

A t'Tribute

Ranulph Glanville
Independent Academic
CyberEthics Research
52 Lawrence Road
Southsea
Hants PO5 1NY
UK

Abstract

This paper presents an alternative view to that proposed in the conference announcement. It questions the use of the concept of “emergence” and the notion of emergent individuals, putting forward an alternative that is based in five cybernetic “friends” the author finds good companions when he goes thinking.

Five Friends

Introduction

There are many devices, concepts and so on that may help us think and have ideas. As someone interested primarily in thinking about thinking, in the idea of ideas, I have become particularly aware of the existence of some of these “friends”, for I have found I like to go on thinking and idea hunting expeditions in their company. I will therefore introduce five of these, adding a commentary on each, and then go thinking and chasing ideas with them, showing how they are present: thinking about the idea of intelligence, seen as an archetypical concept for both thinking and for the idea of where qualities associated with objects lie. (And also, seen in the light of the suggestion in the conference announcement that intelligence is an emergent individual.) These five are not the only concepts I value in such a way, but they are amongst those I most value.

First Friend

A description of a thing is not that thing: the description is not the thing described.

This is the basic premise of representation (as, for instance, stated so clearly by de Saussure (1966)). Its origin is in the practice of thinking and of communicating, and we must suppose it is as old as these activities: for (apart from some sort of direct ephemeral union that may or may not exist) we know of no thinking and communicating without representation.

For representation to work (in de Saussure’s sense), there is a structure made up of two elements. One is the represented, the other the representing. These are not connected except in that they are brought together for a moment by the agent making the representation (although de Saussure also talked of a sort of fixity acquired through a social contract). The agent receiving the representation has to credit this concurrence and understand the “two in the one”, that is the two separate elements that are brought together in the act of representation. All the more sophisticated accounts of representation and description, depending on complex social constructions, must, as far as I can understand, be founded on this Saussurian act, and I can

conceive of no simpler way that representation could be, except where there is a direct ephemeral union—which may be communication but probably isn't representation and is certainly beyond any discussion such as this.

Note that, in this account, no meaning is transferred. Certainly (and de Saussure was, I believe, unnecessarily adamant about this), there may be no connection or similarity at all between that which represents and that which is represented. What happens is an arbitrary bringing together of two elements, unrelated, but which, in being brought together, are created as a representation which allows both the “speaker” and the “listener” to create and represent their own meanings.

(The concepts that can make this work as a means of communication had to wait for the work of Gordon Pask (e.g. 1975), who brought feedback into the act of communication by calling for the archetypically cybernetic act, conversation: that is, circular interaction.)

What is crucial to the argument here are two aspects of de Saussure's construction. The first is the separation of the represented from the representing: two elements are brought together, for a moment. The second is the lack of (logical) connection: Saussure argues there is no inherent connection between the represented and the representing—they are just arbitrarily brought together for an instant. What is in the one is not in the other. And while in the act and at the moment of representation the two may appear one, they must always remain different (Glanville 1980).

These two aspects establish, where description is understood to be a type of representation, my first friend: a description of the thing is not that thing. In de Saussure's account (which I have argued to be the most basic imaginable account of representation), that which represents (describes) is not that which is represented (described). Furthermore, because something is to be found in the one (e.g. the representing/describing), it may not be assumed it is to be found in the other (i.e. the represented/described).

Representation is a muddied field. Much of it concerns interpretations, official meanings etc. Often it ventures into the highly symbolic, and personal opinion seems to me to be frequently asserted as universal truth. Absolute value is claimed for the manipulative and the (merely) personally meaningful. This aspect of representation does not interest me (nor does it communicate to me). My interest is in an account of how representation might happen, the structures and conditions that would allow and sustain it. Such an interest is typical of a cybernetician.

