form of a description where two remain distinct, reflects the single depth of interpretation in the complement (covert description, intended to be accepted) of the overt description. This complementarity is reflected in the symmetry of (39.1), and renders the pursuit of (39.1) or (39.2) essentially symmetrical. The description intended to be accepted, involves the "we" at a single depth, and thus what is accepted is the complement of what is questioned. As a consequence, no more than one thing can be questioned at any one time.

All that can be said about the negotiation of relations thus concerns the possible relations between the beginning one proposes, and the extent to which an other co-operates in questioning his beginning, i.e. the relations (39.1 to 3). While sequences of beginnings, and beginnings within beginnings, may indeed be of interest, the single depth of interpretation requires any beginning, accepted, to be considered on its own merit.

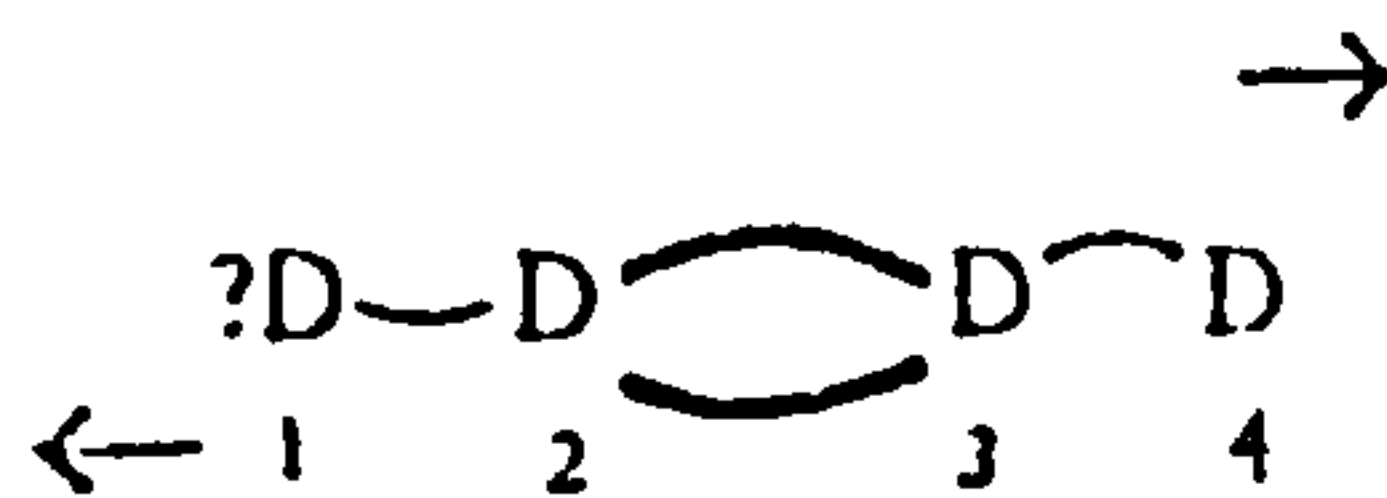
All that can be said about the negotiation of relations, and indications, can be said in terms of what part of a description is negotiated (at any one time in the processes of pursuing a curiosity, questioning, testing and explaining). Where two remain distinct, anything taken to be indicated is taken to be indicative, with regard to the form of the description in which it is indicated. Due to the redundancy of descriptions, and the possibility of expanding any token to a token description, or collapsing any description to a token description or a single token, this is all that is necessary to establish and distinguish indications. Due to the form of interpretation, the single depth of interpretation must be sufficient to negotiate any indication.

Where all that is not explicitly questioned is treated as accepted, one and an other use the single depth of interpretation to direct their attention, in one instance, to table manners, in another to how a thing is indicated, in another to what is said and how it is said, and so on. Such "levels", as may be perceived as distinguishing such concerns, are perceived with regard to the directionalities in which one and the other intend to proceed. Thus using the single depth of interpretation to direct their attention, one or another deem relevant what they negotiate in negotiating it.

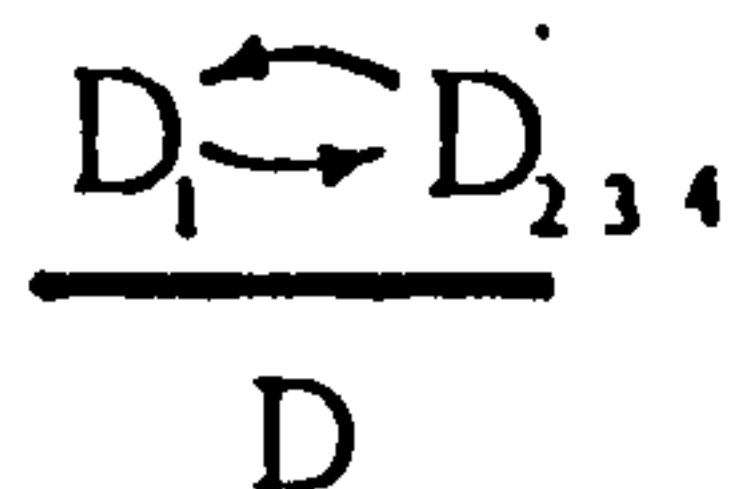
The possibilities of negotiating a description where two remain distinct, reflect the continuity between descriptions (24). To consider which part of a description is negotiated is to consider which description is negotiated. To negotiate a part of a description negotiated is to treat it as a whole description, using the continuity between descriptions (24). It is, in thus treating a part as a whole, that what is not questioned appears to be, and is, accepted.

In (39.1) the description the one ultimately intended to be accepted, i.e.

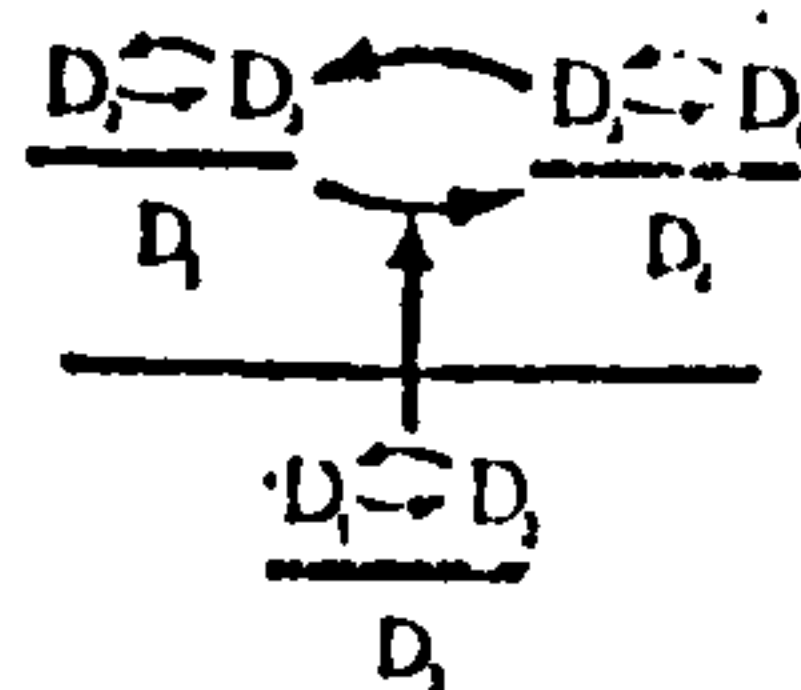
(40.1)



the other questions the description involving the first and second D. To thus question the relation between what the one assumed, and what he said, the other needs to accept what the one said, or that he said it. Thus closing a small self-system over the description involving the third and fourth D, this leads to a switch in the description ultimately intended to be accepted. Collapsing this into the description involving the first and second D, the other appears to accept the relation between what the one said, and what the one assumed, i.e.

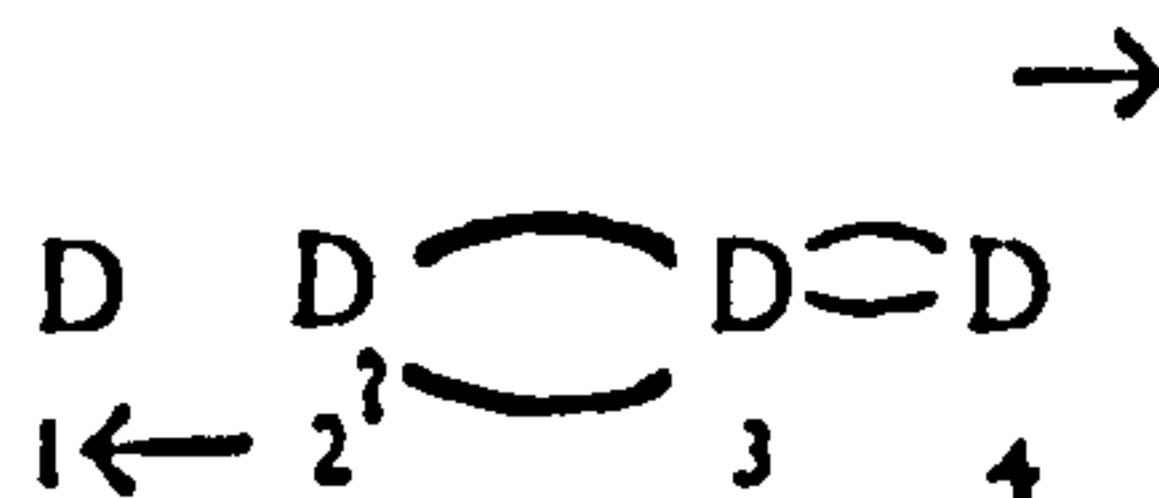


The questioning itself, in turn, expands this description i.e.

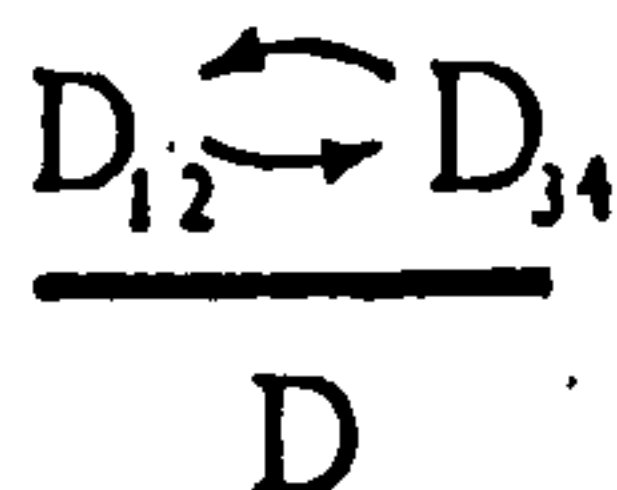


In (39.2) the description the one ultimately intends to be accepted, i.e.

(40.2)

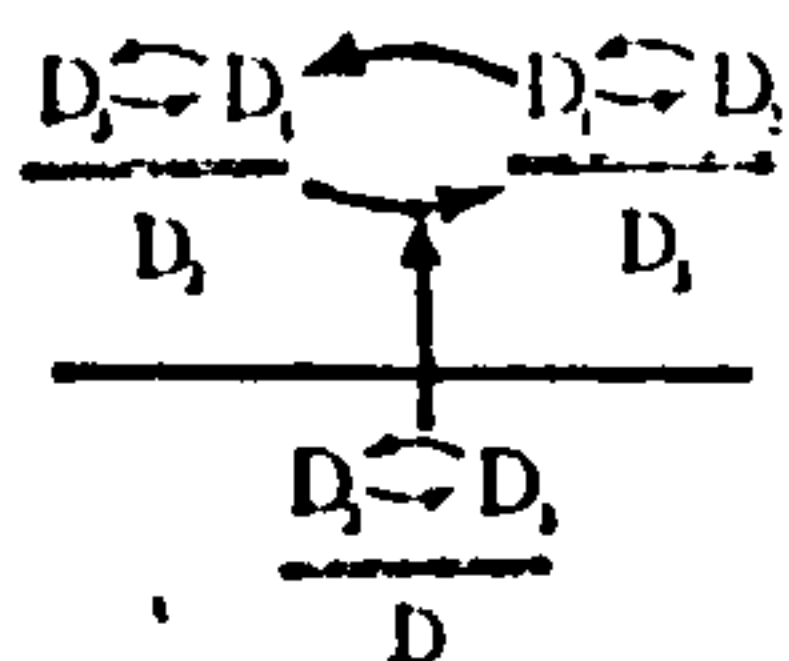


is questioned in the other's beginning. In the other's question, the description the one ultimately intends to be accepted is collapsed, i.e. its first and second D constitute one token, and its third and fourth D constitute the other token in the question,

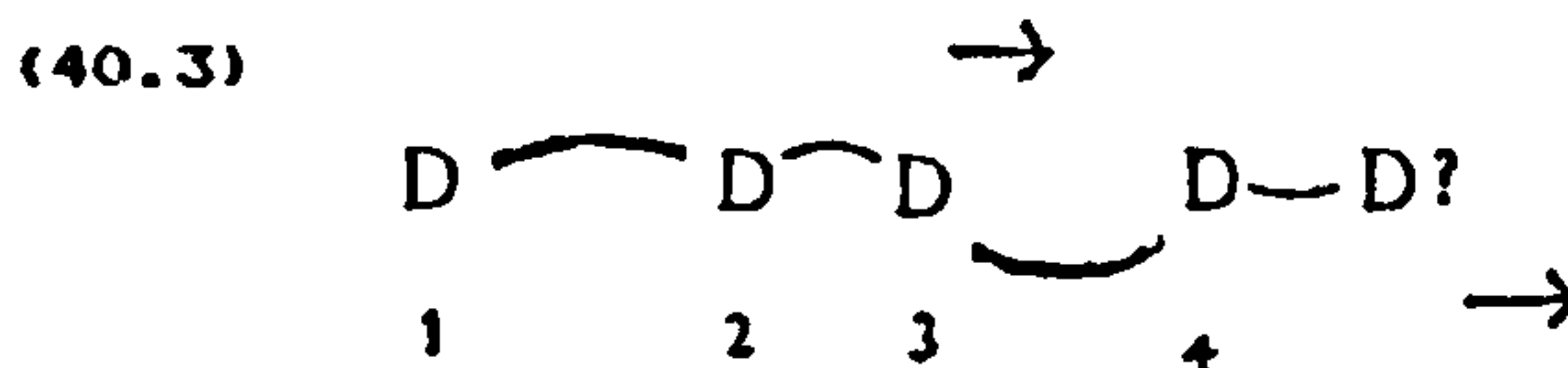


giving rise to the appearance that the description involving the first and second D's, and the description involving the third and fourth D's, are indeed accepted.

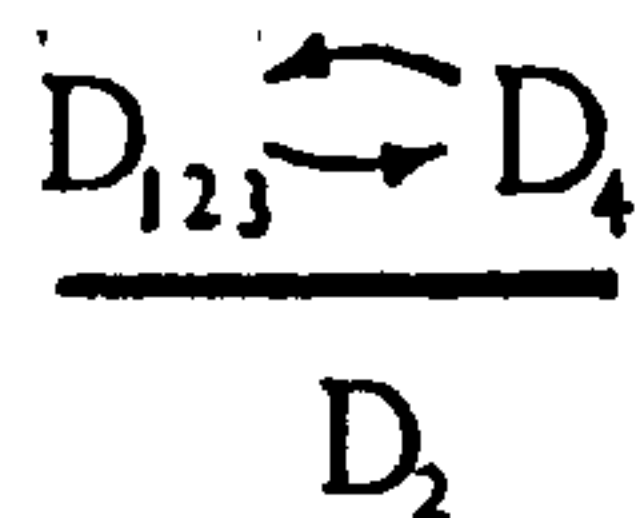
The questioning itself in turn expands this description, i.e.



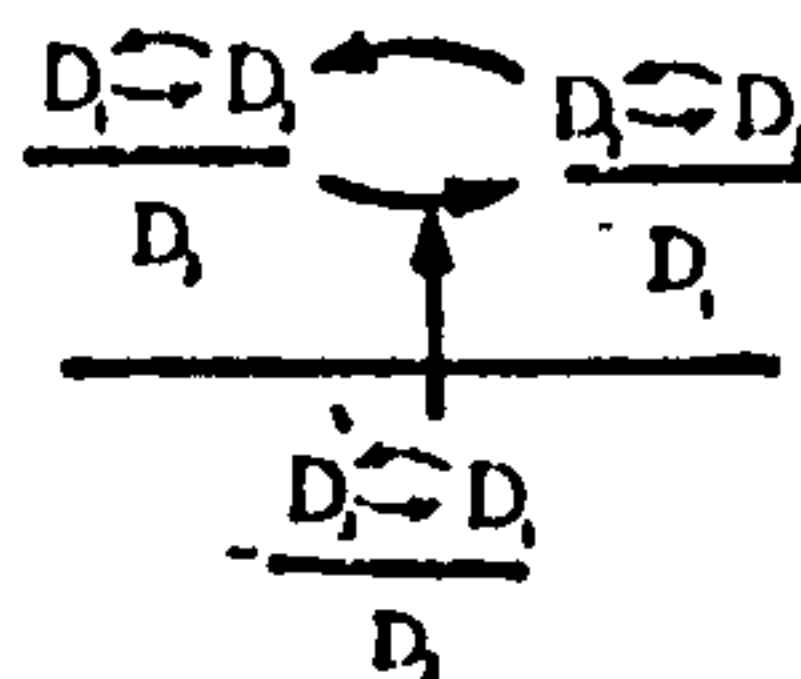
Similarly, for (39.3) the description questioned is that involving the third and fourth D's, i.e.



In such questioning, the other accepts what the one assumed. This leads to a switch in the description ultimately intended to be accepted. In collapsing this description into the description involving the third and fourth D's, i.e.



the relation between what the one said, and what he assumed, appears to be accepted. The questioning itself, in turn, expands this description, i.e.



In all three cases, the closure over the token description questioned (accepting that the question arises) emphasizes the appearance that what is accepted, in such questioning, is actually accepted. As a consequence, it is impossible to distinguish between the simple collapse in which the other accepts what the one did, from a process in which he further accepts that a question arises, and hence it is impossible to know what descriptions are considered left open by one or the other. The distinction between a process in which a description is left open, and one in which it is not, can only be maintained by one or the other in their own activities. Where anything which is not questioned is assumed to be accepted, one or the other needs to remake a description he wishes to return to.

The negotiation of any relation of significance, between one and an other and the descriptions they make, thus proceed along the lines and possibilities discussed



on the way towards communication. One and another may, or may not, co-operate in the exploration of these possibilities. The extent to which they do co-operate is the extent to which they co-operate in their beginnings. The extent to which they co-operate by returning to beginnings they separately maintained open, and the extent to which what appears to have been accepted has been accepted, is manifest only in an event of communication. These cannot be spoken about before, or in, that event. Whatever, and however much, one or the other embeds within a description or explanation, is collapsed in the event of communication.

In oscillating between beginnings and events of communication, one and the other proceed as the observer does in the process of construction. In the process of oscillating between beginnings and events of communication, the "we" accumulates the time generated in this process. The time accumulated by the "we" cannot be distinguished in this process, just as, in the process of construction, the observer cannot distinguish the time accumulated by his ever growing "I". Since any description, or relation of significance, accepted by one and the other, is thus accumulated in the ever-growing "we", the ever-growing "we" is the "I" of language. Is the "I" of language in that the form of a description where two remain distinct is all that is necessary for the description to be taken as indicative.

In the "I" of language, the event of communication is thus a local event, explained in terms of the form of a description where two remain distinct, and the form of interpretation (with its consequent single depth). These simple forms are sufficient to account for the possibility of communication, and to account for the generation of languages in the "I" of language, which one and another may come to distinguish as ITS.

## ARGUMENTATION

The possibility of appearing to accept a conventionally accepted language such as English, in the covert first D, in the form of a description where two remain distinct, suggests that far from being local, the possibility of an event of communication relies on prior knowledge of such a language. Due to the single depth of interpretation, however, an event of communication which arises where a conventionally accepted language is accepted, cannot be distinct from an event of communication where no such language is accepted. Due to the form of interpretation, it is impossible to distinguish the construction and negotiation of a language, from its use.

To, nevertheless, speak of using this or that language, is to distinguish it. To use a language, is to use the distinctions by which it is distinguished. The possibility of distinguishing a language arises in, and remains dependant on, the processes of construction and communication. A language is distinguished, constructed, and communicated. A language remains within the form of interpretation. Whatever may be said about how, given a language, this or that is interpreted, is said by drawing distinctions which are obliterated in the form of interpretation. Just as the distinctions used to embed descriptions within descriptions collapse in the form of interpretation, the distinctions (or levels) used to embed languages (within languages) within the form of a description where two remain distinct, collapse in the form of interpretation (in any event of communication). It is not in, or with regard to, explanations of how this or that was, or is to be, interpreted, that it is interpreted.

ABOUT THINGS

The need to speak about and distinguish things, as things, arises where one and the other need to accept, assume, or know, that they are speaking about one and the same thing.

In constructing, the observer and his construction are one, and cannot be distinguished. There can be no doubt about a thing being one and the same thing. The need to distinguish a thing as a thing cannot arise. In any event of communication, one and an other coincide in a "we", and no longer remain distinct. There can be no doubt about a thing being one and the same thing. The need to distinguish a thing cannot arise.

The need to speak about and distinguish things only arises where one and an other wish to argue, only where there can be a doubt about whether it is one thing, or another, they wish to argue about.

Arguing is reflected in the relevance in saying something new about something old (kept the same in (28)). It is reflected in the form of a description where two remain distinct (38), in which the second D remains the same. It is reflected where, in co-operation, one minimally finds his beginning in the beginning proposed by an other.