Second Friend

Circularity

Circularity (of form), which leads to a spiral progression (a recursion) in which we go round and round the circle ending up, when we complete the circle, on top of where we were before,¹ is the central concern of cybernetics (Glanville 2002b). Cybernetics takes as its basis a concern with

¹ This was one of the crucial problems that had to be solved in computing (vector) graphics. The problem is that, when a shape is constructed from vectors and is closed, the start and finish points lie on top of each other and they have to be brought to the same plane, otherwise the shape is leaky because of the “vertical” difference that occurs when one is on top of the other.

“circular causal and feedback mechanisms” (see the Macy Conferences).² In Wiener’s initial formulation in his eponymous book (1948), he writes of communication and control, and gives as an essential example the feedback loop (which is the prototype for control in a world in which error is inescapable—although we can act to alleviate its effect).

The argument that circularity is a central concept of cybernetics and more “fundamental” than the more conventionally fundamental linearity depends on Occam’s Razor (*Pluralitas non est ponenda sine neccesitate*—entities should not be multiplied unnecessarily). In effect, Occam’s Razor is an efficiency decision maker. It tells us that we should go with the description which for a given description length describes more (or, equally, that which describes the same in a shorter description). I am using the vernacular here: Occam’s Razor is a device that makes intuitive sense, but is very difficult indeed to implement without ambiguity: for instance, what exactly do we mean by the intuitively clear term “length”?

In the light of Occam’s Razor, we can say that circularity is a better way than linearity of describing systems in general because, under these circumstances, linearity can be seen to be a special instance of circularity in which the (effect of the) feedback loop is so weak it may be ignored.³ Such an argument is related to that used in explaining the insistence, in early cybernetics, on the absolute roles of controller and controlled. The location of these roles was determined and justified by energy flows: the controller was that which used an ignorably small amount of energy to affect the behaviour of the controlled, which used a (relatively) large amount of (physical) energy to affect the behaviour of the controller. With the acceptance that cybernetics is concerned with the form of systems, rather than their physics, this argument disappears. Hence, linearity may be thought of as a circularity in which the “feedback” is not worth bothering with. In the extreme limit, it is not even noticed (observed). Then, we can assume those absolute roles—controller and controlled—along with coded communication and linear causality, etc.

In this manner the generalisation to the circular characterises cybernetic systems and the cybernetic way of understanding the world, where interaction, conversation and other similar actualisations of circular form are seen to provide both material for study and the models that cybernetics offers. Understanding circularity as a form allows (requires) us to include the observer and still consider what is being examined as examinable: and it confirms a separation between form and content that allows us to, for instance, discuss experience in general as form while insisting that that each particular experience is personal, its meaning (its content) belonging uniquely and individually to each observer, thus seen as a participant.

The cybernetics of explicitly circular systems became known as Second Order Cybernetics (see Glanville 2002b for an account): a distinction that was important at the time of realisation that circularity was central to the field, but which is probably no longer necessary. In particular,

² The Josiah Macy Foundation supported ten conferences from 1946 to 1953, chaired by Warren McCulloch, on the theme of “Circular Causal and Feedback Mechanisms in Biological and Social Systems,” where it is now generally accepted much of the essential thinking that established Cybernetics as a discipline was practised. Conferences Six to Ten lead to published transactions, edited by Heinz von Foerster. Norbert Wiener was a major contributor, and made his own, profoundly mathematical formulation of the subject for his book “Cybernetics, or Communication and Control in the Animal and the Machine” (1948). There had been earlier seminars at MIT where the basis for the development of such an interdisciplinary metasubject as cybernetics emerged.

³ Note, this is a value judgement.

second order cybernetics insisted on the importance of the involved observer actually making (and accepting responsibility for) his/her observations: observation as a circular process in which each observation of an observer changes the observed, leading to new observation. Etc.!

This means that as the observer observes, what is observed changes, and therefore a new observation is needed. (This is a central notion in de Zeeuw's approach, see Glanville 2002a) Thus, observation is circular. And circularity is the necessary form for interaction.

Third Friend

The Turing Test

The Turing Test is a conceptual tool similar to Occam's Razor in that it has an intuitive obviousness which it is hard to pin down in a precise form of words prescribing a precise set of actions.

The test was introduced by Alan Turing in the article "Computing Machinery and Intelligence" (1950). Its original formulation might be considered a little clumsy, and it has often been presented in a simpler form, such as used here.

Turing proposed that, to get beyond the many questions concerning whether an Artificial Intelligence might be even a theoretical possibility, especially in the face of problems of defining just what intelligence is and how we observe it, we should move from a test based in the defining of intelligence to a test based in the recognition of it.

The paraphernalia of the Turing Test (in both his original and the simplified versions) is a communication link that can be used with equal facility by a human and a computer. The notion is that we, who are to judge whether an interactive behaviour with some respondent in some agreed area is intelligent, are in one space, and connected only by the link to a respondent that might be either a human or a machine that is in a completely separate space. What is important is that we cannot know what it is, except insofar as, through this process, we can "guess" (the situation is a classic Black Box situation—see next section). If we interact with it and judge that it is intelligent, then its intelligence depends on our recognition of the quality of intelligence in our interaction with it. Thus, whether it is human or machine is of no significance. Should we believe the behaviour in the interaction is intelligent and find our partner in interaction is a machine, this "fact" should make no difference to the judgement we have already made.

(The Turing Test can be used, in modified form, to determine the existence of any quality in any interaction: thus, it surmounts problems of prejudice such as those based on race, colour, religion, gender or indeed any other factor. The excuse of trickery on the part of the human or machine cannot be sustained, either: for it is we observers who make the judgement that we recognise a particular quality.)

Behind the Turing Test is a remarkable assumption, and it is this assumption that is, I maintain, so special. Turing is not talking of intelligence, in the manner we have become familiar with, as a property—but as a quality attributed by an observer (you or I) in the response to the observed behaviour of some object⁴ in an interaction with the observer. Intelligence is not a property of an object, but is a quality given to an object by an observer in consequence of the interaction

⁴ Where the word object is used in a most general and ill-defined sense, like the non-specific vernacular English use of the word "thing".

between them. It is recognised rather than measured, and is seen not as belonging to the “intelligent” object but as a gift from the observer resulting from the interaction between observer and observed object. (All these are key words to newly developing understandings such as are found in cybernetics.) Thus, all the questions about whether the object can be intelligent or not are dismissed. The question of intelligence is not seen as being about the object, but behaviours in interaction and about attributive gifts from observers. (See Glanville 2001a)

Turing’s Test implies one further “assertion”. It is that we should trust to experience. What theory tells us, if it counteracts “pure” experience, is to be questioned. All that we have is our experience. This is not to dismiss theory, but to demand a relationship between theory and experience in which experience is given a proper and adequate authority.

The outcomes of Turing’s Test are owned by and the responsibility of the observer.

Fourth Friend

The Black Box

Of the five friends, I find that this is the most complex, the hardest to explain.

The concept of the Black Box was brought into cybernetics by W Ross Ashby (1956). Attributing the notion to James Clerk Maxwell (I have never been able to trace this attribution),⁵ he suggested that maybe everything should be considered as a Black Box. The Black Box is a device that allows us to remain ignorant and yet to act: which tells us we know nothing yet we can build descriptions (acquire knowings) that allow us to act as if we knew.

The way the Black Box works is this: an observer notices a change. To build an account for this he installs a device at the site where he has observed the change. This device is a Black Box. A Black Box has an outside and is assumed to have an inside. The inside cannot be seen or otherwise examined. The purpose of installing this device is to allow the postulation of a mechanism that accounts for (is seen to generate) the change in behaviour, which change is in the realm of the observer’s observation. No matter what we may think about understanding what’s going on inside it, the device cannot be opened: it remains always black. (Don’t forget, the device is our invention and we put it there.) The observer’s actions consist of observing the change, installing the Black Box, and developing and testing the Black Box’s supposed mechanism through interaction with the Black Box (providing inputs). When, through interaction with it we have constructed a mechanism that seems to account for the observed changes in behaviour, we often say that we have whitened the box. However, this whitening takes place between the observer and the Black Box, and exists in the description that is built of the purported mechanism (which exists only in the explanation): it is not in the Black Box, which we cannot (by definition) look into: indeed, the Black Box is a fiction inserted so that we can construct a description that gives us a mechanism. We observe and extend the change, we construct the account, through interaction with our fantasy.