It is thus only the possibility of a doubt, concerning such sameness, which distinguishes arguing from construction and communication. Only in a doubt concerning the sameness of descriptions, can the need to distinguish a thing, as a thing, arise. Such a doubt can arise only in a description concerning the sameness of descriptions. Thus, a thing can only be distinguished, as a thing, in a description concerning the sameness of descriptions.

Where the observer discerns a pattern in random manifestations of his descriptive activities, he (implicitly) discerns a sameness between descriptions. However, the observer, one, and an other, cannot make (explicit) descriptions concerning the sameness of descriptions. To say that a thing is only distinguished, as a thing, where it needs to be known, accepted, or assumed, to be one and the same thing, is to say that a thing is only distinguished, as a thing, where this distinction is relevant. Where one accepts what the other says or does, the description proposed by the one, and the description accepted by the other, are accepted as being the same. Where, what is accepted is the complement of what is questioned, what is relevant is questioned (what is questioned is relevant), and what is accepted cannot be relevant. In being accepted, the sameness between descriptions is deemed irrelevant. The need to distinguish a thing, as a thing, cannot arise where this distinction cannot be relevant.

To distinguish a thing as a thing, one, or an other, thus needs to question what he accepts. A description cannot at once be

accepted and questioned. In questioning the sameness of descriptions, this sameness can no longer be accepted. A thing is distinguished in the sameness of descriptions. For such a distinction to be relevant, the descriptions, in the sameness of which the thing is distinguished, cannot be accepted as being the same.

Wherever one, or an other, encounters a difficulty in accepting what he accepted as being the same, he can question the sameness of two descriptions. In view of such a difficulty, a distinction between two descriptions which he accepted as being the same, becomes relevant. Thus a thing is distinguished where a doubt concerning the sameness, of what had been accepted, is removed.

Where a doubt arises concerning the sameness of what is accepted, the need to distinguish a thing arises in the need to accept acceptance. A thing is distinguished, as a thing, where acceptance is distinguished so as to be explicitly accepted, i.e. negotiated. A thing is accepted as a thing distinguished, where acceptance negotiated is accepted (in an agreement). In the process, the act of acceptance is embedded in a description.

Where acceptance negotiated is accepted, a thing distinguished is no longer questioned. Where, once distinguished, the distinction by which a thing was distinguished is no longer questioned, the form of interpretation is reflected in form of the acceptance of the thing. Thus, the event of interpretation appears similarly embedded in a description.

In distinguishing and speaking about things, one and an other begin to distinguish a language as an IT. A language as an it is distinguished, by one and another, with regard to the particular things the distinction of which became relevant, to one and/or the other. A language as an it is distinguished where one or an other need to accept acceptance. Any language, distinguished as an it, is distinguished in a particular (set of) thing(s), and hence must be a particular language, the distinction of which is, or was, relevant to one or the other.

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#### DISTINCTIONS AND DOUBTS (OR THE FORM OF SPEAKING)

The coincidence of distinctions made, and questions raised, arises in the complementarity, and determines the form of speaking. The need to accept acceptance, and distinguish things as things, arises in the form of speaking. Thus, what is spoken about is reified in the form of speaking.

Where one begins in an other's beginning, the overt description accepted as being the same is accepted in the form of the second D. Thus, the second D, in the form of a description where two remain distinct, appears to be a description in which a thing is distinguished. Where one and an other minimally co-operate, the second D is a description taken to remain the same, and can thus formally (and quite regardless of its content) be taken as a description concerning the sameness of descriptions. As such, it can be taken as a description concerning (and hence questioning) such sameness, while at the same time accepting such sameness.

\* \* \*

#### TIME EMBEDDED

However, the second D does not arise in distinguishing a thing. The sameness 'asserted', and accepted, in the form of the second D arises in a process; the process in which one finds his beginning in a beginning proposed by an other.

Similarly, the form of a description where two remain distinct (SB), arises in a process in which the second D is temporally distinct from the third and fourth D. Within this process the second D cannot 'assert' such sameness overtly. It is temporally linked to the third and fourth D, in the closure over the second D and its re-opening, to make the description involving the third and fourth D.

In the event of communication, the sameness 'asserted' arises in the form of interpretation. In treating the second, and the third and fourth, D's as comprising one description, the second D becomes a description taken to be the same as the description accepted in the previously proposed beginning. By embedding the process, in which the second D was temporally distinct from the third and fourth D, within one description (i.e. the form of a description where two remain distinct), the second D becomes overtly 'assertive' of such sameness between descriptions. Thus, the event of interpretation only appears to be embedded in a description. It appears to be embedded in a description where, by distinguishing things, one and the other remove themselves from what they accept. They accept things as-one or as-an-other.

(The distinction by which a thing is distinguished as a thing, is just the distinction made in speaking about the form of a description where two remain distinct.

The extent to which the process involved in this form is suppressed, in speaking about it, shows the reification involved in speaking; shows the coincidence between this particular act of speaking, and what is spoken about in this act.)

To speak about the form of descriptions where two remain distinct, it is necessary to distinguish, and hence reify, the process in which this form is distinguished. In co-operating, one and another need to treat the three or four D's as one description, assuming the second D to remain the same from one instance to the next. In the process of communication (in the "I" of language), they need not embed this process within a description of this form. Their ability to treat descriptions as being of this form arises in the very process (the stages in (37)) in which they are involved. Generating the time embedded in a description where two remain distinct, they cannot overtly embed this time in such a description. The form of a description where two remain distinct thus reflects the process in which the "I" of language accumulates time. Where, a description, of the form of a description where two remain distinct, is made, this process is embedded in the description.

In the process of communication, in the "I" of language, the sameness between descriptions arises in the act of interpretation separating the second from the third and fourth D. Formally, the second D thus only 'asserts' the sameness between descriptions, in the embedding where it is expanded in the third and fourth D. Temporally, the second D thus only 'asserts' the sameness between descriptions, in the repetition, in which two temporally distinct descriptions arise where one and the other, remaining distinct, participate in this process. The second D thus 'asserts' that temporally distinct descriptions are instances of one and the same description. The sameness between descriptions, in which things are distinguished, is only 'asserted' where descriptions are thus isolated from the processes in which they are generated, negotiated, and interpreted. It, and hence things, arise as a consequence of embedding time in the form of speaking.

§ § §

#### AS IF IT WERE ASKING QUESTIONS

To embed the time separating the second from the third and fourth D within a description, one and another need to step out of the time accumulated by their "we". Just as the observer needs to distinguish himself as an other, to step out of the time accumulated by his "I", one and another need to distinguish themselves from their "I" of language, distinguishing a language as an it, to step out of the time accumulated by their "we".

In speaking about a thing, one and another accept it as-one and as an-other. In the consecutive stages of (37), they remove themselves from their descriptions by adopting roles in which they make, and accept, descriptions. Making and accepting

descriptions as one or an other, they eventually make and accept them as doers (shown as =2), sayers (=3), or in the role of distinguishing themselves as an/the other (=1?). In the process, they explore different aspects of the speech act they perform; exploring either what is said and done, or the rules in which this is accepted (shown on the line nearest the "I"). Thus, they can in turn consider the relation between the "I" and the role in which they try to accept a description.

Thus, the second D also indicates the role in which one, and/or an other, accepted the previous description. In the process of communication, the relation between the role (in which one or the other has accepted a previous description), and the aspect of the speech act (described in the second D), is indicative of the particular act performed. In terms of the description intended to be accepted, the act (eg. of relating 'old' to 'new' descriptions) is indicative of the actor.

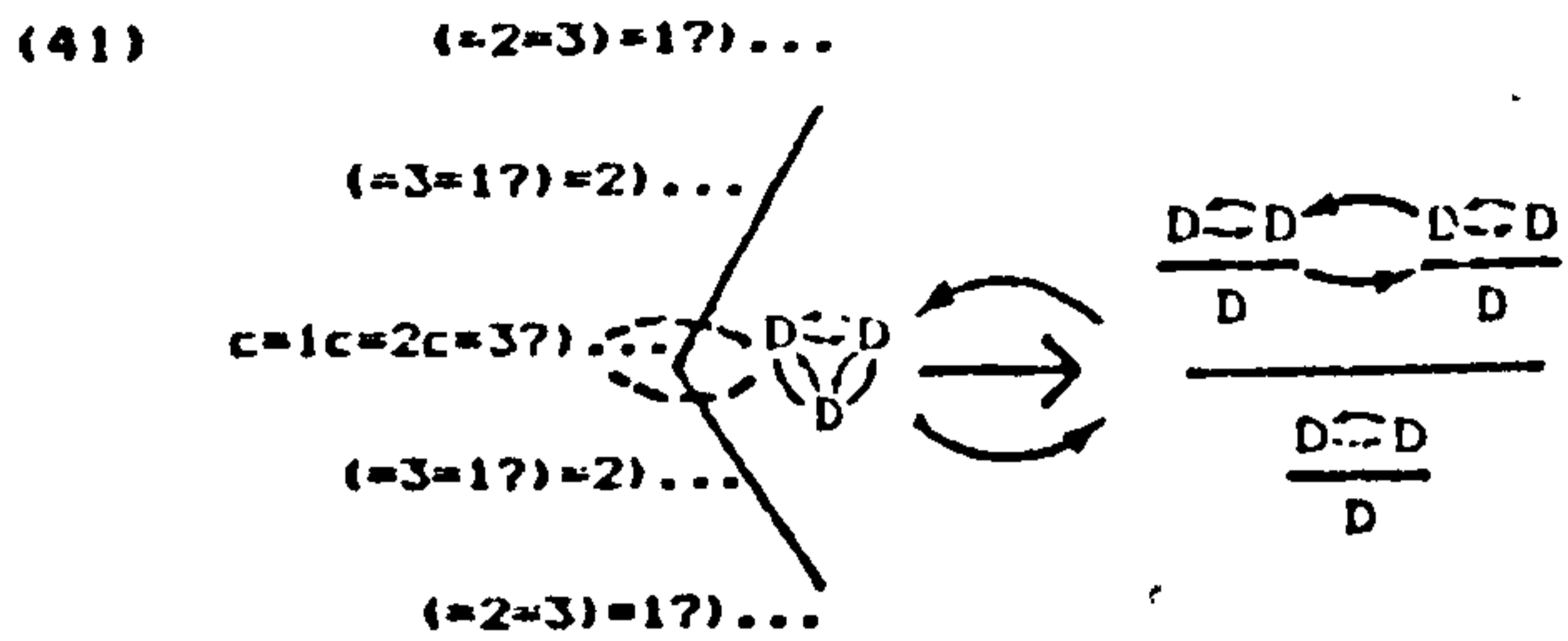
Where the time, in which the second D is distinct from the third and fourth D, is embedded in a description where two remain distinct, the second D can no longer thus be indicative of the act, and its actor. An act can neither be timeless nor separated from its actor. Deprived of the time in which it exists as an act indicative of the actor who performed it, it is reified.

In the process in which the second D is an act, the difficulty of at once questioning and accepting does not arise: an act asserts itself as an act. It does not question or doubt. Only in taking an act to be indicative of this or that, can it give rise to a question or doubt. In the process of communication, doubts are raised by one or an other, where they choose to take an act as indicative. It is in a process that one finds his beginning in an other's beginning, and, in turn, expands on the other's beginning, - as if he were expanding the second D in the third and fourth D.

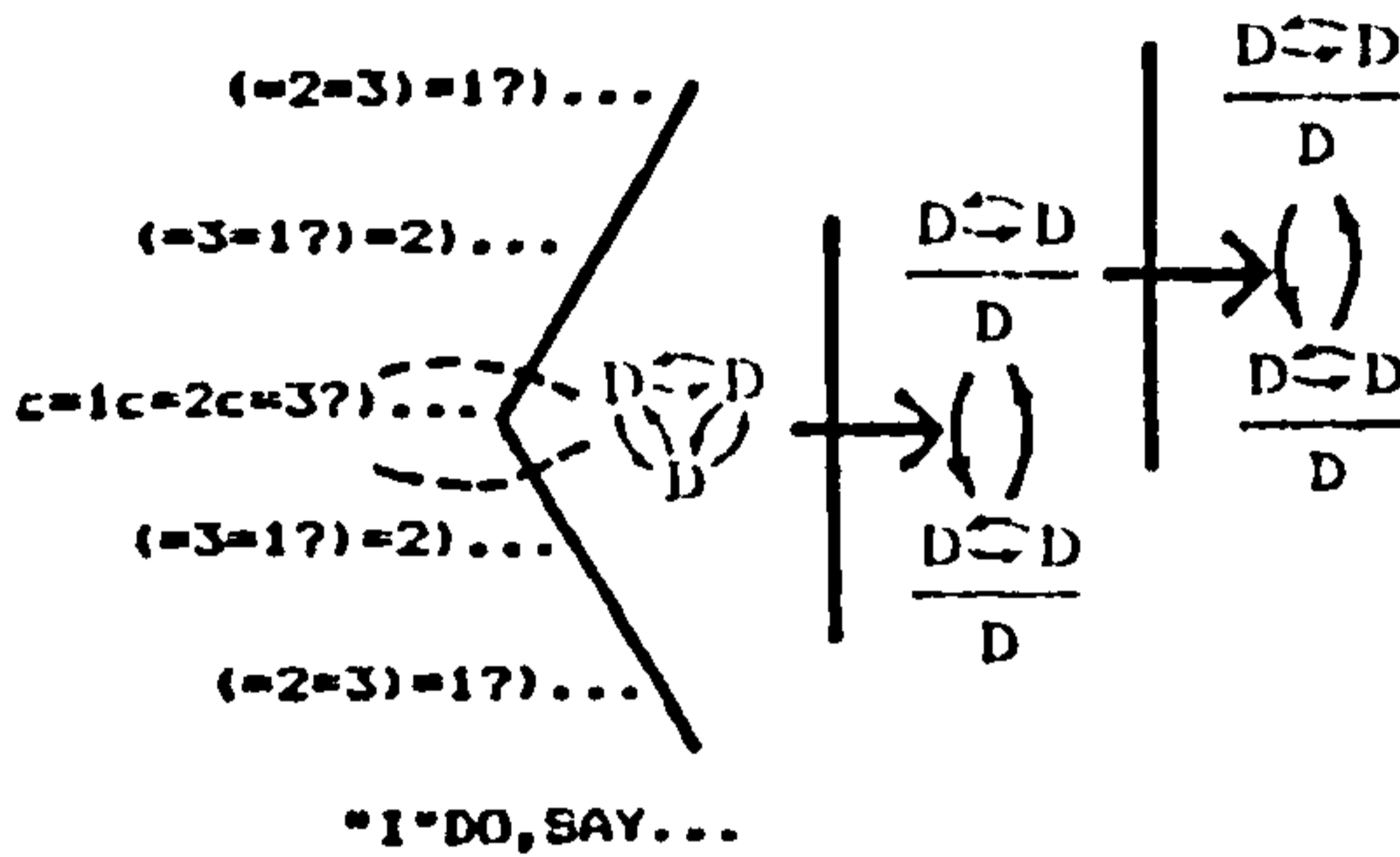
Where the time, in which an act (the second D) is an act, is embedded in a description, the reified act becomes indicative of this thing or that. In the form of speaking, the second D is distinguished as a thing, and expanded upon, or spoken about, in the third and fourth D. Thus, in the form of speaking, the third and fourth D do expand the second D. Thus a doubt is raised in the very form of speaking. (This is reflected in the reversal of saying and doing between one and an other, in which an act can be taken as indicative. It is reflected in the directionality, of the form of a description where two remain distinct, where it corresponds to what is intended to be questioned.)

The form of speaking corresponds to the form in which the observer raises a question. Just as the observer needs to accept that he has made a description in order to question it, a thing distinguished needs to be accepted in order to speak about it. In the form of speaking a thing is accepted in being spoken about

(linguistic ontology).



The reification involved in speaking about a thing thus arises in the form of speaking. It is as if the doubt, raised in the form of speaking, were raised by the thing distinguished. It is as if the thing begins to wonder about itself. Where, in the next description, the third or fourth D is expanded,



it is as if it were asking questions.

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### ONE THING AT A TIME

The form of speaking about a thing reflects the form of interpretation. Where two remain distinct, the symmetry of the description, intended to be accepted, arises in that it is taken as a description in an act of interpretation. The asymmetry, of a description in the form of speaking, arises in that it is made in one instant of time. In the prior instant, all distinctions collapsed in the form of interpretation. As a result the first D must remain covert. In the next instant, all distinctions collapse in the form of interpretation. A description is timeless. Without time the second D, in the form of speaking, cannot be indicative of the act or the actor. The need to repeat distinct instances, of the same description, arises in the timelessness of a description. In time, it will be interpreted and collapse with all distinctions in the form of interpretation.

The need to distinguish a thing, as a thing, and the reification in speaking about a thing, arise in the a-temporality of descriptions. In the complementarity between description and interpretation, the need to distinguish a thing arises in the need to exclude time and the act of interpretation, - to make a description; to say something; to say one thing rather than another.



In the processes of construction and/or communication, the single depth of interpretation allows the second D to be taken as indicative of an act, and of the role in which the act was performed. One, and/or an other, distinguish, speak about, and embed, a thing in a description in this role. What can be said about a thing is bounded by the role adopted in distinguishing it. i.e. by the particular intentions with which it was distinguished. To change these intentions, one, and/or an other, need to move on in time to interpret their description of the thing, and thus obliterate its distinction.

In distinguishing a thing, one, and/or an other, can step out of their time, and take 'time' to consider a thing, to explore a role with one intention rather than an other. In embedding time in a description, one, and/or an other, can take 'time' to consider one thing, rather than another. In appearing to raise and ask questions, a thing distinguished thus simply reflects the intentionality with which they explore a construction; the intentionality with which they unfold the time accumulated by the "I" of language. In speaking about a thing, they expose their construction in terms of that particular intention or thing.

The single depth of interpretation is reflected in the form of speaking, in that one, and/or an other, can only consider one thing at a time. Only by considering one thing at a time, exploring one intention, can they speak about a thing, and accept the distinction by which they distinguish it. In considering one thing at the time they can explore and compare their constructions in an argumentative manner.

It is in accepting a distinction that a doubt is raised in the form of speaking.

WORLDS OF THINGS IN THEIR TIMES

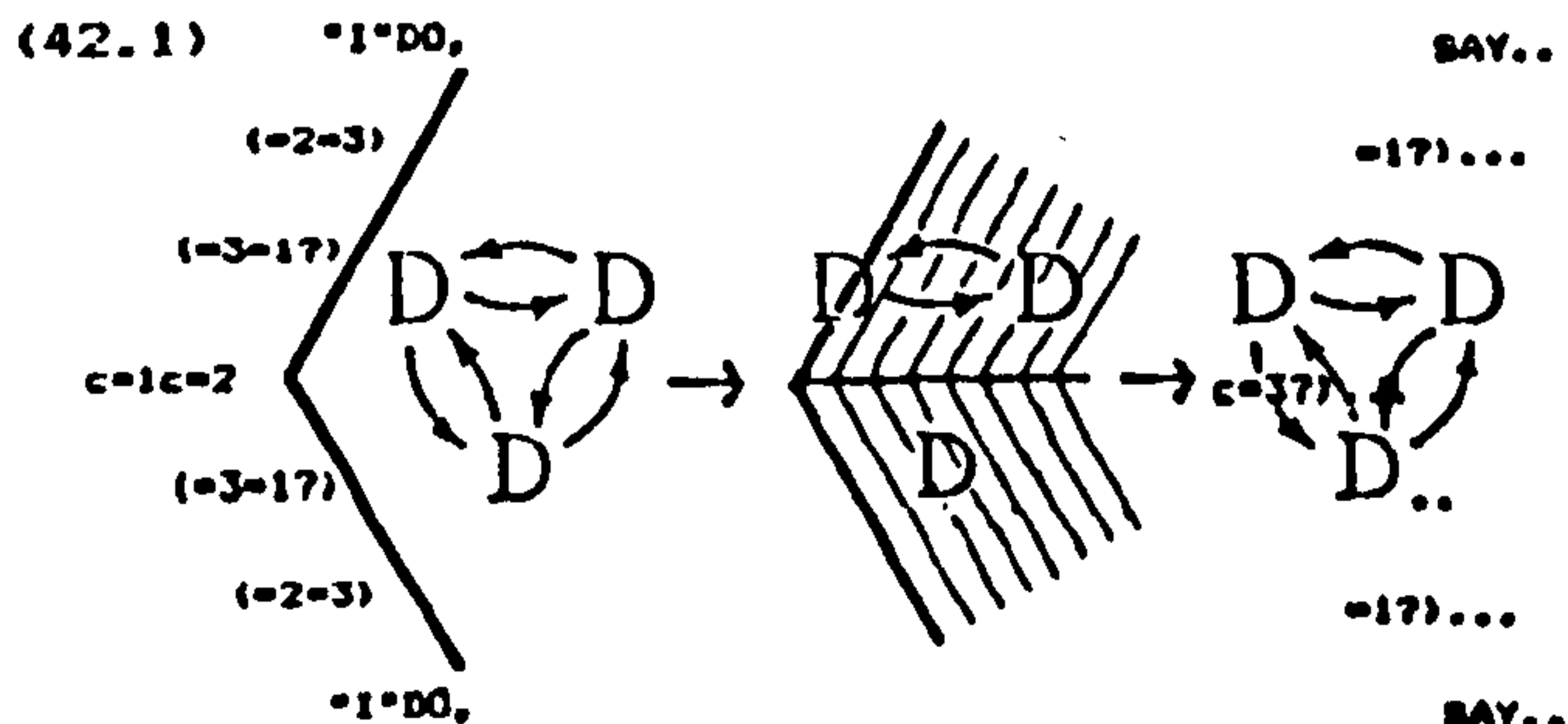
Where two distinguish a thing and embed time in a description, they distinguish themselves in a role. In turn, in making and accepting different distinctions, they embed their "I's" in such roles. Embedding their "I's" in roles, accepting a thing in this role or that, they remove themselves from their descriptions (37).

Due to the single depth of interpretation, the role in which a thing is distinguished is prior to, and distinct from, the role in which it is accepted. In accepting a thing, the role in which it was distinguished merges with all prior roles. In distinguishing things, the "I" accumulates roles, distinct from the role in which what may be said about a thing is accepted. It is thus, in accepting what one says about a thing, that he can distinguish himself as an other.

Every description where two remain distinct proposes a beginning. Every description made in the form of speaking distinguishes one thing. Where the role, in which a thing is distinguished, is distinct from the role in which it is accepted, the self-system closed in accepting it, does not merge with the "I". In the role of the "I", the single depth of interpretation thus allows one, and/or an other, to distinguish a number of things.

Where the role, in which one and/or an other distinguish one thing and an other, remains the same, the things thus distinguished are distinguished within one (aspect of the) speech act, and with one intention. One, and/or an other, can only speak about one thing at the time. Things distinguished within one speech act must thus in some sense be the same. To speak of things distinguished within one speech act is to speak of one world of things in a time.

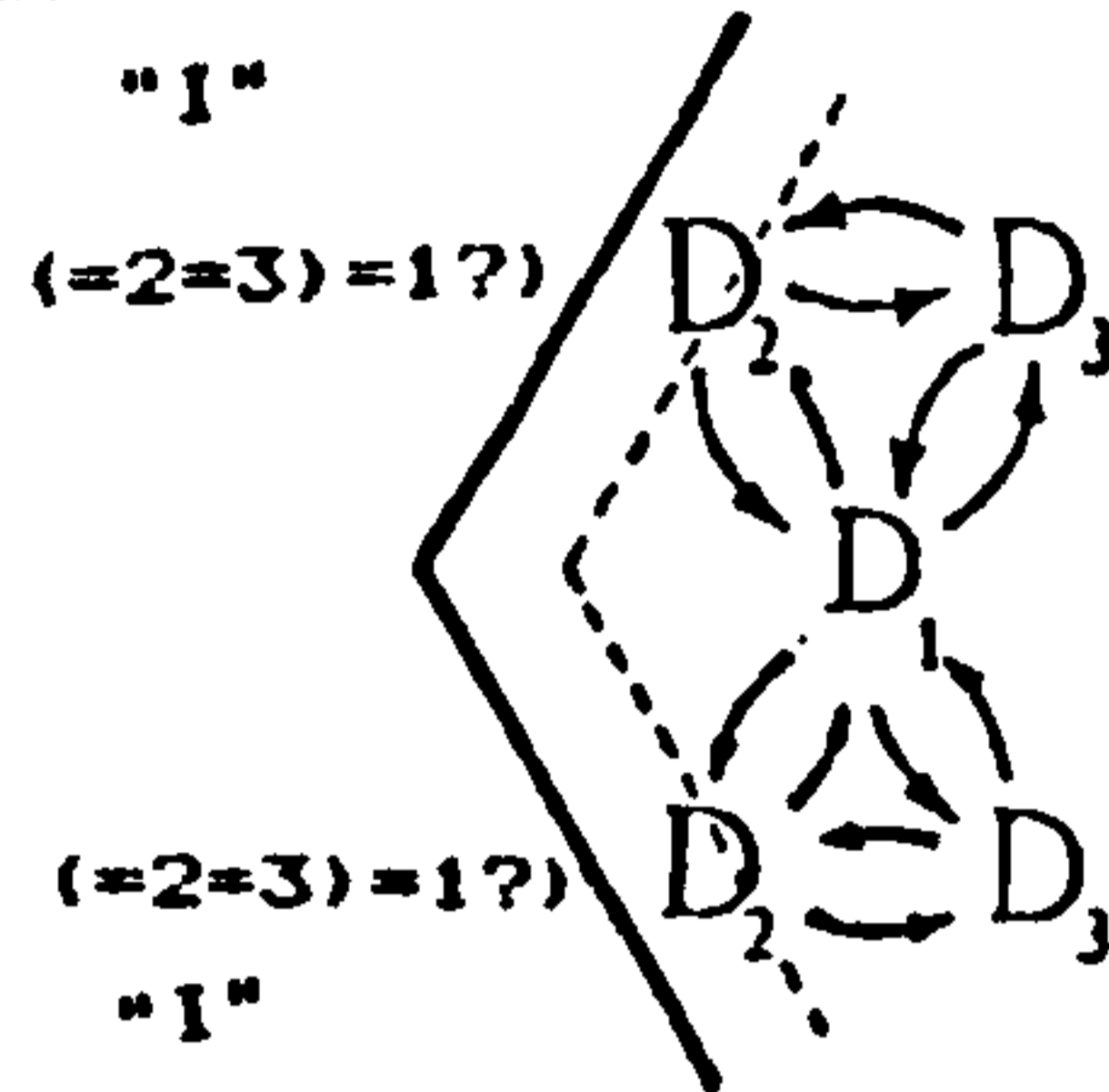
A world of things in a time is a construction, constructed by one, and/or an other, in the role in which they accept what is said, about one thing or another. A world of things in a time is constructed in a process embedded within one speech act. From the point of view of a role, a world of things in a time accumulates the time in which it is constructed. It accumulates this time in the same way as, and in one instant of, the time accumulated by the "I", the "we", or the "I" of language, i.e.



A world of things in a time is one world, just as the observer's construction

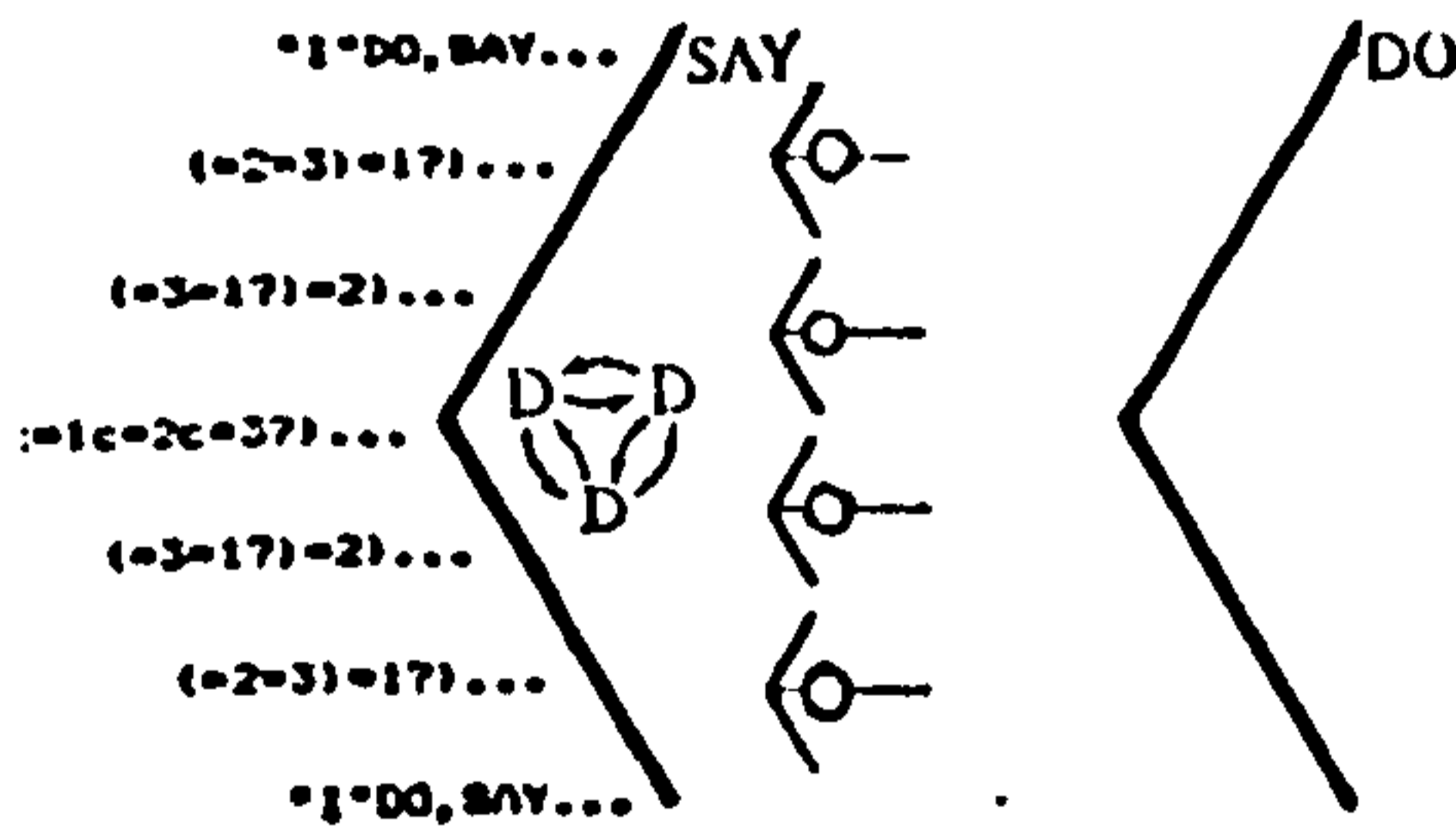
is one construction. It is a world of things distinguished in the distinction in which one, and/or an other's, "I" remains distinct from this world. It is one world, in being embedded within one instant. It is distinct, in being constructed within one distinction. In the form of interpretation, in which this distinction is obliterated, the one world collapses. Where one, and/or the other (in the role in which they distinguished it), interpret a world of things in a time, it collapses with all previous distinctions, i.e.

(42.2)



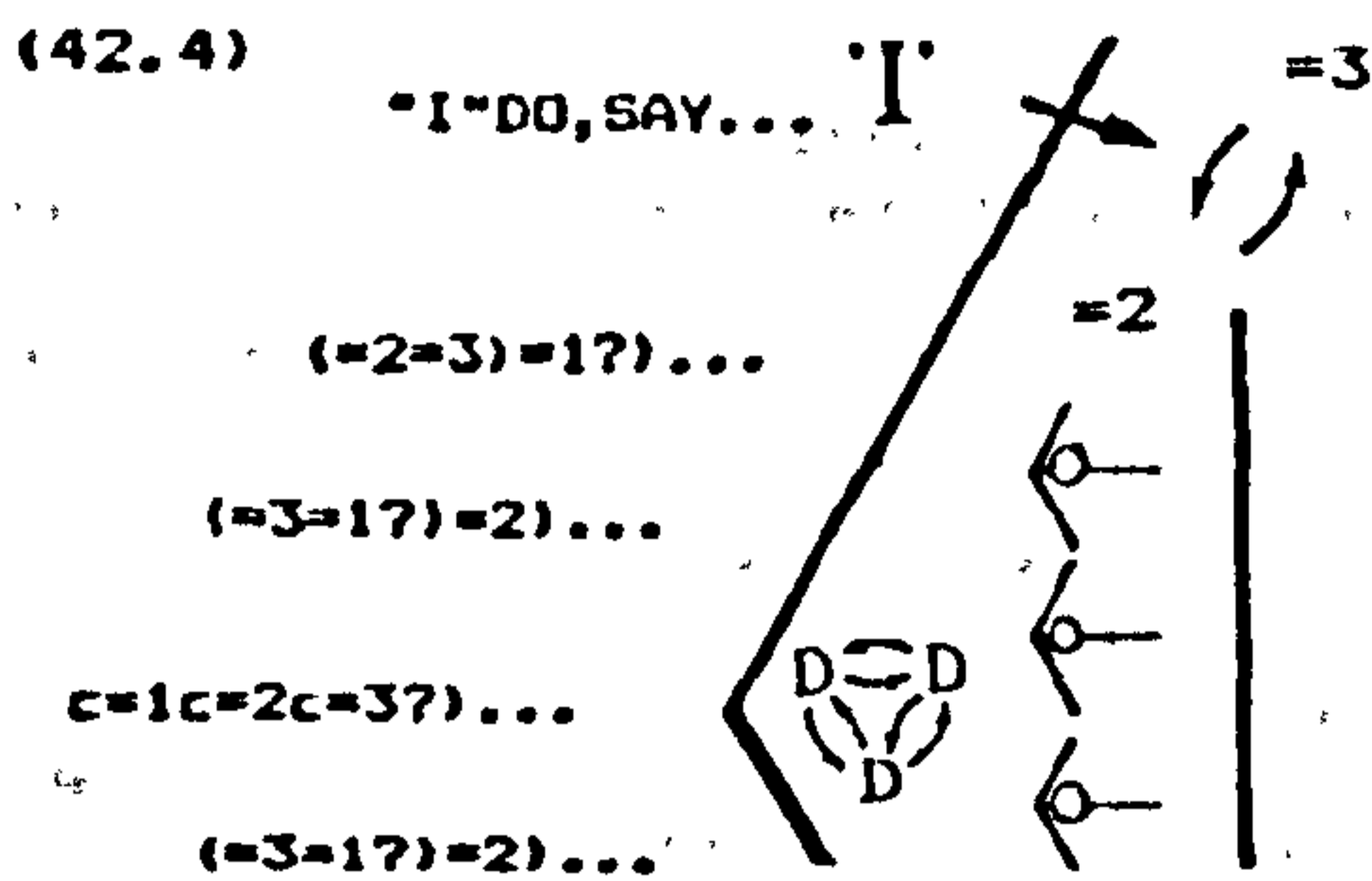
The oneness or coherence of a world of things in a time reflects the form of interpretation. The single distinction distinguishing a world of things in a time reflects the single depth of interpretation. Each thing in a world is distinguished, as a thing, in terms of this one distinction. However-many things are distinguished in a world, they are all distinguished within one speech act, from one point of view, and in terms of this one distinction. From the point of view of the role in which the a world of things is distinguished in a time, any one thing is as any other. Timeless, things cannot be structured. A world of things in a time cannot have a form, i.e.

(42.3)



Things are structured in the process of constructing a world of things in a time. They are structured in the time generated in constructing that world. In the role in which what is said about things in a world is accepted, this time cannot be distinguished. The way in which things are structured in it, cannot be spoken about. To speak about the construction of a world of things in a time is to interpret it, and hence to obliterate the distinction by which the world of things in a time is distinguished. The absence of structure, in a world of things in a time, arises in the absence of an act of interpretation. It arises in the absence of the time in which a structure could be grasped. It reflects the bounds, within which a world of things is distinguished, and embedded in one act of description; in one instant of time.

One, and/or an other, can in turn take the relation between a role distinguished, and the role accumulating "I", as a description. In so doing, they further remove themselves from their descriptions. They embed the roles, in which they accept what is said about things in a world, within the role in which they distinguished this world, i.e.



They embed the time, in which they would otherwise move on, to interpret and obliterate the distinction distinguishing the world of things. They can speak about a world of things in a time by treating it as a thing. They can speak about the role in which they accept what is said about things in a world by treating themselves as an other.

Thus embedding roles within a role, they appear to move on in time. In speaking about a world they appear to interpret this world. They appear to speak about the structure there may be between the things distinguished in a world. They appear to embed talk of such structure within the descriptions in which they speak about things. Embedding roles within a role, they only appear to move on to interpret, as there can be no time within a description. What structure they speak of can arise only in terms of an apparent interpretation.

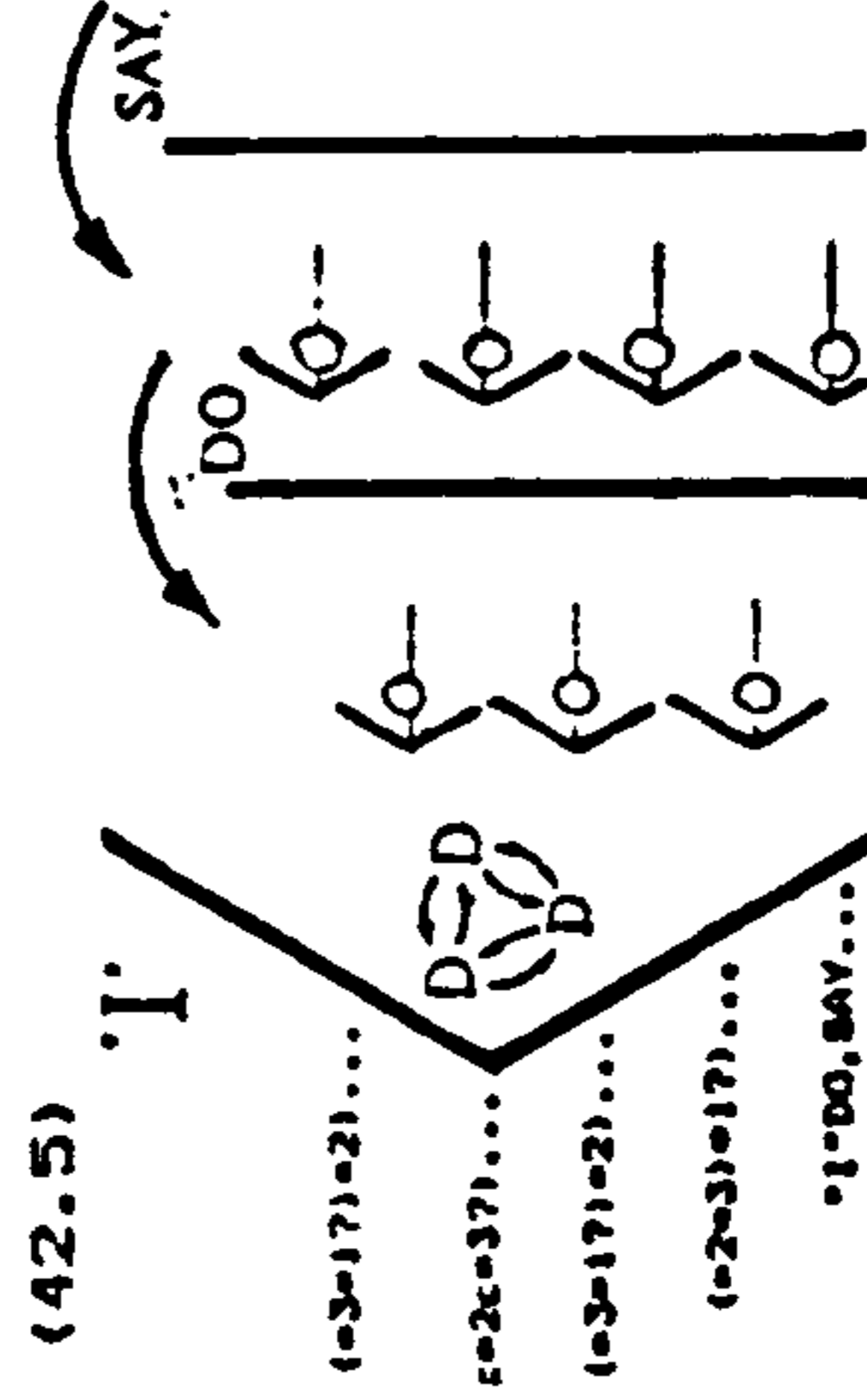
Such apparent interpretation arises where the doubt raised in the form of speaking appears to be addressed in embedding roles within a role. To address the doubt raised in speaking about a thing, one, and/or an other, need time. One, and/or an other, need to switch (=/-/=) in their treatment of the distinction in asking a question. Where all things distinguished within a world, are distinguished in terms of one distinction, such switching is excluded. In a world of things in a time, any switch in the treatment of a distinction, entails a corresponding switch in the treatment of the distinction by which the world is distinguished. It entails a corresponding switch between the role in which one, and/or an other, distinguish a world, and the role in which they accept what is said about things in this world. It is, thus, in switching between roles, that one, and/or an other, distinguish and embed roles within a role.

The complementarity between description and interpretation is thus reflected in a duality of embeddings. Where time is embedded within descriptions, one, and/or an other, need to embed roles within roles, removing their "I's" further and further from what they speak about.

Due to the absence of time in a world of things in a time, one thing cannot be taken as another. The roles of things are determined in terms of the distinction by which the world is distinguished. The distinction by which a world is distinguished thus disrupts the continuity between descriptions (24). In a world of things in a time, there can be no "I" who can switch between roles; there can be no "I" who can treat one form as another.