This account is not quite that given by Ashby of Maxwell’s Black Box. Ashby’s account stopped at the point of the installation of the device. Ashby appeared to consider that the Box could be

⁵ I have tried to pursue this with a number of Maxwell scholars, but none has come up with a definitive answer. however, some have suggested that the Black Box is related to Maxwell’s famous demon (which allows atomic particles to move from one half of a box into another, redistributing energy and acting against Newton’s Laws of Thermodynamics.

whitened, but he was not quite clear how. He also suggested that the Black Box might be thought of as a universal: it's how we act. In this I believe he showed an astonishingly prescient understanding. In my view, the Black Box is indeed the best description of how we confront the world. And it means that we are ignorant, and will remain so, of what (if anything) that external, mind-independent reality (the out there, the reality of reference) is doing, and, indeed, whether it is actually there or not. We cannot know (in the sense of having quasi absolute knowledge): and with the Black Box, we do not need to. Thus, the Black Box can be seen as the root device of what is now called Constructivism. But these extensions of how we understand the Black Box are mine (Glanville 1979, 1982). In this extension, the outcomes of the installation and observation of a Black Box are, thus, owned by and the responsibility of the observer.

The Black Box is the epitome of Bateson's explanatory principle. And it shows us clearly why no scientific theory can be held to be absolutely true: for, no matter how well the description we have developed with the Black Box stands up, we do not see inside and the Box is never truly whitened. It can be seen as providing a mechanism (and metaphor) that support Piaget's views of how children build their pictures of their worlds.

In fact, the Box isn't really there, and it has no connection with what, if anything, happens in whatever reality there may or may not be.

Fifth Friend

The Principle (Law) of Mutual Reciprocity

The Principle (or Law) of Mutual Reciprocity says that, if when we draw a distinction through which we are willing to give a certain quality to that which we distinguish on one side of the distinction, we must also give the possibility that that quality is given to that which we distinguish on the other side of that distinction. I first introduced it in Glanville 1990a, although the reasoning behind it had to wait for Glanville 1990b, which, while published in the same year, was written a couple of years later.

In other words, if I distinguish myself from you and I consider I am intelligent, I must consider that you (which I distinguish from I) might also be intelligent.

Note that this does not mean that the quality is actually claimed for both sides of the distinction, only that it must be conceivable that it might be present: it is possible. This Principle is related to the requirement that if we are to value something, we must be prepared to accept that its value might be zero: the potential for the quality may be on either side, but its value on each side may be zero, so that the quality appears not to be there—it remains as potential.

The Principle comes about from the condition of drawing a "first" distinction. This, I have argued (Glanville 1990b), requires that when we distinguish ourselves we must also distinguish an other: there is no point in me distinguishing myself if there is not another from which I distinguish myself. Thus, on either side of the distinction is an assumed sameness-of-quality potential: in this case, the case of the first distinction, it may be called a sense of self. Distinction drawing generates this requirement. It is taken to be a consequential feature of distinction drawing (or rather, of the reason for drawing distinctions), and is therefore not only present in the "first" distinction, but in all distinctions. It is general.

This Principle provides an explanation of how a quality, such as intelligence, can be understood as belonging to both participants in an interaction (specifically, a conversation), existing as

shared, in the between. Recognising it in you, I confirm it in me while recognising that you also, acting in your intelligence, may confirm mine.

It also suggests that generosity of approach is important. This means that we look to find and affirm any quality both in another and in ourselves. We seek to discover these qualities, rather than to deny them.

It is as a result of taking this position that we can develop a different account of being human from the impoverishing approach of the determinist and materialist interpretations that assert our selfishness and suggest the appropriate model for human behaviour is mean and grabbing. See Glanville 2001c.