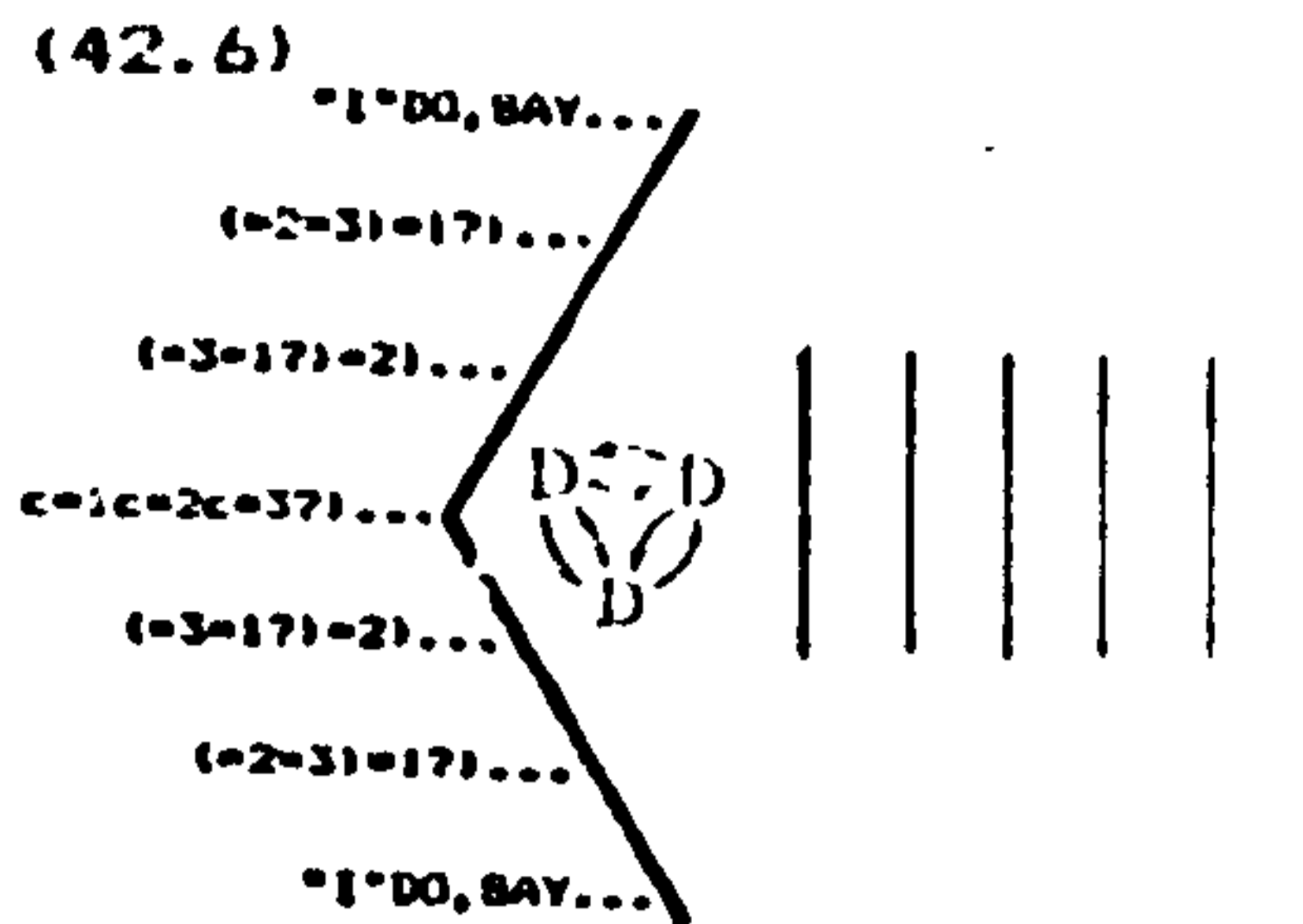
The absence of structure in a world of things in a time, reflects the absence of an "I" who can treat one description as another, expand a description to ask questions and relate descriptions. Where the continuity of forms is disrupted, there can be no structure. Where the role of a description, embedded in a world of things, is determined it cannot be expanded, and hence it cannot be indicative. Where the role of descriptions is determined, a description cannot be taken as part of another, and hence it cannot be related to another description. Where the "I" is external to a description in which one or another speak about a thing, the ability to treat one description as another, the ability to switch and relate, is external to a world of things distinguished.

To maintain a world of things, while nevertheless being able to relate things within it, the "I" needs to switch between the role of distinguishing the world, and the role of speaking about the world. To construct and speak about relations between things distinguished in one role, one and/or another, need to distinguish themselves in another role. To address the doubt raised in speaking about a thing, distinguished in one role, they need to distinguish themselves in the other role. The need to switch between these roles arises in the complementarity between description and interpretation. The switching between roles corresponds to the oscillation between opening and closing the self-system.



In switching between roles, one and/or another, treat a world of things they distinguished, as a thing. In speaking about a world, they reify it.

One, and/or another, may speak about what they said about a world and, in turn, treat what they say about a world, as a thing, and so on and on. With each role they adopt, the form of speaking raises a doubt about the thing distinguished, pressing them on, to switch to another role to address this doubt, i.e.



Proceeding thus they remove themselves further and further from the worlds they speak about. The time they embedded in such descriptions manifests itself as levels distinguishing things from what is said about them; distinguishing relations from things related; levels which separate a thing from what could in time be said about it; distinguishing a thing from what it appears to be indicative of.

Levels thus arise in speaking about a thing. They arise in the distinction by which a thing is distinguished. They distinguish the roles one, and/or an other, adopt in speaking about a thing, or about a world of things in a time. They arise in that a world of things is maintained with one intention, within one act, in one time.

Levels and the worlds they distinguish collapse in the act of interpretation. They arise in the ability to switch between one role and another, and thus reflect the single depth of interpretation. One, and/or an other, move on in time, a world (of worlds) at a time, closing their self-system over a world of (worlds of) things at a time. Opening another, they move on, from world to world, moving between worlds of things in their times.

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LANGUAGES AS ITS

Levels in a world of things reflect the form of speaking. Levels are related in speaking on one level about a thing distinguished on another. Levels are distinguished in the form of speaking about a thing. Levels distinguishing the roles in which one, and/or an other, distinguish and accept the thing spoken about, reflect the complementarity between description and interpretation. Levels distinguishing the roles in which one, and/or an other, speak about a thing or a world of things, reflect the complementarity between saying and doing.

In the form of speaking, what is said appears to expand what it is said about; the third and fourth D appear to expand the second D. This appearance arises in the reversal of saying and doing between one role and an other (rather than between one observer and an other). What is said on one level thus appears to make explicit what is distinguished on the other. What is said on one level, appears to make explicit how the thing distinguished on the other level is indicative.

Thus, any one level in a world of things can be considered indicative of the things distinguished on an other level. A language is distinguished as a thing, where one level in a world of things is considered indicative of things distinguished on another level. In distinguishing a language, the one level is in turn considered as indicative of things distinguished on another level. Such levels may be identified as, the domain of the language (one level), the language (another level), and its interpretative structure (another level). They are timeless reflections of the speech act, and the "I" of language. In speaking about a language as a thing, such identification, may in turn require another language, and so on and so forth.

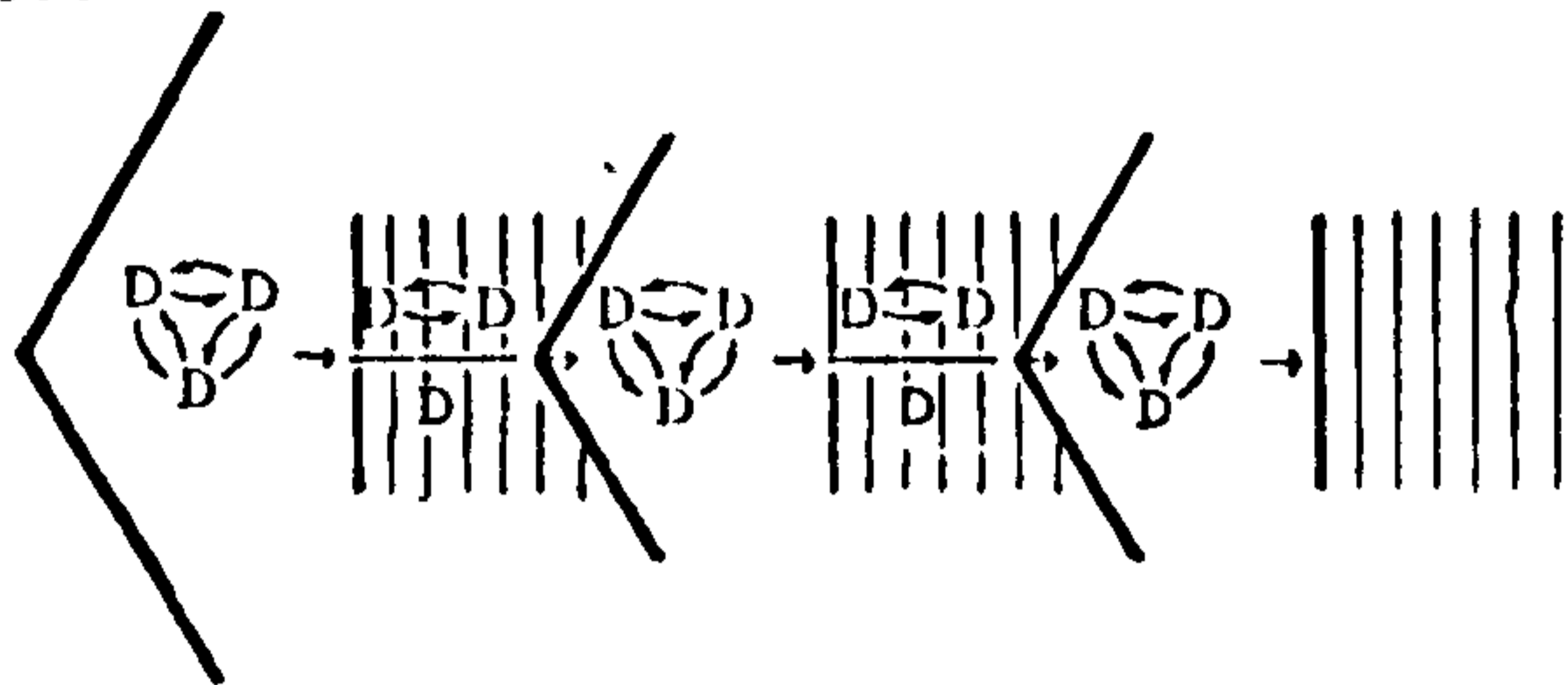
Within a world of things, and bounded by the distinction distinguishing this world, one, and/or an other, can choose to explore a hierarchy of languages. Such a hierarchy is bounded by the intention with which one, and/or an other, distinguish, and distinguish themselves from, this world of things. In exploring such a hierarchy of languages, one, and/or an other, remain within the one act, and the one instant of time, in which they distinguished the world of things; bounded by, and exploring, a single act of speaking.

What is explored in a hierarchy of languages is the form of speaking. It is the form of speaking, which presses on to address the doubt raised in speaking about a thing. There is no distinction between a language and what is said in it, except where and while such a distinction is made. Any level may be identified as either a language or a world of things in a time, and all things (levels, and languages) distinguished, merge indistinguishably in the act of interpretation. Beyond things,

there is the process in which the "I" of language accumulates time.

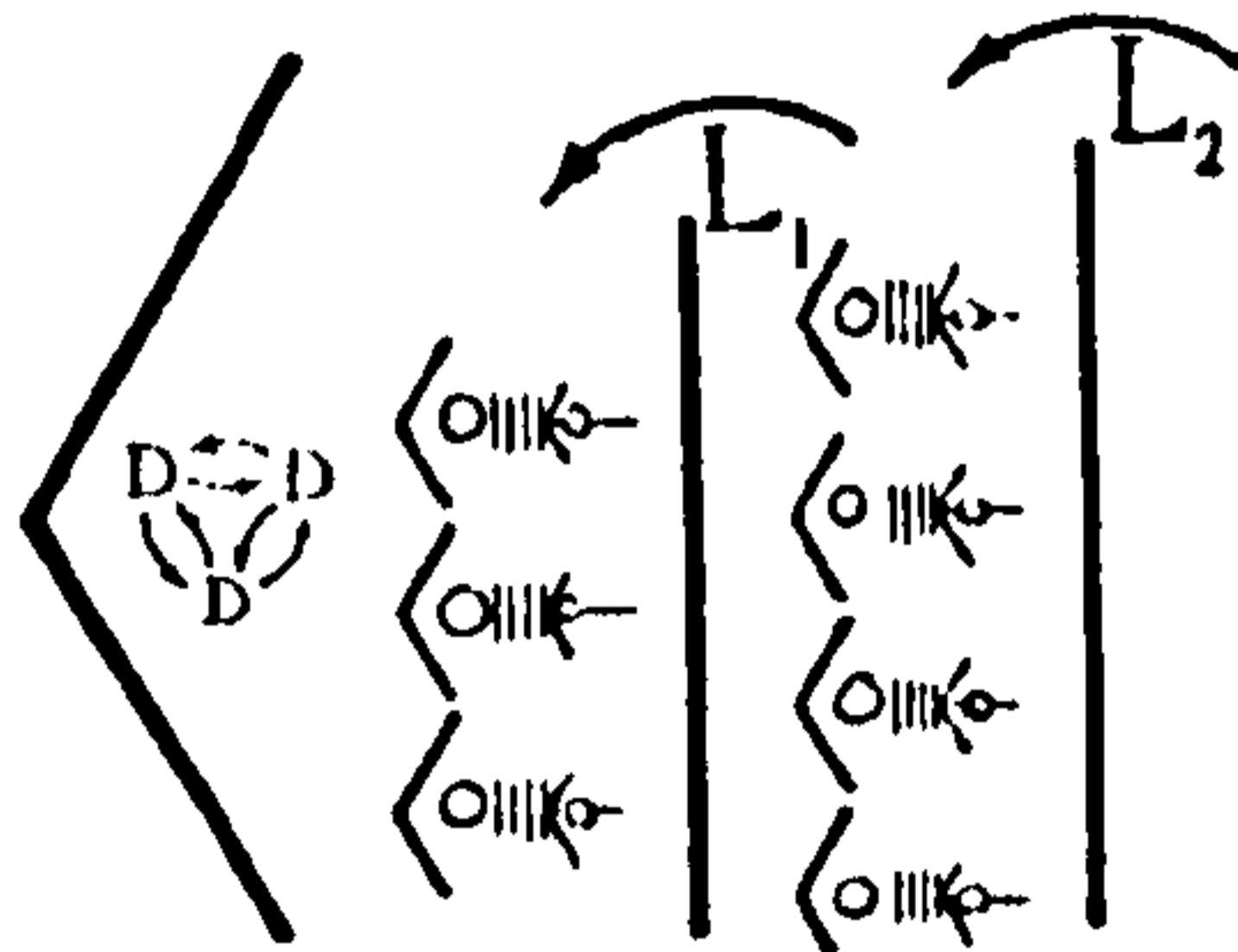
For there to be a distinction within a world, between a language and the things it is used to speak about, there must be time. There must be time to accommodate the use of a language. There must be time to construct, accept, and use, a language. One, and/or another, may construct languages within one world. They may communicate and accept such languages, and in turn use them. In the process they embed a "we" in a role, as another thing, within a world of things.

(42.7)



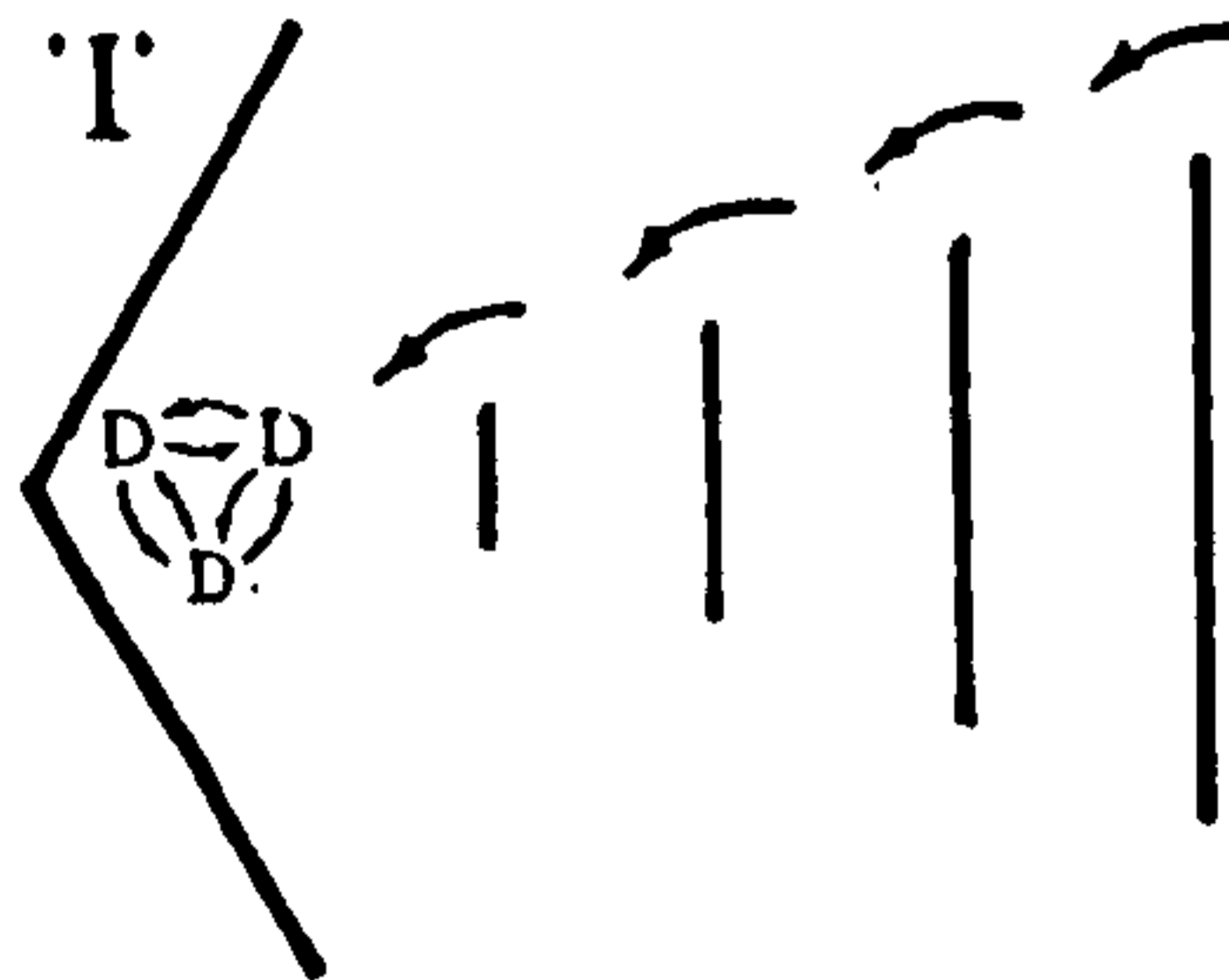
From the point of view of the role accumulating "I", there can, at any level of such embedding, be no distinction between things (i.e. 42.3). Hence there can be no distinction between, a language as a thing, a "we" in a role, and the things spoken about using a language as a thing.

(42.8)



Where these things can in turn be spoken about, the doubts, raised in distinguishing them, can in turn be addressed, and give rise to further levels within the world of things,

(42.9)



in which more languages can be identified, and so on and on.



## Agreement (267)

Speaking of an agreement (Pask 1975a, b, 1976, 1980) or a consensual domain (Maturana, 1980), and more generally any talk of a consensus, involves a twofold need to be explicit: (i) To establish the concept two come to share in an agreement, they need to speak about this (in Pask's formalism, in terms of other, similarly established, concepts) and (ii) To speak of an agreement (and more notably to establish an agreement to disagree (Laing, Philipson and Lee, 1966)) they need to acknowledge such agreement. This applies to discourse in psychology (eg. Pask considers an agreement to be the only sharp valued measurement in psychology), where the psychologist identifies an agreement (ii), and in order to do so requires the participants to make explicit or operationally establish what they share (i). Similarly, it applies to discourse in linguistics, and in particular to semantic representation, eg. the identification of meanings established by participants in a conversation (Pedretti, 1978/80, 1979b).

However, this does not (in general) apply to language or ordinary discourse, in which understanding is to be found in the complement to such explicitness; even where acceptance negotiated is accepted, the negotiation only concerns the acceptance (corresponding to (ii) above) and hence this does not, as a rule, involve a decomposition of the thing distinguished in terms of other things (but rather the distinction of that one thing). Where the descriptive predicament of having to be explicit is applied to language and the linguistic domain is identified as a domain of agreements or consensual descriptions, a language is identified as a thing, precluding a theory of communication (von Foerster, 1972), if not precluding communication itself (due to an intolerable "wasting of time"). In this connection I would like to thank Heinz von Foerster for 'requesting' the substitution of "do not" for "agree not to" in "The terms in which a thing is 'explained' are terms we agree not to question." (Pedretti, 1980). - Perhaps, my perplexity when I found myself answering "I agree..." explains the mistake: I do!

## Alive (105)

Varela, Maturana and Uribe (1974).

## Ambiguity (21, 147)

Ambiguity arises with regard to a description or descriptive framework (see 'ambiguous'). In this connection it is important to distinguish indeterminacy (where there is no way of knowing) from ambiguity (where we don't know which of a known set of options). Similarly, we may SPEAK of an ambiguity with regard to the continuity in form between descriptions. But, such an ambiguity only arises where we consider (in another description) how a description is or could be treated. Hence an ambiguity arises only where such another description becomes relevant to someone or other. However, since a description must be relevant to be made (and treated as such (is relevant)), such another description is (in most cases) not relevant (to the one making a description or the one treating it

as such).

#### Ambiguous (80)

A description can only be deemed ambiguous with regard to the descriptive framework, in which its possible interpretations are specified; it is thus considered to be ambiguous by analogy to other descriptions, which it may resemble, but from which it is distinct. Hence the "ambiguity" does not arise in the description, but in the analogy, eg. in the descriptive framework in which certain descriptions are considered to be the same. (see also 'ambiguity'). But while ambiguity arises in a descriptive framework (eg. a grammar, or a semantic representation), such descriptive frameworks are often justified in terms of the need to account for ambiguity! (eg. "... the explanation of ambiguity is an essential task of a semantic theory ..." (Kempson, 1977); or "... the listener will interpret it immediately in a unique way, and will fail to detect the ambiguity. ... Nevertheless, his intuitive knowledge of the language is clearly such that both interpretations (...) are assigned to the sentence by the grammar he has internalized in some form." (Chomsky, 1965).)