Thinking with My Friends

Why have I referred to these thinking devices as my friends? Because, just as with my human friends, I like to be with them, I like to talk with them, I enjoy their company, I like to do things with them, and I like it when they give me what they can, adding to my range.

So now I shall take you with me, to explore the idea of intelligence mentioned in the Conference Prospectus, and then to show how my friends contribute to this exploration.

Intelligence

The introduction to the conference, which set the theme for attendees to address, concerned what were defined as “Problems of Emergent Individuals”. An example given of an “Emergent Individual” was intelligence.⁶ Intelligence was selected as an example, which means that what holds in its case holds, equally, in many other cases: those cases of which it is an example. I think I would be tempted to say that intelligence is not just an example: it indicates a general case.

Let’s think about how we come to consider intelligence. If we think of our experience, I believe we would say that intelligence is something we recognise it. When you and I meet, we may assume that each is intelligent.⁷ However, we confirm this by examining and intervening in the behaviour of the other, so we recognise intelligence is present. We have thought of it as a property of the individual in whom we have, traditionally, recognised the quality.

Intelligence, then, is a quality we recognise in others through (as an account of) their behaviour. Their behaviour is in interaction with us. So intelligence, when recognised, is actually recognised as arising between us (as shared), not in one or the other. And that’s also because we generally think of ourselves as intelligent. It is, in part at least, the fact that we think of ourselves as intelligent that allows us to recognise the intelligence in the interaction, and thus attribute the quality of intelligence to that other.

Intelligence is a quality recognised by an observer through the behaviour of an other in an interaction with him/her, and is thus attributed by us to the other, in just the manner it is assumed

⁶ See the conference announcement re-printed in this volume.

⁷ We have traditionally associated intelligence with human beings: hence questions concerning the intelligence of machines, and the original reason for the invention of the Turing Test.

by the observer for him/herself. We give it as a gift, out of our recognition of it in the contribution of the behaviour of the other to an interaction between us.

This is, I believe, how we come across intelligence, in our lives.⁸ There may be variations, such as the intelligence exhibited between others when observed by us without active intervention: but interactions do not have to be active. And there are interactions that exist in less obviously active arenas (eg non-verbally).⁹

There is also the position where we believe we are intelligent, ourselves: we recognise intelligence in our behaviour and so we attribute the quality to us, ourselves. In this case, I am inclined to accept the notion that the intelligence may be treated as a property. That is to say that, when we attribute some quality to ourselves, we turn it into a special type of (self-)attribute, which we call a property: which is a quality we attribute to ourselves. But this is the special case.

This position is in contradistinction to the commonly held view that intelligence is a property of an object, and can be defined and specified. Properties belong to the objects they are attached to, and might indeed emerge. When there are many cases in which the same property emerges, I believe the argument goes, we may consider that there is a common, general property, which might be thought of as an Emergent Individual. This may be a helpful construction at a social level, but, in the account I argue here, it is plain wrong.

Attributes do not emerge. They are recognised, and their commonness is not in their existence in objects, but in their attribution, and in the mind of the attributor.

My Friends and Intelligence

Let us now look at the contributions of my friends to this understanding of intelligence. Their contribution is probably clear to the reader already. But in case it is not, we will examine it, by counting down from five.

The way in which I have described how we experience behaviours which we come to call intelligent is an example of the Principle of Mutual Reciprocity in operation. The intelligence recognised in the other is the intelligence I recognise from me, and exists in the behaviour that is

⁸ This paper was written for the conference in 2001. Reconsidering the paper in 2007, I have since developed my understanding. I now see intelligence as purely a matter of interaction. The Turing Test thus becomes a step on the way that opens up this possibility, rather than the defining understanding.

⁹ We might talk of the demonstration of intelligence in a record, but then we are still attributing the quality and we are interacting with the record (no one insisted there must be equal “effort” from all participants, or that effort must be explicit—for participation, conversation, interaction, we have to learn to listen, which is as important to an interaction as it is to utter (Glanville 2001b) Which is not so far removed from the intelligence exhibited between others when observed by us without active intervention .