#### Analytic (85)

I do not wish to distinguish a complementarity between analytic and synthetic descriptions from the complementarity between description and interpretation; the intricacies of speaking about analysis, analytic, analytic truth and the like, being, I hope, illuminated, rather than obscured by the removal of this excessive distinction. I use the terms relatively, and in connection with the complementarity between description and interpretation, - in that 'descriptions' support the analytic by excluding interpretation. (to quote but the bones of a passage (I have quoted before (1978/80))): "...to ask, 'Is the judgement "x is y" analytic or synthetic?' ... WOULD be the merest common sense IF 'meanings' were things in some ordinary sense which contained parts in some ordinary sense. But they are NOT." Austin (1970)).

#### Any (143)

The observer's ability to grasp himself in a, and any, pair of P's, i.e. in the form in which he grasps himself, coincides with what we can speak about, i.e. the form a, and any, description has, by virtue of which it is a description (and thus the difficulty lies in distinguishing himself, - as a particular and distinct observer). The exclusion of unfolding, of a, and any, distinction (compare Pask (1977/81), suggests that the form of grasping (the form of interpretation), complementary to the form of distinction (Spencer-Brown, 1969), is, to say the least, similarly fundamental.

This suggests that an a-any (instantaneous) grasping of a form and an a-(some)-all 'process of grasping' a form, can be considered as complimentary. The two may in some respects come to one, and (one involving distinctions) may be difficult to

distinguish, but, they must surely differ in attitude: what is grasped in an a-any manner, is grasped in the form of acceptance (i.e. the ontological aspect of the complementarity (von Glasersfeld, 1980)), while what may be grasped in an a-(some)-all process, is - or would be - grasped in the form of an agreement between descriptions distinguished (i.e. the epistemological aspect of the complementarity). The difference in attitude may be more or less successfully described in terms of (more or less) open-mindedness about what is grasped (being accepted or known) (given the same degree of 'ontological security'). The reification in generalising, however, would appear to arise only in to the latter case, - at least as long as what is grasped in the former is not in turn spoken about..

#### Applying (21)

The notion of application implies a distinction between what is applied and that to which it is applied. Such distinctness characterises artefacts and tools: just as a hammer is distinguished from the nail to which it is 'applied', description(building abilities) are distinguished from the description-(building abilities) to which they are applied (using one to describe the other). Where thus a tool, method, instruction, or rule is distinguished from that to which it IS applied, this distinction remains dependent on the particular intention with which it is distinguished. Beyond the particular intentions for distinguishing them, the two remain complementary (see also "On the function and existence of language"). This is often overlooked or forgotten, giving rise to the excessive distinctions which permeate our conceptions of language (eg. Bergstein's (1974) application (!) of the discussion of complementarity in physics to ordinary language). Beyond particular constructions, the coincidence and continuity between descriptions of our description(building abilities) (von Foerster, 1973a) may thus be sought under the motto "Against Application": for the "reality" in the coincidence of the described and describing (the instructions and the instructed, the rules and the ruled, the saying and the doing)! (A motto, intended to put off the sales-men of opportunist instrumentalism and false promises.)

#### Artefacts (145)

I include 'artefacts' in an attempt to counteract the restriction of our description building activities to such things as 'propositions' and 'sentences' which arises with the pre-occupation with truth and reference and the thereby assumed distinction between language and 'the world'; - a pre-occupation which might be considered obsessive, in having rendered it necessary to point out that we do, for instance, make statements (rather than 'sentences') (Strawson, 1950), or give commands (Rescher, 1966) more often than 'propositions' (see also 'say/do' and 'speech act'); what 'meaning' I still associate with the notion of 'meaning', I owe to Peter Maranghi, a bricklayer, who warned me "It wasn't meant for that!"

observing the limitations in a ladder (I had made...?): (see also 'design' and 'artificial')

#### Artificial (71, 106)

Like 'artefact', I use 'artificial' in the general sense of made (or created (and hence 'art')) drawing attention to the making. In our endeavour to construct, making is, of course a, if not the, natural activity, and hence possible negative connotations of 'artificial' arise in mistaking as opposite what is complementary. In this, as in so many other connections (if indeed they are distinct), I am indebted to Lars Loeffgren for pointing out my carelessness in drawing (artificial) distinctions for the sake of delimiting what I wanted to speak about; what, from his comments I learned that I could not.

#### Attention (83)

Kallikourdis (1981) discusses "a process which creates the Identity of the object of attention".

#### Black Box (27)

In terms of a distinction between first and second-order cybernetics, Glanville (eg. 1979b, 1980) provides the grounds for distinguishing an explicitly second order discussion of the black box. But the distinction between first and second order discussions of the black box is difficult to draw, and such labelling may amount to no more than saying 'more explicit' or 'more recent', eg. von Glasersfeld (1980), can be considered as a second order discussion of the black box, as much as, it is a second order discussion of feed back; and the notion of the black box in, eg. Jones (1970/81) corresponds to that of a second-order discussion. The difficulty is twofold. Firstly, the second-order discussion of black boxes can be considered as the (a more silent) complement of the second-order discussion of distinctions (see 'distinctions'). Secondly, (see "Paradigm and the Black Box") such second-order observations, are by no means absent in early introductory texts (eg. Asby, 1956, Pask, 1961). They are implicit, and made explicit, in the very notion of the black box. (In this context, it may or may not be necessary to point out that I use and discuss the black box in a linguistic (description building) context.) .. and what about the Little Prince, then? (eg. St. Exupery, 1943).

#### Change (85)

eg. phenomena discussed in Lakatos and Musgrave (1970), fall within the "I" of language and arise in the forms I discuss; with regard to the use of complementarity between saying and doing in such development, see de Zeeuw (1979b, c, and 1980).

#### Closure (20)

(see also 'self-reference') Recent 'cybernetic' discussion on closure can be seen as eg. beginning with the autopoietic characterization of the living organisation (Varela, Maturana and Uribe, 1974), arising

in the context of the work carried out the BCL (von Foerster, Ashby, Maturana, Guenther, Pask, Loeffgren and many more, see BCL Fiches); Pask's (1968, 75a,b, 76) notion of 'organisational closure' of a coherent domain (as a whole), and the local closure ('local cyclicity') over the production and reproduction of concepts (and topics) in this domain; Varela's (1975) extension of Spencer Brown's (1969) calculus, with the form of self-indication (self-reference), developed to an arithmetic of closure (Varela (1976), Bougen and Varela (1978)) and to the one-sidedness of distinctions (Blaville and Varela (1980)); and the complement 'openness' (eg. Pask's (eg. 1977/81) 'informational openness', and Braten's 'dualities' or 'multiple views' complementing 'meaning tightness' (eg. Braten (1980) and Braten, Jahren and Jansen (1978)). In this connection, I use 'one' or 'oneness' for the whole, in the severance of which (distinction), complementary aspects are perceived, and which itself, perceived as one, is (has an existence) complementary to thus being severed.

#### Coherence (136)

Coherence, as a complement to distinctness, arises in grasping (i.e. the form of interpretation) and may be paraphrased as the one and the sameness in which a pattern is grasped. See 'closure', and in particular Pask for the treatment of coherence in terms of organisational closure.

#### Coincidence (65, 66, 70, 88)

Perhaps the difficulty with the notion of 'coincidence' only arises in the need to distinguish what coincides (Blaville, 1977/81), and as such is a difficulty only in being spoken about (eg. rather than being different, the same needs to be treated as different in speaking).

This is reflected in the circumstance that the coincidence of 'the language' with 'the meta-language' presents no difficulty, but for our 'descriptive' activities (eg. Pask (1968), Loeffgren (IOW 549) Pask (IOW 550)), to which, in continuity between descriptions (von Foerster (1976), it is rather essential (Pedretti, 1980). The difficulty similarly arises where in speaking (eg. the notion of 'description') a distinction (or "sharp separation", Bohr (1949)) between the described and the describing (the measuring instruments and what is measured) is required, but not possible.

As such, the notion of coincidence becomes central to 'methodological' (see also 'applying') considerations in the description of our descriptive activities, and needs, alas, to be spoken about, despite the initial difficulty (the only alternative being to adapt our curiosities to what can be spoken about, - in which case, of course, we adopt an ontology in which 'the same' IS 'different').

Here it is necessary to underline that a 'methodological' criterion of coincidence (eg. de Zeeuw, 1980), coincides with the criterion of coincidence used in the processes, the description of which requires me to speak of such 'method':

what I say, concerns my 'method' as much as it concerns these processes.

For instance, beyond "shoulds", my integrity is judged in terms of the coincidence between what I say and what I do, be it in what I say in doing (or do in saying), be it in what I say here and do there, or be it in what I do and say on one occasion and on any other.

Thus, a 'methodological' criterion of coincidence (for the description of our descriptive activities) has a 'pragmatic' plausability, where it is unavoidable, being a basic (not to say 'the natural') criterion in our judgements and attempts to make sense.

It may have a 'psychological' plausability (which under the requirements of 'description' might have been deemed a weakness) both in the coincidence of 'man-as-scientist' (Kelly, 1955/63) and in the resemblance of this criterion with an apparent psychological requirement (the endeavour to construct a coherent picture) which lead to phenomenon of "dissonance" (Festinger, 1972) and the need for "assimilations" and "accomodations" (Piaget, 1972).

Similarly, it may have an 'epistemological' plausability (. But), where in each of 'these' plausabilities, we distinguish a particular aspect of our description building abilities, we use our description building abilities. In the inevitability of so doing (von Foerster, 1972, 1973a) it formally imposes itself (as an epistemology, perhaps): bound to describe, it is only in describing description, that there can be some confidence about what form we discern.:

Consider for example

"...4. Determine if the components that constitute the boundaries of the unity constitute these boundaries through preferential neighborhood relations and interactions between themselves, as determined by their properties in the space of their interactions. If this is not the case, you do not have an autopoietic unity because you are determining its boundaries, not the unity itself. ..." (Varela, Maturana and Uribe, 1974)

I am not here concerned with the resolution of the doubt, but only with the possibility that it can arise: The piece of confidence I have in mind arises in the circumstance that no such doubt can arise where the form I give rise to in describing and the form I describe (i.e. the form I give rise to in describing), coincide.

Beyond the suggestion, that it is (anchored) in this piece of confidence that the construction of a language can coincide with the construction of the world described (as it does in design (Jones, 1970/81)), that the communication of the language can coincide with (the perception of) what is communicated (eg. compare Bohm, 1969), and that we can have confidence in the distinctness of things we distinguish, (imposing itself as an ontology, perhaps), I can only underline (Pedretti, 1980) that, however this may be, these processes do coincide where the language is the meta-language.

A final point concerns the locus of such coincidence in grasping a (one and any) speech act: obtruse as the special concern

with the coincidence of 'the form I give rise to in describing and the form I describe (i.e. the form I give rise to in describing)' may be, it is but a special case of the possibility of a coincidence between what I do (eg. describe) and what I say or address (eg. description); a special case of the possibility of the "self-indicativeness" of the speech act (compare eg. Varela (1975) who describes this as "... being self-indicative in a given domain, in standing out of a background by their own means, in being AUTONOMOUS..."). In this sense, the coincidence between aspects (distinguished!) of any speech act implies closure, and in such closure, indicativeness within any one act.

Where it is absent, it is in terms of the possibility of such coincidence, that doubts or questions can be raised (in an endeavour to establish coincidence). Where indicativeness is thus established within, (what in so doing is treated as) one speech act, (resulting in more or less confidence in anything from the form of descriptions to, eg., a politicians promises), my curiosity has been one in which the coincidence between what I say and what I do should be apparent throughout, - I hope not too repetitiously so.

#### Complementarity (87, 144)

The notion of the complementarity between description and interpretation, as well as the development from Bohr's (eg. 1949) view of complementarity as exclusive to a productive and generative notion of complementarity I owe to Loeffgren (eg. 1978, 1980). (see also 'closure' 'coincidence' and 'time'). I am indebted to Stefan Rozental for his attempt to introduce me to the intricacies of the notion of complementarity in physics, and I would like to thank Lars Loeffgren for the many inspiring discussions on this topic, and the many challenging questions, about most of which I will long remain wondering. Amongst these, a question, whether there is or can be more than one complementarity, stands out in my mind. While I fail to grasp it, I suspect much of what I wrote must have been in an attempt to do so... However, this is not to suggest that they agree with what I have done with what they tried to convey (when, at a stage in its development, this threatened to become a thesis on complementarity, I decided that this was beyond the scope of this thesis).

#### Construction (131)

see 'coincidence' and 'epistemology'

#### Cybernetics of Cybernetics (19)

see von Foerster (Ed) (1974) (see also 'second order cybernetics', 'closure', 'self-reference')

#### Cyclic Relations (141)

The form of 'local cyclicity' in the stable production and reproduction of concepts, is due to Pask (eg. 1968/73, 1975a, b, 1976), and corresponds in form to the schemes developed by Locker (eg. in (1978a) viz the "overall triadic relations

'between the dyadic relations amongst domains' of cognition, conversation and self-reference; either of which domain is in turn seen as such a cyclic relations, between system, observer and designer; speaker, hearer and theme; respectively between "'self 1' looking on 'self 2', looking on 'self 3'" (my translation) and similarly in Locker (1979) viz. designer, system and observer, viz. system, observer and model; and viz. system, model and simulation). Similar forms arise in the "Diagrammatic Evocation of a Hierarchy of System Levels" in Gougen & Varela (1978), (see also 'ideograms' and 'examples').

#### 'Descriptions' (84)

In the first instance, the quotes are an arbitrary notational device for distinguishing 'descriptions' the 'interpretation' of which is determined, from descriptions which may in time be interpreted. (Similarly arbitrary quotes are used to distinguish "descriptions" in which indeterminacy is removed in coincidence.) (In the sense that indeterminacy in 'interpretations' is removed in descriptions (prescribing), this bears on the use/action distinction, - which, in the continuity between descriptions, remains indeterminate (but with regard to actual 'uses'...).

#### "Descriptions" (97)

i.e. descriptions, see 'descriptions' and 'coincidence'

#### Design (150)

I am greatly indebted to the Architectural Association, and in particular to Graham Shane, Ranulph Blunville and Leon van Schaik (amongst many others), for teaching us design as, and in, an open, and unde(pre)scribable, process.

In this sense, most of what I say about language, I say equally about design (eg. where the designing of (a) language is the language of designing). The difficulties in speaking about design are (at least akin to) the difficulties in speaking about language. Thus, the near emptiness of most uses of 'design' can be seen as arising, for instance, in mistaking the product for the process (the reification involved in speaking), and overlooking the particularity of correlations between intentions and designs (the mutual interdependence between the function and existence of a language).

In the emphasis on doing (i.e. on designing) rather than saying what is (to be) done, architects, for instance, are apt to (recognise the need to) pass things over in silence, and there is a healthy tendency to consider the rationalisation of what one is doing as no more than a helpful 'ladder' (in Wittgenstein's sense (1921) 6.54) in developing and exploring a particular design (eg. in processes shown in (14), (33'), (34')). Similarly, teaching architecture can, and in my experience did, proceed much as Wittgenstein proposed in 6.53. ('see also artefacts').

Where I suggest that the difficulties in speaking about design are (at least akin to) those of speaking about language, they



seem to be those of cybernetics (silence bound from the outset); the virtual emptiness of the notion of 'design'; the proliferation of solutions and applications; the switch to "designing designing" (eg. Jones, 1979); an invisibility (silence) in what is said about design (eg. Russell and Powell, 1981, suggest that the significance design models have for their designers differs substantially from the significance they have for other users); and the coincidence (corresponding to that) between 'first order instructions' and 'second order observations' (eg. in Jones 1970/81); - all go to suggest a coincidence...

...between what I have distinguished, and treated as distinct in thus speaking about 'design' 'language' and 'cybernetics'.

(an autobiographical coincidence

they coincide in the form of interpretation . my interpretation . I negate(d) their coincidence in distinguishing them . I negate their distinctness in asserting the coincidence .

(a coincidental autobiography

coincide in the form of interpretation my interpretation . my coincidence . coincidentally I am me.

(a coincidental autograph.))

In this connection, compare de Zeeuw (1980), - for the possible distinctions.

Distinctions (49, 131)

Spencer Brown (1969) is, amongst many others (eg. Pask (eg. 1977/81), Bougen and Varela (1978), Braten (eg. 1980)), discussed and developed in Varela (1975, 1976, 1979) who augments the calculus with the form of self-indication (see also 'closure'); Howe and von Foerster (1975) who illuminate the reasons for doing so; Kallikourdis (1976) who raised the question of the distinction of the space in which a distinction is drawn; Blaville (eg. 1979a) who extends this question to include the distinction of the agent and the distinction between mark and value and suggests the one-sidedness of distinctions; and in Blaville and Varela (1980), who show such one-sidedness concerning the distinction of the elementary and universal (and hence 'closure').

Informally (and this may be taken as it may), Spencer Brown's construction ("draw a distinction") is often interpreted as an epistemological initial (the form, "we cannot make an indication without drawing a distinction"). Such informal interpretations differ, in(volving) time, from a formal treatment of the calculus. In taking this difference into account, I hope to explore this form, as a form in time.

Distinguish (131)

see 'distinctions'

Do (69), Doing (139)

see 'Say/Do'

### Ego-centrally (155)

see eg. Piaget (1972). Note, however, that in the interaction between the processes of construction, communication and argumentation, between which I (need to) distinguish (as a matter of exposition) this is not to suggest a direct correlation between these processes and developmental stages.

### Epistemologically (43)

In the first instance, I adopt a relativistic - constructivist view (eg. Wittgenstein (1921), Kelly (1963), Festinger (1972), Laing (1966), Piaget (1972), von Foerster (1972, 1973a, 1976) von Glasersfeld (1974b, 1977, 1980), Blanville (1975), Pask (1975a, b, 1976)), compare also p. 131. However, the interaction between language and epistemology (if the two are indeed distinct) leaves no little (or any, see "Language is..") space for such a choice (Pedretti (1978/80)). I explore their coincidence.

Even if the choice of an epistemology were to be determined on purely descriptive grounds, only a constructivist position can, beyond the prescriptive, lead to a theory of language (see von Foerster, 1972). Moreover, if a criteria of simplicity (Ockham) could be distinct from a constructivist theory of language (and were distinct from (the criteria of) coincidence), such a criteria would strongly support the continuity between descriptions...

### Ever-growing (1)

von Foerster (1973b), Blanville (1975), compare also Loeffgren (1976); see also p.152., i.e. I try to capture this notion with the notion of accumulating time.

### Ever-changing (10, 80)

I am indebted to Lars Loeffgren for pointing out the possibility of describing natural language in terms of the process of developing a hierarchy of artificial languages (see, eg. Loeffgren (1980), and eg. Kripke (1975)). If there is a difference, it lies in the curiosities pursued in the process of language, respectively the curiosities, the pursuit of which gives rise to an ever-changing hierarchy of languages. (See also 'hierarchy of languages' and 'Logician and Linguist' for the difficulty in speaking about (and a possible) difference in curiosity).

### Exclusive (8)

see 'Complementarity' and for the connection with time, eg. Guenther (1967) and Braten (1980).

### Example (62, 90, 237)

In the coincidence of the described and the describing, a thing (or description) is an instance of itself. In the continuity between descriptions examples arise in connection with a distinction (or level, embedding time). Thus, helpful as examples can be in illustrating what can be spoken about, they are, in the first instance,

bound to be misleading, in what can be said; and thus in the text I give but the text itself as an example (simply to avoid such limitations).

More than an example, Lewis Carroll's (1865) Mad-Tea-Party, is what I set out to 'account' for, and what provided the guidance I often needed to resist the temptations of descriptive idealisations and reifications; contrived as it might be, I take the stance that it provides a minimal instance against which to assess the adequacy of linguistic theorising (of so much concern to recent linguists (eg. Chomsky 1965)).

In the next instance, however, there is an abundance of instances which could be pointed to, - were it not that such instances speak for themselves (and in so doing, perhaps belough being pointed to). Where in these notes I try to give examples, I doubt that there is any point in doing so (see also 'design'); and I suspect, that "my" only examples are those, mostly literary, in which others have managed to say what I have tried to say, far clearer than I could.

#### Existence (108)

Epistemologically speaking, the existence of a thing arises in a description an observer (eg. Glanville, 1975) makes of it. In the continuity between descriptions (von Foerster, 1973a) there can be no given distinction (another description) between descriptions (eg. explicitly made or presupposed, see 'relevance' and 'ontology'). Such a distinction arises in the act of speaking about one thing and passing other things over in silence, and hence depends on our curiosity and what we choose to speak about, respectively pass over in silence. The notion of a 'linguistic ontology' (Pedretti, 1980) imposes itself, where it is just such an act of distinction which distinguishes what is said to exist, epistemologically from what is said to exist ontologically speaking!

#### External Observer (92)

cf. Pask (eg. 1961, 1975a, b)

#### Familiar forms (19)

eg. metaphors and analogies (see eg. Pask, 1978b) (see also 'form')

#### Forgetting (40)

I use 'forgetting' in an attempt to point to a difficulty in speaking about memory (especially in analogies made to the storage of data in machines). The notion of 'techunking', and Pask's notion of 'condensation' (eg. Pask, 1968, see also Pedretti, 1978/80) come some way in overcoming the difficulty of assuming the presence of some representation in speaking about what is remembered. The difficulty lies in allowing for the possibility of an absence of any representation (compare the playetan notion of 'occultation' (eg. Wernus, 1981) in 'memory', - prior to a re-construction of a representation in re-remembering; in speaking about what is remembered (or in wondering what I am remembering) just such a re-representation is

involved. (Beyond this simple point, I do not here wish to consider the extensive literature on memory; relevant papers by von Foerster and Dianville are referred to in other papers of theirs I quote.)

Form (70)  
Formally (150)

I speak of 'the form of speaking' ('the form of interpretation', etc.) in the sense I attribute to Wittgenstein's notion of "structure of language" (i.e. to avoid just the difficulties I discuss as arising in the different notions of "structure" (see p. 10/11). I try to show (throw some light on) the nature of this form (see also 'ideograms'). (Except in the specific context of calculus, eg. Spencer-Brown's calculus) I use 'formal' or 'formally' as a shorthand for saying 'in terms of this form', i.e. in terms of the forms I discuss.

(It may be necessary to emphasise that these forms are forms of ACTS and as such arise only in events (eg. of speaking, interpreting, communicating). Where, abstracting these forms, I suggest the possibility of eg. 'saying something in the form of interpretation', what I have in mind might be clumsily circumscribed as the arrangement of descriptions (or things) in some configuration which, corresponding to (or fitting) the form of an actual act of interpretation, may facilitate the event of such an act. Clearly such an arrangement is made in an act of its own form (i.e. the form of a description). However, where it succeeds, it 'transcends' this form, - in the sense that the act of arranging becomes irrelevant (or invisible). Examples of such 'arrangements' range from poetry (to the understanding of which the 'interpretation' of its component parts is irrelevant and at best a 'ladder') to social institutions (in which the source of a sense of 'institutional identity' is often invisible, eg. the "AA"; "Fleet Street") to folklore and what Happaport (1968) has described as 'ritual regulation'.)  
see also 'any' 'coincidence' and 'prescriptive'.

Fragmentation (87)

By fragmentation I mean no more than the epistemological proliferation of distinctions (compare Bohm (1980)).

Function (109)

(compare, also Locker (1978a))  
Consider, for instance, the most commonly assumed 'function of language', i.e. the conception that language is a means for communication. The 'pump priming' problem is illustrated in the use of secret codes, where we cannot know what is communicated unless we know the code: A code (eg. how x, y and z are to be interpreted) needs to be communicated (using an already known code), before it can itself be used to communicate. The same problem arises where we assume the 'function of language' to be that of enabling us to communicate. Moreover, under this assumption, language cannot be considered to be anything more than a known code, i.e. the shared knowledge which enables us to transmit further knowledge. But, just as we come to

share knowledge in a process of communication, we learn a language in a process of communication. What, then, is to enable us to communicate before we have learned the language?

Similarly, if consider language to be the result of a process of communication (learning) by which we come to share the knowledge or language which then allows us to communicate more efficiently, this relies on some prior shared knowledge (in terms of which we can 'begin' to communicate). The interaction between language (conceived as enabling us to communicate) and communication is mutual: in order for there to be a language (shared knowledge) between communicators, they must have communicated this language. In order to communicate the language, they must already have had a language.

But, since whatever we would thus come to share, we would come to share IN TERMS OF whatever we shared before, this has the consequence that, however rudimentary the 'initial' shared knowledge (or 'innate language ability' Chomsky (eg.1965)) may be, -it would have all the features of the language we eventually would come to share. (compare also Glanville's epilog to Pedretti and Glanville (1980)).

The discussion of the difficulties which arise with regard to other 'functions of language' follows much the same pattern (some of which I have explored in Pedretti and Glanville, 1980), and reveals a simple choice in the place allocated to the paradox (i.e. either at the 'bottom' of this or that otherwise infinite regress, or locally, within any one 'use' of language).

#### Grey box (93)

I use this as an (in the sense of the black box and its being whitened strickt, (Pask,1975a,b,19769)) analogy. The 'grey box' phenomenon might, somewhat poignantly be described as the circumstance whereby linguistics, in describing a portion of natural language thereby treats it as an artificial language. It is however a predicament which manifests itself in the interaction between eg. language and epistemology (see Pedretti, 1978/80), language and ontology, linguistics and psychology, and, in general, any two (or more) aspects of our description building activities we care to distinguish, whereby one is determined in the description of the other.

#### Hierarchy of Languages (74)

While the work on hierarchies of languages, and particularly the notion of an ever-changing hierarchy (see there), in many ways parallels the processes I discuss, it differs - at least in curiosity - in the notion that interpretations are to be rendered explicit, - a difference which, although small by comparison to the similarities, lies at the very center of my curiosity. Due to this difference and in view of the fruitlessness of semantic endeavours within linguistics (and particularly the lack of any sense of relevance in truth conditional semantics), I have not attempted to discuss this work, nor learned as much as I might have, from its careful study (though the little I have learned of it has often helped as a

great deal). (In view of these similarities it is perhaps helpful to recall the 'differences' see 'Logician and Linguist').

#### Ideograms (33, 115)

"...and what is the use of a book', thought Alice, 'without pictures or conversation?'..."

My ideograms are pictures in which I try to show (Wittgenstein, 1921, see also 'said') what I am doing and saying. In some cases (eg. black boxes and distinctions; but see also 'cyclic relations') they may bear some resemblance to pictures or 'notations' developed by others; I try to find my beginnings in their beginnings, (and in that sense, Alice, there may be a conversation).

In developing a sequence of ideograms (eg. 1-24 (black boxes), 1-17 (distinctions), 1-21 (origin), and particularly in the "I" of language 1-43) I construct a language. As such, what I may say or show in developing these ideograms, I say or show within this process (eg. in the terms I hope to establish in so doing).

The languages I thus construct are not in the ordinary sense formalisations or formal languages. They may, in their shortcomings show the way for such a formalisation, - or it may go to indicate why these processes cannot be formalised in the ordinary sense. But, more than a simple mnemonic, such languages are a way of checking the coherence of what is constructed (as a whole); and their construction in our day to day attempts to make sense (see also design), coincides in form with the languages sought in the concern with wholistic representation (compare eg. Maturana (1970)).

#### Implicated (251)

see Grice (eg. 1967). The difficulty which arises in speaking about what is conveyed in silence (Pedretti, 1980), may go some way to show the relation between the specific notion of a 'conversational implicature' Grice describes, and the general phenomena I outline. In the general framework, the distinction between what is implicitly conveyed and what is conversationally implicated is, however useful for some particular purpose, academic.

#### Imprecise (80)

eg. Zadeh (1973) (see also 'ambiguous'). The imprecision or fuzziness arises with regard to the descriptive framework in which we attempt to remove the indeterminacy of interpretation. (As with most descriptive frameworks, the basis of which I object to, it is the virtue of such frameworks to sharpen our perceptions about languages; my difficulty is in acknowledging the help such perceptions have provided in pointing to the 'phenomena' for which I try to account here.)

#### Independence (243)

The interaction between independence and co-operation should be apparent as such within my discussion, - which reflects what I learned from the exchange between

Glanville, Pask, Pask (E), Loeffgren,  
Glanville, Pask, Gaines (IOW 478-492);  
compare also Pask, eg. 1977/81).

#### Indeterminacy (43)

(see also 'forgetting') My use of the notion of 'indeterminacy' is based on the notion of the 'truly black box' with which we are confounded in trying to understand each other (Pask, 1961); i.e. what Pask calls 'conversational indeterminacy' (1975a, b, 1976). Where the very notion of the black box, and the cybernetic enterprise as a whole, has its roots in the foundational discussions of the early century, the light my use of this notion may throw on broader senses of the notion, is presupposed rather than shown.

#### Instructing (90)

(see also 'applying'). In discussions of the black box, the difficulty of distinguishing between general observations on the nature of cognition and perception, and apparent 'instructions' on the use of the 'device' is 'recognised' by, for instance, Ashby (1956) and Pask (1961), - in introductory texts. (Such insight seems to have been overlooked in applications of "the device" (eg. reification!)). While one may or may not be surprised by this circumstance, it does seem indicative of the difficulties of 'cybernetic description'.

#### "Language is ..." (110)

Chomskyan linguistics offers a number of illustrative examples, eg. (compare Chomsky (eg. 1965) with) the notion that "Language is a set of sentences", should be modified: "For the purpose of writing a grammar, let language be a set of sentences, (and let the child have an innate linguistic ability)".

Literature in the recent developments of this technology is riddled with delimitations of "language communities" (whereby, a speaker is excluded from a language community, if his intuitions do not support a particular rule of the grammar (the linguist has managed, so far, to 'abstract' for the 'language-community-(said-to-be)-using'-this-rule').

The circularity is engrained in the circularities between practically all the basic 'methodological' notions of this technology, eg. universals; the distinction between a speaker's competence and his performance; the distinction between the acceptability and the grammaticality of a sentence (which leads to the need to 'prime' a subject (native speaker) in how he is to describe his intuitions (with regard to highly unlikely sentence-constructions, presented out of context), - and should such a subject invent a context in which a 'bad' sentence seems nevertheless acceptable, he is asked to try not to be clever...) etc. etc.

This circularity which is beginning to be explored in terms of the technology's "long march" from syntax, via semantics to pragmatics and predictably back to syntax, in which what was accounted for in 'the

'syntactic component', is unwritten (eg. most transformations (and hence most of the all too easily appealing distinction between 'surface- and deep-structure' (Chomsky, 1976)), and accounted for in 'the semantic component', and eventually in a deplorably limited 'pragmatic component', and so on and on.

#### Logician and Linguist (23)

Beyond a simple caricature, made for a specific purpose, the logician and the linguist coincide in their description building activities (however much they may differ in what they describe), and as a consequence, ANY distinction between them is a distinction made with a particular curiosity and by a particular person. This means that it is not possible to distinguish between them in terms of their work, eg. what either speak about, for it is necessary to consider the curiosities they have in doing so.

The differences arise in terms of the relevance we attribute (in terms of what we wish to do) to what we do do, and it is in terms of such relevance criteria, that other-than-caricature distinctions arise locally, and with regard to very specific intentions (compare the differences even in apparently very similar intentions, eg. between Kempson (1977) and Allwood, Anderson and Dahl (1977)).

The difficulties arise in that we cannot use the results obtained with the intention x, in undertaking work with the intention z unless z is x or contained in x. It is precisely such an observation which prohibits a 'natural language semantics', where the significance of a word or construction arises in and with the intentions with which it is 'used'. Similarly, this observation must render what is pursued with a concern for the explicit, inapplicable, even if complementary, to what is pursued with the concern for the implicit.

Thus, for instance, an explicit framework leads (via the "likelihood" that what is described, IS what needs to be learned) to an "epistemological double-bind" (in which an epistemology needs to be invoked to 'account' for the 'miraculous' acquisition of a given language (see also 'function' and Pedretti, 1978/80)).

Similarly, the use of frameworks initially developed with a curiosity in truth, to consider processes which are essentially not concerned with truth is, at best, puzzling. More often than not it leads to the exclusion (what we cannot 'describe' does not exist) of just those aspects of the speech ACT which can account for why there is no need for, and indeed no such a thing as 'semantics' (in the sense of the "psychological reality" attributed to representations created in this confusion of intentionalities)!

#### Notes (0, 295)

In nature, notes are irrelevant. If they were relevant, the observations made in them would be made in the text. The notes I make, are also, I'm afraid, often all but helpfull to the understanding of the text (see 'examples'); - or, again, I would have included them in the text. In writing the



notes from A - N (i.e. here and now), I have struggled in each case, knowing that what I can say in a note is bound to lead to misunderstandings; and would better be left in silence.

Wittgenstein's (1918) Preface to the Tractatus has been on my mind, and I have perhaps in writing these notes begun to understand a little more of the wisdom in it. It is a strange insight, which slips out of reach as soon as it is not attended to, - and I suspect it cannot be attended to, but in the painful process of being thus torn in tearing oneself from one's writing. It is as such, that reference to others is difficult; and, perhaps irrelevant, perhaps presumptuous.

I know that what I can say in these notes lags behind what I hope to have said in the text, - by virtue of being distinct from, and looking upon, the process of exploration in which it could be experienced, in which it was relevant, and of the relevance of which these notes are but faint memories. Nevertheless, they are important to me; important, precisely in their limitations. For, I hope, that the comparison between the text and these notes will reveal the difference between what we can say and what we can speak about, and thus the limitations of speaking. I hope this difference will show why, where like Wittgenstein's "Dagegen scheint mir die WAHRHEIT der hier mitgeteilten Gedanken unantastbar und definitiv." I feel that what I could say in the text imposed itself with the coincidence between descriptions and made me feel confident beyond the explicit reasons and arguments which lead me to write it.

One (21, 75, 87, 88, 135, 155)

see 'closure' for why I prefer to speak of 'one'; see 'coincidence' for the notion of one and the same, and 'coherence' in connection with 'one observer's if the 'one observer' (135) nevertheless appears to be an assumption, I trust that in the coherence of the construction as a whole, such an assumption is necessary only as a matter of exposition (- but see also 'ontology').

Ontology (37)

I make a, perhaps excessive, distinction between ontology and 'linguistic ontology' (Pedretti, 1980) and discuss the latter in the text, where I prefer, in general to speak of 'acceptance'. Where the need to accept arises in the form of speaking (about one thing rather than another) and in any beginning, linguistic ontology would appear to relativise what other things may be subjected to ontological considerations in the more usual sense; which may explain my difficulty in properly grasping that notion.

In such relativity, I say, for the purpose of such argument, accept that there may be a reality-out-there, and that it is in such a reality that we have bodies and minds which are capable of feelings and compassion... In other words, I attribute no relevance to the assertion of such existence or its denial, since there appear too many worlds of interest to be constructed and explored; and since the pressing problems and issues in our affairs seem to me to arise in our constructions;

and very often constructions we have been taught not to question for the benefit of a little piece of 'power' held by one man or woman over another, and depriving either of his or her peace of mind. However, in underlining the importance of acceptance throughout our description building activities, and in distinguishing ourselves from one another, I hope to relate the need for an 'ontological security' to the distinction of worlds and worlds of things, and the reluctance to question (the intentions embedded in the construction of) these. (see also 'complementarity', 'coincidence', 'existence', epistemology', perhaps 'design' and eg. von Glasersfeld, 1980).

Open (144)

see 'closure' and 'complementarity'

Ordaining (108)

- to say we 'presuppose' a things existence, does not, it seems, prevent the removal of construction into some remote domain.

Origin (125)

compare Locker (1978a, 1979b, c).

Paradox (18, 21, 108)

(see Howe and von Foerster (1975) for the spade-work on vicious and unvicious occurrences of self-reference.)

I use paradox in the sense of paradoxical predicaments in the domain of actions. Thus, for instance, I do not speak of paradoxes in the sense in which Hofstadter (Scientific American, Jan. 1981) asserts that all paradoxes are liars; if a paradox requires a contradiction, Mr. Hofstadter's 'prediction' seems self-fulfilling, and of relatively little interest beyond "metamagical themes"; - and paradoxes (or their predicament) would not have the disquieting effect they have.

Thus, for instance the paradox of means may be captured in some sort of 'liar' sentence, - but to interpret the difficulty as one of asserting and denying the existence of language would be to consider a description of the predicament, rather than the predicament itself; - and preclude the obvious resolution it has in our particular activities.

But beyond semantics, the difference concerns a distinction between 'logical-' and 'psychological self-reference' (IOW); eg. the question of whether or not "self-reference lives in sentences"; and using paradox in the sense of a predicament, I content that it does not, but that rather, the possibility of self-referential sentences arises only in our activities (in connection with such sentences, in the circular activity of reasoning (to avoid saying 'interpreting'), - which seems to be why we mostly need to be taught to perceive such paradoxes (perceive the two warring within the one).

More generally, such possibilities arise in activities, which, in their (conceived) nature prevent themselves from getting off the ground; eg. such paradoxes as arise

where, in trying to do x, z is required to do so, while in order to get z, x is required (compare also Varela, Maturana and Uribe, 1974); or, in terms of levels, the paradox, where in order to get from A to B, we need already to be at B; i.e. the old problem of priming the pump. Where just such a predicament arises with regard to the assumed existence of language, - this may throw some light on the source of liar sentences.

#### Participating (239)

see Pask (1961, 1968, 1975a, b, 1976) for the requirement that an (external) observer must participate in a conversation to be able to make observations about it.

#### Particular (109)

see Austin (1970).

#### Perceptual (28)

For the 'intentionality' in our perceptual mechanisms, as selecting on the basis of 'hypotheses' about the environment, see eg. Gregory, (1970), 'What the Frog's Eye tells the Frog's Brain' in Arbib (1972), von Foerster (1973a); (and compare also, Lofgren (1977)).

#### Persist (44)

eg. maintaining cognitive consonance (Festinger (1972)).

#### Prescriptive (111)

A great deal of methodological arguments in linguistics claim to provide a descriptive rather than prescriptive approach to language; but it seems the prescriptive element can only be overcome by taking seriously the predicament of 'using language to describe language' (i.e. the coincidence between the described and the describing) and accordingly restricting what can be spoken about (rather than prescribed).

#### Presuppose (107)

It is perhaps unfortunate that the term is often, taken to suggest an absolute ordering, and hence a given ontology; rather than one relative to the particular act of speaking, in which something needs to be passed over in silence; see 'ontology', 'ordaining', 'existence', and 'closure'.

#### Reality (146)

see von Foerster (1973a); re. an interpersonal reality see (minding explicitness) eg. Pask-(1975a, b, 76) Laing, Philipson and Lee (1966)).

#### Reference(s) (0)

Where the construction of a language coincides with the construction of the world described, and the distinction of a language coincides with the distinction of a thing (or worlds of things), - there can be no given distinction between eg.

reference, predication or construction; - any act may, where relevant at a particular time, be taken in one sense rather than another.

In line with thus treating indicativeness as arising within a speech act, I have tried not to treat what others have said or written as mere things referred to, - trying instead to let them speak for themselves, to the limited extent to which this is possible by tearing a passage from its context.

If there is a practical reason to try to do so, it is in the nature of interdisciplinary work, which by its nature does not share its beginnings, and as such has a tendency to get trapped in stating these. If such contexts can help here, this is only a very notional attempt to do so.

I have made a personal anthology of passages I found relevant to thinking about language: some of the passages, on first reading, some a long time ago, stood out from their context and, often without my grasping their meaning, returned again and again; others, I must have read, but on re-reading, they suddenly stood out as completely fresh; making me wonder how I could have been blind to them; and often the coincidence with what I'd been doing since reading them, made me wonder just how blind I had been... (others I quote for more apparent reasons, but) it is in terms of these experiences that I tried to let these passages speak for themselves: as seeds which have and continue to provoke thought. As such, they should be treated kindly, - as gifts from their writers, and not as things to be used.

#### Relations (134)

see Glanville (1975); (I discuss and use his temporal computations of relations in Pedretti (1978/80)).

#### Relevance (173)

Where construction is not considered, discussions of the notion of relevance run into difficulties in trying to account for relevance in (often static) terms external to the processes at hand (compare also 'presuppose'). Further difficulties arise in overlooking the interaction between the relevance of describing and that described. If thus, for example, one part of an overall model is concerned with truth (eg. a 'semantics') or sentence structure (eg. a 'syntax') and another part (eg. a 'pragmatics') is to account for relevance (and interact with such a 'semantics' or 'syntax'), then the relevance attributed to 'truth' or 'sentence structure' is - at some level or other - presupposed in the description; as is the relevance of making (explicit) such a description; the difficulty of accounting for 'relevance' appears to arise relative to such presupposed relevances. In the coincidence between the described and the describing, instead, no such difficulty arises: in what we can speak about, the 'two relevances' coincide in the relevance of a particular act.

#### Rules (90)

see 'coincidence', 'apply' and 'structure'

## Russell (5)

Encapsulating the difficulties of my curiosity, I use Russell's Introduction to the Tractatus (1922) as providing a convenient beginning. In so doing I treat this as a self-contained discussion, and perhaps as an example, and do not attempt to consider Russell's other work (or the work which followed on from this introduction (see also 'hierachy')).

## Said (68, 89)

Here I use 'said', in what I take to be the sense in which Wittgenstein (1921) uses 'show'; i.e. distinguishing what can be spoken about from what can be shown or, as I prefer, said. I try to establish a criterion (see 'coincidence') for removing the indeterminacy in such 'saying'; a criterion which, I hope to show, coincides with our day to day judgements and attempts to make sense. As such it is perhaps necessary to point out that 'saying' is not 'uttering', but rather 'making a point' (and as such does not necessarily involve making an utterance (see also 'say/do'). 'Saying' rather involves an act of interpretation, in that what is said, is what is taken to be said. (In connection with showing/saying and the criterion of coincidence I propose, it is perhaps useful to point out that I have elsewhere (eg. Pedretti, 1978/80) discussed the notion of 'making a point' as the involving the possibility of saying different things about the same thing, and hence the notion of 'making a point' appears to coincide with at least some aspects of the notion of falsifiability.

## Say/Do (69, 139)

I use this pair of terms with reference to Austin (1962) and the notion of a speech act developed in the work of, amongst many others, eg. Searle; however, unlike these I do not use these notions exclusively in connection with the making of utterances (and similarly for my - and I trust Wittgenstein's - use of 'speak about'). Rather, I use them, in the first instance, in the sense of any act of making and what is made (see also 'artefact'); in the sense of any act of description and the description made; in the continuity between descriptions (von Foerster, 1973a), this act may be distinguished as one of eg. perceiving, observing, thinking, speaking, writing, drawing, building ... or what not.

In the next instance, in that what is said, is what is taken to be said (see also 'said'), there is an essential indeterminacy about what is said, respectively done; and hence the act need not be an act of expression (as the above suggests), but can rather be any act taken as indicative, and hence the my use of saying and doing includes any action taken as significant (do) and the significance attributed to it (say). (compare eg. Jung, 1977, 1978, 1979).

## Second Order Cybernetics (20, 27)

see 'closure', 'cybernetics of cybernetics', 'self-reference'. See 'apply' for why it might be paradoxical to call it so. However, it is useful to be able to

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distinguish between first and second order cybernetics: even where such a distinction may turn out to be an excessive distinction (see eg. 'black box'), it distinguishes what are, at present, two substantially different concerns. Moreover, in being somewhat paradoxical this label may help to remember that we DO speak about these things, and remind of the difficulties involved.

#### Self-Reference (20)

see also 'closure' 'cybernetics of cybernetics' and 'coincidence'  
If I began to list what authors and papers I think constitute the recent cybernetic discussion on self-reference, I would quote practically all the texts I list (the texts to be exempted are, I think, obvious enough not to need to do so), for it is in the context of this discussion that I say what I say. Here I would like to thank all those who took part in the meetings on self-reference over the last two years: Stein Braten, Brian Baines, Ranulph Dianville, Ernst von Glasersfeld, Richard Jung, Alfred Locker, Lars Løefgren, Gordon Pask, Mike Robinson, and Gerard de Zeeuw, for it was in listening to their discussions, that I learned most, and it is due to them, that this was written; - however this is not to suggest that they would agree with this. Though I would have liked to include (excerpts from) the transcripts, I have only managed to transcribe the Isle of Wight discussions (IOW), and feel that the spirit of these discussions would be spoiled if I started to quote them.

Although in the context of these discussions I would, as indeed I did in the earlier drafts, use a title such as 'Language and Self-Reference', I have mostly refrained from speaking here of 'self-reference' for a number of reasons: Firstly, I found myself in danger of confining self-reference; and when 'self-reference' started occurring in almost every sentence, I became suspicious of my use of the notion, and challenged myself to try and get along without the word.

The second reason has to do with the combination of language and self-reference, in connection with the possible distinction between 'logical-' and (for lack of a better word) 'psychological' self-reference (see 'paradox'); where such a distinction is made, the discussion of self-reference in connection with language is bound to suggest the former, where instead, I would be concerned with the latter.

Here I hope that refraining my use of the word 'self-reference', may have helped to overcome this difficulty (though I find myself in the converse difficulty of losing sight of the distinction: where I see 'linguistic' or 'logical' in terms of the processes and activities I discuss, I could not deny that self-reference is 'linguistic'...):

As I saw it, the distinction between 'logical' and 'psychological' self-reference, places the latter in the grasping and closure of the self-system (shown in (9 - 10), pp 141/2), and, in the extreme, places the former within sentences of languages distinguished as its, and thus within a world of things in a time (eg. shown in 42). However, the differences such

a distinction aims to point out, are somewhat resolved where the two are not seen only in the extremes, i.e. where 'psychological' self-reference has its place in any closure of the self-system, and hence in any act of interpretation; and 'logical' self-reference has its place within any description (eg. the description in which a world of things in a time is distinguished). The relation between the two can thus be seen as shown in eg. (13) (p 148); i.e. seeing 'logical' self-reference as the reflection, within a description, of 'psychological' self-reference, and in turn allows for (the self-system to be closed i.e.) 'psychological' self-reference...

Where the main difference between 'logical' and 'psychological' self-reference is manifest in the difference between allowing for partial self-reference or complete self-reference, this again places the notion of 'logical' self-reference within a world of things, which would collapse in an act of interpretation (eg. 43); i.e. where the self-system is closed. Within a world of things self-reference must be partial in the sense that the "I" who distinguishes this world remains outside the world (eg. 42.5; 42.8). It must further remain partial, where such self-reference is spoken about (it's interpretation is made explicit); - the partiality, or distinctness, then is none other than that of descriptions, i.e. the distinction by which the self-system is opened, eg. (12) (p. 144)), and hence these differences find their resolution in our particular activities.

System (142)

'cyclic relations'

atics (79)

'agreement' and 'Logician and Linguist'

act (76)

use speech act in the general sense of an act of drawing a distinction; see (143).

against (147)

compare Varela (1975) (particularly the passage I quote towards the end of the note on 'coincidence').

structure (11)

where I do not have in mind the notion, as is refuted, that the structure of a language (in Russell's sense) cannot be spoken about in that language. What I have in mind is far simpler, i.e. that the application of language in describing eg. 'the structure' in itself distinguishes the language from the process in which we can change our curiosities, and hence, new languages will be necessary to accommodate such changes. However, by assuming a structure and hence rules a distinction is assumed, - use 'apply'.



Time (57, 60)

See later for how I conceive of time, i.e. not as an externally given clock-time; see, for instance, Carroll (1865), Guenther (1967); von Foester (1972), Atkin (1977, 1981), Glanville (1975), Kripke (1975) de Zeeuw (1979a) Braten (1980), Jones (1980a) Loeffgren (1980).

Truly black (93)

eg. Pask (1961) describes conversational indeterminacy in contrast to situations where an external observer can know, omnisciently - and describes in his meta-language - what is inside a subjects black box.

Unfolded (118)

see Loeffgren (1979)

we (1)

I use 'we' since I can only speak about these issues being myself a speaker, i.e. by participating in what I speak about I cannot remain external; and since to do otherwise, eg. in an attempt to avoid undue familiarity, would lead to just the reifications I address (see also 'coincidence').

Within (100, 251)

see 'coincidence' and eg. Maturana (1970a).

Aichinger, I. (1973). MEINE SPRACHE UND ICH. Frankfurt: S. Fischer Verlag.

"Meine Sprache ist eine, die zu Fremdwörtern neigt. Ich suche sie mir aus, ich hole sie von weit her. Es ist aber eine kleine Sprache. Sie reicht nicht weit. Rund um, rund um mich herum, immer rund um und so fort. Wir kommen gegen unseren Willen weiter. Zur Hölle mit uns, sage ich ihr manchmal. Sie dreht sich, sie antwortet nicht, sie lässt uns geschehen. ..."

Allwood, J., Andersson, L. Dahl, O. (1977). LOGIC IN LINGUISTICS. Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.

"...in what way can the formal languages of logic be used when we try to describe the meanings of expressions in natural language?... In our opinion, the most reasonable way of defending the use of a disambiguated language is to say that we need some way of referring to the semantic interpretations in any case, so we have to construct a disambiguated language to do that. ...the formal systems constructed by logicians have the great advantage of being EXPLICIT. The development of generative grammar has made linguists understand that an explicit model - even one which is wrong - may help us gain insight into problems by making clear exactly what we know and what we do not know. ..."

Anonymous. (1981) indirect personal communication.

"..you mean that language without words!"

Arbib, M. (1972). THE METAPHORICAL BRAIN. New York: Wiley Interscience.

Ashby, W. R. (1956). AN INTRODUCTION TO CYBERNETICS. Chapman & Hall. (1976) Reprinted as a University Paperback. London: Methuen.

"... It will be noticed that nothing has been said about the skill of the experimenter in manipulating the input (of a black box). The omission was deliberate, for no skill is called for! We are assuming, remember, that NOTHING is known about the Box, and when this is so the method of making merely random variations (e.g. guided by the throw of a die) on the input-switches is as defensible as any other method; for no facts as yet exist that could be appealed to as justification for preferring any particular method. ..."

Atkin, R. H. (1977). COMBINATORIAL CONNECTIVITIES IN SOCIAL SYSTEMS. Basel: Birkhaeuser Verlag.

Atkin, R. H. (1981). MULTIDIMENSIONAL MAN. Harmondsworth: Penguin Books.

Austin, J. L. (1962). HOW TO DO THINGS WITH WORDS. Oxford: Oxford University Press.

Austin, J. L. (1970). PHILOSOPHICAL PAPERS. London: Oxford University Press.

"... This supposed GENERAL question is really just a spurious question of a type which commonly arises in philosophy. We may call it the fallacy of asking about 'Nothing-in-particular' which is a practice decried by the plain man, but by the philosopher called 'generalizing' regarded with some complacency. ..."

Beckett, S. (1958). ENDBGAME. London: Faber and Faber.

"The end is in the beginning and yet you go on."

Beckett, S. (1965). CONVERSATIONS WITH GEORGE DUTHUIT No.3. London: Calder and Boyars.

"There are many ways of trying in vain to say the thing that I am trying in vain to say."

Bergstein, T. (1974). QUANTUM PHYSICS AND ORDINARY LANGUAGE. London: The Macmillan Press Ltd.

Bohm, D. (1969). "Science as Perception - Communication". Talk for the Illinois Symposium on Philosophy of Science.

"... Rather, the very act of perception is shaped and formed by the intention to communicate, as well as by a general awareness of what has been communicated in the past, by oneself and by others. Even more, it is generally only in communication that we deeply understand, i.e. perceive the whole meaning of, what has been observed. ..."

Bohm, D. (1980). WHOLNESS AND THE IMPLICATE ORDER. London: Routledge & Kegan Paul.

"... If the thing and the thought about it have their ground in the one undefinable and unknown totality of flux, then the attempt to explain their relationship by supposing that the thought is in reflective correspondence with the thing has no meaning, for both thought and thing are forms abstracted from the total process. The reason why these forms are related could only be in the ground from which they arise, but there can be no way of discussing reflective correspondence in this ground, because reflective correspondence implies knowledge, while the ground is beyond what can be assimilated in the content of knowledge. ..."

Bohr, N. (1949). "Discussion with Einstein on Epistemological Problems in Atomic Physics", in Schilpp, P. A. (Ed), ALBERT EINSTEIN: PHILOSOPHER-SCIENTIST. The Library of Living Philosophers, Volume VII.

"... the impossibility of any sharp separation between the behaviour of atomic objects and the interaction with the measuring instruments which serve to define

the conditions under which the phenomena appear. .. Consequently, evidence obtained under different experimental conditions cannot be comprehended within a single picture, but must be regarded as complementary in the sense that only the totality of phenomena exhausts the possible information about the objects. ..."

Borges, J. L. (1941) FICTIONS. Jupiter Books (1962). London: John Calder.

"... Nouns are formed by an accumulation of adjectives. One does not say moon; one says airy-clear over dark-round or orange-faint-of-sky or some other accumulation. In the chosen example, the mass of adjectives corresponds to a real object. The happening is completely fortuitous. In the literature of this hemisphere (as in the lesser world of Meinong), ideal objects abound, invoked and dissolved momentarily, according to poetic necessity. ..."

Braten, S. (1980). "Time and Dualities in Self-Reflective Dialogical Systems", to appear in Lasker, G. E. (Ed.), Proceedings of the International Congress on Applied Systems Research and Cybernetics: Pergamon.

"... When problems connected with temporality arise in connection with some approach, we tend to "solve" them in an either-or manner: either time is being allowed for, or excluded from the domain, made time-less. ..."

Braten, S., Jahren, E., and Jansen, A. (1978) "Social Networks and Multilevel Structures: Systems Description and Simulation", in Cavallo, R. (Ed) RECENT DEVELOPEMENTS IN SYSTEMS METHODOLOGY FOR THE SOCIAL SCIENCES, Leiden: Martinus Nijhoff.

"... Any concrete phenomena of cognitive, symbolic, and social processes in man and in the context of his group activities, contains programs of PARALLEL, DUAL OR MULTIPLE PATTERNS, competing for dominance or for being active, and should thus be explained in terms of complementary models. ..."

Carroll, L. (1865/1973) ALICE'S ADVENTURES IN WONDERLAND and THROUGH THE LOOKING GLASS. Penguin.

"Then you should say what you mean," the March Hare went on.  
'I do,' Alice hastily replied; 'at least I mean what I say - that's the same thing, you know.'  
'Not the same thing a bit!' said the Hatter. 'You might just as well say that "I see what I eat" is the same thing as "I eat what I see"!'. ..."

Chomsky, N. (1965) ASPECTS OF A THEORY OF SYNTAX. Cambridge: The MIT Press.

"... Let us consider with somewhat greater care just what is involved in the construction of an "acquisition model" for

language. A child who is capable of language learning must have

(i) a technique ... (v)...

Correspondingly, a theory of linguistic structure that aims for explanatory adequacy must contain

(i) a universal ... (v)...

Putting the same requirements in somewhat different terms, we must require of such a linguistic theory that it provide for

(i) an enumeration of the class s1, s2, ... of possible sentences, (ii)..."

Chomsky, N. (1976), REFLECTIONS ON LANGUAGE. Glasgow: Fontana/Collins.

Festinger, L. (1972) A THEORY OF COGNITIVE DISSONANCE. Stanford: Stanford University Press.

von Foerster, H. (1972). "Notes on the Epistemology of living things". BCL Report 9.3. BCL Micro Fiches. 821 Bond, Peoria: Illinois Blueprint Corporation. (French version in E. Morin & M. Piatelli-Palmarini (Eds). L'UNITE DE L'HOMME, Editions du Seuil, Paris 1972)

"... B. A formalism necessary and sufficient for a theory of communication must not contain primary symbols representing "communicabilia" (e.g., symbols, words, messages, etc.). B.1. This is so, for if a theory of communication were to contain primary communicabilia, it would not be a theory but a technology of communication, taking communication for granted. B.2. The nervous activity of one organism cannot be shared by another organism. .. B.43. This shows that "communication" is an (internal) representation of a relation between (an internal representation of) oneself with somebody else. .. B.45. In this formalism the reflexive pronoun "I" appears as the (indefinitely applied) recursive operator... or in words: "I am the observed relation between myself and observing myself." B.46. "I" is a relator (AND representor) of infinite order. 9. Terminal representations (descriptions) made by an organism are manifest in its movements; consequently, the logical structure of descriptions arises from the logical structure of movements. ..."

von Foerster, H. (1973a). On constructing a reality. In W. F. E. Preiser (Ed), ENVIRONMENTAL DESIGN RESEARCH Vol.2, Stroudsburg: Dowden, Hutchinson and Ross.

COGNITION — computing a reality

COGNITION — computing descriptions of a reality

COGNITION — computing descriptions of

COGNITION — computations of

von Foerster (1973b). Diversity, a measure complementing uncertainty. BCL Micro Fiches. 821 Bond, Peoria: Illinois Blueprint Corporation.

VON Foerster (Ed) (1974). CYBERNETICS OF CYBERNETICS. Urbana: University of Illinois, BCL Report 73.38. on BCL Micro

Fiches. 821 Bund, Peoria: Illinois  
Blueprint Corporation.

von Foerster, H. (1976). Objects: Tokens  
for (Eigen)-Behaviors. Paper presented to  
the Festschrift for Jean Piaget's 80th  
birthday, Geneva.

"... In other words, the coordination of  
compositions (i.e., the whole) corresponds  
to the composition of coordinations. This  
is the condition for what may be called  
"the principle of cognitive continuity"  
(e.g., breaking pieces of chalk produces  
pieces of chalk). ..."

Gaines, B. and Shaw, M.  
(1980). "Analysing Analogy. Proc 5th EMCSR.  
Washington DC: Hemisphere Press.

Glanville, R. (1975). "A Cybernetic  
Development of Theories of Epistemology  
and Observation, with reference to Space  
and Time, as seen in Architecture", also  
known as "The Object of Objects, the Point  
of Points - or, Something about Things",  
(PhD Thesis). Uxbridge: Brunel University.

Glanville, R. (1978). "The Nature of  
Fundamentals, applied to the Fundamentals  
of Nature" in Klir, G. (Ed) APPLIED GENERAL  
SYSTEMS RESEARCH, Proc 1st ICAGS. New York:  
Plenum.

Glanville, R. (1977/81) "The Same is  
Different" in Zeleny, M. (Ed) AUTOPOIESIS.  
New York & Amsterdam: Elsevier.

Glanville, R. (1979a) Beyond the  
Boundaries, in Ericson, R. D. (Ed) Proc of  
the SGRS Silver Anniversary Int. Meeting.  
Springer Verlag.

"... But distinctions need an agent to draw  
them. What then distinguishes the agent  
(the distinguisher)? This is the first  
weakness. But distinctions need a space in  
which to be drawn. What then distinguishes  
the space? This is the second weakness. But  
the distinction is a mark that indicates a  
value. What then distinguishes between mark  
and value, between the distinction and that  
which is contained by (is inside) it? This  
is the third weakness. ..."

Glanville, R. (1979b) "Inside every  
White Box there are two Black Boxes trying  
to get out" presented to the 6th Annual  
Conference of the Cybernetics Society,  
London.

"... Thus, a Black Box gives us a concept  
that allows us to handle what is, in  
effect, an unknown world: it is a statement  
of ignorance, of our ability to overcome  
and cope with ignorance, and thus is a  
primitive of learning and hence of science.  
..."

Glanville, R. (1980) "Occam's Adventures  
in the Black Box (A Wonder Land)", in  
Lasker, G. E. (Ed) Procs of the Int.  
Congress on Applied System Research and  
Cybernetics: Pergamon.

"... The Black Box appears through Occam's Razor as the simplest view. This view requires simplification, as a principle - that is, it also implies Occam. But this simplification destroys the concept of objective "simpler", because it cannot support the "simplest". Then, what is the status of the simplest, of the Black Box? ..."

Glanville, R. and Varela, F. (1980) "Your Inside is Out and your Outside is In", in Lasker, G. E. (Ed), Proc of the Int. Congress on Applied System Research and Cybernetics: Pergamon.

"... The elementary is that which cannot be further reduced: it is only itself: it has no properties. Thus it can have no inside separate from its distinction. Its distinction may have no content. The universal is that which cannot be further expanded: it is everything: nothing may be excluded. Thus it may have no outside separate from its distinction. Its distinction must contain all content. ..."

von Glasersfeld, E. (1974a) "Signs, Communication, and Language". Journal of Human Evolution, Vol. 3, 465-474.

von Glasersfeld, E. (1974b) "Piaget and the Radical Constructivist Epistemology", Third South-eastern Conference of the Society for Research on Child Development, Chapel Hill.

"... Taken seriously, a statement to the effect that the child CONSTRUCTS his universe and then experiences it AS THOUGH it were external to himself, would be rather shocking. ..."

von Glasersfeld, E. (1977) "Notes on the Epistemological Revolution" SBSR/AAAS Symposium, Denver, Colorado.

"... Anything KNOWN is known by an experiencer. If "to know" is to make distinctions in experience and then to set up relations between the parts of experience that have been distinguished, it follows quite inescapably (1) that we can know ourselves only to the extent to which we experience ourselves, and (2) that the self we do experience and incorporate into our cognitive structures, by that very act of construction, ceases to be the self that does the experiencing. ..."

von Glasersfeld, E. (1978) "Les chimpanzes et le langage", in La Recherche no. 92, Paris.

"... Lorsque certains chercheurs affirment qu'ils peuvent en effet parler avec des chimpanzes, ils déclenchent des réactions plus ou moins violentes de la part des incrédules: comment un singe pourrait-il établir avec l'homme une véritable communication? ... On ne peut en aucun cas parler de "langage". Cette résistance à l'égard d'expériences qui, depuis plus de dix ans, ont fait leurs preuves, s'explique sans doute par le désir de conserver à l'homme son caractère d'"unicité": ... exclusivité qui pendant des siècles lui a permis d'occuper une place privilégiée dans

le monde animal. ..."

von Glasersfeld, E. (1980) "Feedback, Induction, and Epistemology" in Lasker, G. E. (Ed) Proc of the Int. Congress on Applied Systems Research and Cybernetics: Pergamon.

"... Hence, a model is a good model whenever the results of its functioning show no discrepancy relative to the functioning of the black box. That relation, I content, is the very same as the relation between our knowledge and our experience -- and because our experience is the only contact we have with what philosophers call "ontological reality", I have suggested that that absolute reality has for us the status of a black box. ..."

Bougen, J. and Varela, F. (1978?) "Systems and Distinctions; Duality and Complementarity. Xerox of a paper submitted to Int. J. General Systems.

Gregory, R. L. (1970) THE INTELLIGENT EYE. London: Weidenfeld & Nicolson.

Grice, H. P. (1967) William James Lectures (unpublished xerox). (Lecture II "Logic and Conversation" in Davidson & Harman (Eds) THE LOGIC OF GRAMMAR, Dickenson Publ. Co. 1975)

"... A man who, by (in, when) saying (or making as if to say) that p has implicated that q, may be said to have conversationally implicated that q, PROVIDED that: (1) he is to be presumed to be observing the conversational maxims, or at least the cooperative principle, (2) the supposition that he is aware that, or thinks that q, is required in order to make his saying or making as if to say p (or doing so in THOSE terms) consistent with this presumption, and (3) that the speaker thinks (and would expect the hearer to think that the the speaker thinks) that it is within the competence of the hearer to work out, or grasp intuitively, that the supposition mentioned in (2) is required. ..."

Guenther, G. (1967) "Time, Timeless Logic and Self-referential Systems" in ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, Vol. 138, 396-406.

"... An ontology with two themes requires two successive systems of logic because its conceptualization has to choose between one or the other theme. Either the first or the second theme will shift into logical focus or, to put it in more formal terms, nondesignation will either correspond to the theme designated by the single value or it will reflect the second theme which needs a duality of values for designation. ..."

"... due to the inherent ambiguity of the term "Thought". It may either refer to the image, or the image-producing process. The classic tradition of formal logic neglects this ambiguity. And thus it does not understand the Janus-face of subjective self-reference. Subjectivity is both the still image of the world as well as the



... process of making an image; and what we call a personal ego constitutes itself in the triadic relation between environment, image and image-making. ..."

Howe, R. H. and von Foerster, H. (1975) "Introductory Comments to Francisco Varela's Calculus for Self-Reference" Int. J. General Systems, Vol. 2. 1-3

Johnson, B. S. (1975) "See, The Old Lady Decently". London: Hutchinson.

"O let me open as though there were a beginning, though all there can be is the Great Round, uroboros, container of opposites, within which we war, laugh and are silent. ..."

Jones, J. C. (1970/1981) DESIGN METHODS, Chichester: Wiley.

Jones, J. C. (1979) "Designing Designing" in Design Studies Vol.1. No.1. 31-35.

Jones, J. C. (1980a) ".....in the dimension of Time. (Thoughts about the context of designing)" in Design Studies Vol. 1 No. 3.

"... When we say 'the world', and when we call it an 'it', we are making a false distinction between the things we perceive and the processes of perception and recognition by which we learn to see and act. ..."

Jones, J. C. (1980b) "Things" in Neuf No.87

"... The eye is NOT a 'thing', an entity, and neither is the 'hand'. Cut them off from the body and they cease to work, to operate, they die. This whole idea of "thing" of artefact, is wrong, as is any "naming", any treating of parts of the world as separable entities. ..."

Jung, R. (1977) "Systems of Action". Univ. of Alberta, Edmonton: Center for the Advanced Study in Theoretical Psychology.

Jung, R. (1978) "Cybernetic Phenomenology of Conduct", visiting lecture series. Uxbridge: Brunel Univ.

Jung, R. (1979) "The Cybernetics of Ethnogenic Systems", visiting lecture series. Uxbridge: Brunel Univ.

"... A cybernetic system of constraints generates, in a system of meanings, a semantic nexus which is embodied as conduct in the fabric of human activity. CONVERSELY, the constraints explain the semantic nexus in terms of which accounts of human activity can be interpreted as descriptions pertinent to the intelligibility and warrantability of conduct. . ."

Kallikouras, D. (1976) Seminar on Distinctions Brunel University.

Kallikourdis, D. (1981) "The Meaning of "Mental Specificity"" to appear in Pedretti, A. and de Zeeuw, G. (Eds) Proc of the SN conference on PROBLEMS OF LEVELS AND BOUNDARIES. London: Prinzelet Editions.

Kelly, G. A. (1963) A THEORY OF PERSONALITY. New York: Norton.

Kempson, R. M. (1977) SEMANTIC THEORY. Cambridge: Cambridge University Press.

"... extending the concept of logical truth to include inferences contributed by time expressions, adverbs, modality and belief expressions - each of which in so far as it provides an adequate explanation of the data will have to be taken account of in the linguist's semantic theory. And as the domain of logical truth is further and further extended, the goal of writing a logic with complexity sufficient for all entailments of sentences of a natural language becomes an increasingly realistic one. ..."

Kripke, S. (1975) "Outline of a Theory of Truth" Journal of Philosophy, 72. 690-716.

"... If we think of the minimal fixed point, .., as giving a model of natural language, then the sense in which we can say, in natural language, that a Liar sentence is not true must be thought of as associated with some later stage in the development of natural language, one in which speakers reflect on the generation process leading to the minimal fixed point. .. (.. If we give up the goal of a universal language, models of the type presented in this paper are plausible as models of natural language at a stage before we reflect on the generation process associated with the concept of truth, the stage which continues in the daily life of nonphilosophical speakers.) ..."

Laing, R. D., Philipson, H. and Lee, R. A. (1966) INTERPERSONAL PERCEPTION. London: Tavistock.

Lakatos, I. and Musgrave, A. (Eds) (1970). CRITICISM AND THE GROWTH OF KNOWLEDGE. London: Cambridge University Press.

Locker, A. (1977/81) "Meta-Theoretical Presuppositions for Autopoiesis (Self-reference and Autopoiesis)." in Zeleny, M. (Ed) AUTOPOIESIS. New York and Amsterdam: Elsevier.

Locker, A. (1978a) "Meta-Theoretische Voraussetzungen der Formalen und Empirischen Linguistik" in NOVA ACTA LEOPOLDINA.

(from the english abstract) "... Any monological approach is confined to the application of pre-given grammatical rules, whereas only the dialogical approach places one into the position to ponder the emergence of competence. It turns out, that the latter has to be normatively founded, a finding which leaves scientific explanation as well as deductive derivation principally

behind. ..."

"... a solution of the problem of origin of language is always endangered to degenerate into the assumption of a temporally occurring mechanism. This is especially the case when the intrinsical paradoxes of the origin problem are not taken as hints for looking for the atemporal presuppositions for the process and the recognition of the process, as well, but are, on the contrary, neglected. ..."

Locker, A. (1978b) "Elements of a Cybernetic Theory of Purposiveness", in Rose, J. (Ed) CURRENT TOPICS AND SYSTEMS. Berlin and New York: Springer p. 47-48.

Locker, A. (1979a) "Allgemeine Modelltheorie als Metatheorie und ihre Bedeutung fuer Kybernetik und Naturwissenschaft" in Stachowiak, H. (Hsg) MODELLE UND MODELLDENKEN IM UNTERRICHT. Bad Heilbrunn: Klinkhard.

Locker, A. (1979b) "On the Origin of Systems and the Role of Freedom Therein". in Ericson, R. (Ed) Procs of the SGBR Silver Anniversary Int. Meeting. Berlin & New York: Springer.

"... the whole conceptuality needed for an appropriate formulation of the system, i.e. prescriptions ("ends") and descriptions ("means") (Locker, 1978b) appears on the scene at the same creative moment, such that system creation is identical with goal setting. .... systems are always appearances ("images") of origin evoking (creative) processes primarily occurring in the mind of an OS (origin - evoking system) and are kept alive as long as they are constantly hugged by the very same mind that conceived of them."

Locker, A. (1979c) "Selbstentstehung von Leben und Vernunft - ein Trugschluss" paper presented to the Austrian Societies for Biophysics and Philosophy, and at the Universities of Tuebingen, Freiburg, Basel (Interfaculty Colloquium "Schoepfung und/oder Evolution"), Paderborn and Muenster, and the Medical Society, Duesseldorf.

"... Dieser Aussenbereich ist nicht nur erforderlich fuer die Interpretation der Zirkularitaet, d.h. die Aufloesung der Paradoxie - soferne dies moeglich ist - durch Transposition jedes "Umlaufs" auf eine neue Sprachebene (wie das Tarski (...) zeigte), sondern auch noetig fuer die richtige Einschaeztung des Ursprungs- oder Entstehungsproblems. Fuegen wir einen Pfeil an der die SETZUNG (Formulierung) des Paradoxes symbolisiert (...), dann haben wir die Rolle des ... Subjekts, seiner Bedeutung gemaess veranschaulicht. Zugleich aber kommt durch den Pfeil deutlich zum Ausdruck, dass "von sich selbst" nichts entsteht, ..."

Loefgren, L. (1976?). "Describability and Learnability of Complex Systems" (xerox of pages 41-56 of an unidentified publication).

"... In my own interpretation there are bounds, but not of such a nature that human knowledge would progress to a certain frontier and then no further. Rather, I think of the situation as follows. The growth of our knowledge is unlimited in the sense that, at any time, it will increase. Let me explain this point with reference to the further results of Goedel (...) on the effectively productive nature of the arithmetical truths. ..."

Loefgren, L. (1977). "On Existence and Existential Perception", *Synthese*, 35, 431-445.

"... In that sense it reminds on our cerebral view on existence as resulting by a purely technical description mechanism. Instead the interesting question will be that of trying to support the proposed explanation of existence, not that of verifying existence."

Loefgren, L. (1978). "The Complexity Race", in Klir, G. (Ed) *APPLIED GENERAL SYSTEMS RESEARCH*. New York: Plenum Press, 85-90.

"... The description-interpretation complementarity is basic for the whole discussion. I conceive of these concepts in an abstract way, that does not restrict them to our external communication languages, but includes internal languages as well, all the way to genetic descriptions and epigenetic interpretations. ..."

Loefgren, L. (1978/81) "Life as an Autolinguistic Phenomenon" in Zelany, M. (Ed) *AUTOPOIESIS*. New York & Amsterdam: Elsevier North Holland.

Loefgren, L. (1979) "Unfoldment of Self-Reference in Logic and Computer Science" in Jensen, F. V., Mayoh, B. H. and Moller (Eds) *Proc 5th Scand. Logic Symposium*. Aalborg: Aalborg University Press.

"... The difference is much the same as that for example between describing a system that is itself describing and the easier problem of describing a non-describing mechanical system. The former problem implies a kind of self-reference, which has to be unfolded to be explained. Such unfoldment implies a linguistic hierarchy. ..."

Loefgren, L. (1980) "Knowledge of Evolution and Evolution of Knowledge". Jantsch, E. (Ed) *THE EVOLUTIONARY VISION*, AAAS Symposium Volumes.

"... The linguistic complementarity is productive in the sense that the interpretation processes may be described in a higher level formal language. This suggests the idea of an evolving language trying to catch up with its own evolution, if always lagging behind, though. The

language must first evolve and can then describe previous stages of its evolution. Thus, the productive nature of the complementarity is a (even "the") source of evolution, not its prohibitor. ..."

Loefgren, L. (1981) "Autology - of help resolving problems of levels and boundaries" in Pedretti, A. and de Zeeuw, G. (Eds) Proc of the SN conference on PROBLEMS OF LEVELS AND BOUNDARIES. London: Prinzelet Editions.

Maturana, H. R. (1970a) BIOLOGY OF COGNITION. BCL Report 9.0. BCL Micro Fiches. 821 Bond, Peoria: Illinois Blueprint Corporation.

"... In what follows I shall not offer any formal definitions for the various terms used, such as "cognition", "life", or "interaction", but I shall let their meaning appear through their usage. This I shall do because I am confident that the internal consistency of the theory will show that these terms indeed adequately refer to the phenomena I am trying to account for; and because I speak as an OBSERVER, and the validity of what I say at any moment has its foundation in the validity of the whole theory, which, I assert, explains why I can say it. Accordingly, I expect the complete work to give foundation to each of its parts, which thus appear justified only in the perspective of the whole. ..."

Maturana, H. R. (1970b) "Neurophysiology of Cognition" in Garvin, P. L. (Ed) COGNITION A MULTIPLE VIEW. New York: Spartan p. 3 - 23.

Maturana, H. R. (1980) "Man and Society" in Benseler, F., Hejl, P. M. and Koeck, W. K. (Eds) AUTOPOIESIS, COMMUNICATION AND SOCIETY. Frankfurt: Campus.

"... 11) Language, as a domain of consensual interactions, is a sufficiently large and complex domain of descriptions that permits human beings, through recurrent self-descriptions, to operate as self-conscious observers that, by standing descriptively as if external to their circumstances, look at themselves and others in it. In doing this, and and by effectively accepting or rejecting with their behaviour what they see through language, human beings define an ethics, validating a domain of social existence in which it is legitimate for other human beings to exist. ..."

Pask, G. (1961) AN APPROACH TO CYBERNETICS. London: Hutchinson.

Pask, G. (1968/73) "Aspects of Machine Intelligence" Introduction to Negraponte, N. SOFT ARCHITECTURE MACHINE. Cambridge: The MIT Press.

"... 2.7. Conversations occur automatically and are discovered or noted by accident. Most of these conversations take place in natural language; in the limiting case, L=L. Hence, ..., the observer is hard

pressed to maintain the impartial poise of an external observer. Since it is important that he should do so in adjudicating the conversations as 'intelligent' or 'not intelligent', he needs to maintain a firm distinction between L† and L. ... 12. ... Once these connections are established, the closure condition is removed, the domain can expand (though not in an unlimited fashion), and at the same moment the stratification of L is lost, so that L may as well be L†. ..."

Pask, G. (1975a) CONVERSATION COGNITION AND LEARNING. Amsterdam & New York: Elsevier.

Pask, G. (1975b) THE CYBERNETICS OF HUMAN LEARNING AND PERFORMANCE. London: Hutchinson.

Pask, G. (1976) CONVERSATION THEORY: APPLICATIONS IN EDUCATION AND EPISTEMOLOGY. Amsterdam & New York: Elsevier.

Pask, G. (1977/81) "Organisational Closure of Potentially Conscious Systems" in Zeleny, M. (Ed) AUTOPOIESIS, A THEORY OF LIVING ORGANISATION. New York & Amsterdam: Elsevier North Holland.

"... 3.4.5. To manufacture independence is to make a distinction. Only a process CAN make a distinction. The most fundamental distinction is ANY distinction; predication unqualified (Spencer Brown's "—" operation). ..."

Pask, G. (1978a) "Consciousness". Proc. 4th EMCSR. Washington: Hemisphere.

Pask, G. (1978b) "A conversation theoretic approach to social systems" in Geyer, R. F. and van der Zouwen, J. (Eds) SOCIOCYBERNETICS. Martinus Nijhoff.

"... it DOES, for all its insistence upon coherence or agreement support (in fact, demand) a PROPER CALCULUS OF ANALOGICAL REASONING, and forms of abduction or innovation (rather than deduction and induction) ..."

Pask, G. (1980) "The Limits of Togetherness", in Lavington, S. H. (Ed) INFORMATION PROCESSING 80. North Holland.

" ... Conversely, the common concept, the "meaning of the word", exists because of a consensus amongst a whole community of L users, A, B, ... N. Concepts are shared by means of requests, commands, persuasions, etc., from A, obeyed by B, or vice versa; through questions posed by A and answered by B, or vice versa. This activity, whether it is verbal or in a language for exchanging, executing and debugging programs (or a language of graphics, gesture, etc) IS a conversation. If it results in a sharing of some or all of A's, B's concept, then there IS an agreement T(AB) between A and B, or, in general, an agreement T(AB...N), the meaning of which for A, B, ...N is a shared concept where "T" (omitting subscripts) is the word, in the language, L, of this community, that designates it. ..."

Pedretti, A. (1978/80) "Epistemology, Semantics and Self-reference" J. of Cybernetics Vol. 10 313-339.

Pedretti, A. (1979a) "What the Little Prince said about what the Little Prince said." showing some of the processes discussed in Pedretti (1978/80)

Pedretti, A. (1979b) "Negotiating Language" paper presented at the SCSR Silver Aniv. Meeting (based on BA Thesis, Dept. of Phonetics and Linguistics: University College London).

Pedretti, A. (1980) "Where the Language is the Meta-Language" in Lasker, G. E. (Ed) Procs of the Int. Congress on Applied Systems Research and Cybernetics: Pergamon.

Pedretti, A. and Jackson, P (1979) "Context - speaking for itself" in de Zeeuw, G. and van den Eeden, P. (Eds) Procs of the SN conference on PROBLEMS OF CONTEXT. Amsterdam: V. U. Boekhandel.

Pedretti, A. and Glanville, G. (1980) "The Domain of Language" in Procs of the 5th EMCSR. Washington: Hemisphere.

Pedretti, A. (Ed) (1979). IOW: Self-Reference on the Isle of Wight: Transcripts of the 1st Int. workshop on Self-Reference. Privately circulated.

Pedretti, A. and de Zeeuw, G. (Ed) (1981). Procs. of the SN conference on PROBLEMS OF LEVELS AND BOUNDARIES. forthcoming, London: Princelet Editions.

Piaget, J. (1972) "PSYCHOLOGY AND EPISTEMOLOGY - TOWARDS A THEORY OF KNOWLEDGE. New York: Viking Press.

Proust, M. (1927/76) TIME REBAINED. London: Chatto and Windus.

"... But enchantment cannot be decanted from one vessel to another, memories are indivisible, and of the Prince de Guermantes, now that he had himself shattered the illusions of my belief by going to live in the Avenue du Bois, nothing much was left. ..."

Rappaport, R. A. (1966?) "Ritual Regulation of Environmental Relations Among a New Guinea People" Ethnology, Vol. 6 17-30

Rescher, N. (1966) THE LOGIC OF COMMANDS. Dover.

Russell, B. (1922): see note 'Russell'

Russell, B. and Powell, J. A. (1981) "Model Blindness; its influence on some aspects of Architectural Design, Research and Education" to appear in Pedretti, A. and de Zeeuw, G. (Eds) Procs of the SN conference on PROBLEMS OF LEVELS AND BOUNDARIES. London: Princelet Editions.

St. Exupery (1943/78) THE LITTLE PRINCE. London: Pan Books.

"... So I tossed of this drawing. And I threw out an explanation with it. "This is only his box. The sheep you asked for is inside." I was very suprised to see a light

break over the face of my young judge:  
"That is exactly the way I wanted it! Do  
you think that this sheep will have to have  
a great deal of grass? ..."

de Saussure, F. (1915/74). COURSE IN  
GENERAL LINGUISTICS. Glasgow:  
Fontana/Collins.

Spencer-Brown, G. (1969) THE LAWS OF  
FORM. London: Allen and Urwin.

"... Draw a distinction! ..."

Strawson, P. F. (1950) "On referring"  
Mind 59, 320-344.

Varela, F. (1975) "A Calculus for  
Self-Reference". Int.J. General Systems,  
Vol. 2, 5-24.

"... There seems to be an irreducible  
duality between the act of expression and  
the content to which this act addresses  
itself; ..."

Varela, F. (1976/7) "The Arithmetic of  
Closure" Procs of the 3rd EMCSSR.  
Washington: Hemisphere.

Varela, F. (1979) PRINCIPLES OF  
BIOLOGICAL AUTONOMY. New York & Amsterdam:  
Elsevier North Holland.

Varela, F., Maturana, H. R. and Uribe,  
R. (1974) "Autopoiesis: The Organisation of  
Living Systems, Its Characterization and  
Model" in BioSystems 5 187-196.

"... The autopoietic organization is  
defined as a unity by a network of  
productions of components which (i)  
participate recursively in the same network  
of productions of components which produced  
these components, and (ii) realize a  
network of productions as a unity in the  
space in which the components exist. ..."

Wernus, H. (1981) "Levels of  
Representation and Levels of Logical  
Competence of Mind (A summary)" in  
Pedretti, A. and de Zeeuw, B. (Ed), Procs  
of the SN conference on PROBLEMS OF LEVELS  
AND BOUNDARIES. London: Princelet Editions.

"... the values of acceptance (+A) and  
rejection (-A) precede those of truth and  
falsity. More importantly, perhaps, the  
combination of the rejection of A with  
either the acceptance or the rejection of B  
is neither present nor active in the mind  
of the child. The absence of a  
representation and the consequent absence  
of any meaning we call the "occultation  
value" of a connective. ..."

Wittgenstein, L. (1921/71) TRACTATUS  
LOGICO-PHILOSOPHICUS. London: Routledge and  
Kegan Paul.

"Dieses Buch wird vielleicht nur der  
verstehen, der die Gedanken, die darin  
ausgedrueckt sind - oder doch aehnliche  
Gedanken - schon selbst einmal gedacht hat.  
..."



de Zeeuw, G. (1979a) "Context and time" in de Zeeuw, G. and van den Eden, P. (Eds) Proc of the SN conference on PROBLEMS OF CONTEXT. Amsterdam: V. U. Boekhandel.

"... in research in standard form we try to decontaminate (make objective), try to disembody the constructor (repeatability), try to be independent of valuation (validity), try to deflate the importance of time (criterion of predictability: by making the future visible now, we take it out of time - make it timeless), and try to departialize (generalizability). ... By these criteria and intentions we can indeed see why the context seems to stand apart, even from research: it represents a cry of protest ... against the 'killing' of time... In all these cases we try to take things out of time, to make them time-less - something which seems indeed well named as killing time. ... To create time we apparently then should be more like constructors, sources of new actions with a surplus to be evaluated - positively for the constructor, and not negatively for others. ..."

de Zeeuw, G. (1979b). "Methodology for dealing with side-effects of Policies for Science". Proc Symposium on ORDER AND DISORDER IN SCIENCE POLICY. Bruxelles: Fondation Francqui.

"... a. The FORM such knowledge takes is of the embedding variety. If one is doing A to effectuate X, and an obstruction is signalled or the appearance of a side-effect, one should find a structure, part of which is a description of what one is doing, such that there are other parts - which either can replace what one is doing (thus improving our ability to reach X), or can be combined with what one is doing (so the combination can replace what one is doing) - to reach X with minimal side-effects. Such embedding forms in fact are 'definers' and 'changers' of boundaries: the boundary on what one is doing (and which originally defines what is an effect or side-effect) is changed and redefined. ..."

de Zeeuw, G. (1979c) "When to stop, improvement" in Ericson, R. (Ed) Proc of th SGBR Silver Aniv. Conference. Berlin, Heidelberg & New York: Springer.

"... : in a process of inquiry try to find various stopping rules, as an activity on the first level itself; these must be such that they will help maintain improvements, and thus contribute to improvement on the second level! ..."

de Zeeuw, G. (1980) "Speeding Up Improvement" in Lasker, G. E. (Ed) Proc of the Int. Congress on Applied General Systems and Cybernetics: Pergamon.

"... the I-indeterminacy model implies that there is a difficulty of deciding which of various co-existing I-saying systems is 'the' I, the I that can represent all the others. ... So one would like to have a method for improvement, that does not presuppose any identifiable 'I' on any level. ..."