Then there is metaphorical transfer. By this, I mean that we transfer the quality of intelligence to things not normally granted it (cats, computers). But that is the whole point of the Turing Test. Given the Turing Test, we do not think of intelligence in this way. We may, however, think of a metaphorical transfer of, for instance, evidence from which we might acquire behaviours that seem to be intelligent. But, again, Turing comes to our aid and shows this is not a significant distinction. The medium and the means of acquisition are not important.

Note, too, that there is circularity in all these examples.

between us and through our interaction (as I observe it in behaviours). This I think of as occupying a space between us (hence the importance of the in between and the interface, that I have written about elsewhere, see Glanville 1997). The recognition of intelligence is an act of mutualism and of reciprocation: what I have you have. I know I have it because I give it to you and you give it to me: we are co-partners. This is Friend Five.

Yet we have made no assertion about those properties we take as belonging to our co-participant(s) in this interaction/conversation. I know nothing of you—the other—except what I observe of what I come to think of as your behaviours, in which I recognise intelligence. All of this is done by me. What I have done is to treat the other exactly as a Black Box, (as I described it above). We know, and can only properly assert we know, nothing about what happens in this other. We can observe their behaviour in interaction with us (that is how we come to know they are present in our world). From this, we can build a description which allows us to attribute the quality intelligence to the interaction and to each participant. Thus, we attribute (if we do) the quality to the other. This is Friend Four.

The way that we do this is through a Turing Test. In fact, the Turing Test can be seen as an expression of the Black Box notion. What the Turing Test allows us do is to give the quality of intelligence regardless of the nature of the object. Thus it allows us to step beyond our natural associations, our prejudices. The Turing Test achieves this (whether Turing himself realised this, or not) through the premise of the Black Box: we do not know what is inside the Black Box, and we can never see inside. What we can do is observe behaviour, interact with that behaviour, and build descriptions that seem to work. The building of the description is, in this case, expressed by the giving of quality of intelligence. This is Friend Three.

The ways we can do this, can build descriptions that work, is through interaction, that is, circularity. The processes above are circular in form: I do something, and you do something (which I take to be a in response). In fact, as I begin to build my description (and, I suppose, you do too—by the Principle (Law) of Mutual Reciprocity)—I extend the value of my description by controlling the input so I can see how the description continues to work. This is a test, and lies at the base of most accounts of science.

But circularity is also involved in that circularity creates the interaction, and circularity passes the quality between the participants. This is Friend Two.

Finally, intelligence is recognised in the behaviours exhibited in the interaction. It exists in a description. Firstly, in the description by which we attach the label “intelligent” to this behaviour. But secondly, and as importantly, in the recognition that the behaviour is itself taken to be an expression of the object, where expression is a form of description. Intelligence is, thus, seen not in the object to which we will attribute it, but in an expression and/or description of the object. The attribution of the quality is not in the object but is in the description, so the intelligence attributed is in the description. Since the quality is not in the object, it cannot be a property of the object. This is Friend One.

It is, perhaps, clear that the Friends are not totally removed from one another: they have similarities, and they more-or-less imply each other. They are related in other ways, too. For instance, the Black Box, Turing’s Test, and the difference between the description and what it describes all support a notion of ignorance. Ignorance is a very important quality much underrated in our society. For it is ignorance that allows us to learn. And, as Gordon Pask noted, Humans are Machines for Learning.

Conclusion

The outcome of the process I have demonstrated here may be to argue against the position presented in the conference announcement concerning emerging individuals. As it happens, I am not impressed by the notion of emergence, especially in the usage that has recently emerged and which seems to miss the point. But I do not wish to argue that here: it is an incidental point. As it happens, I see the world in a very different way, and the notion of qualities as existing in my experience and in my consciousness is no more bizarre to me than the existence of chairs, stars or epistemology. The notion that such objects are attributed (that's how they become qualities, I would maintain) is not in the least bizarre to me and to my way of conceiving the world. But, anyhow, my intention was not to convert, merely to parade.

What I hope I have done is to introduce my Five Friends as powerful ideas which help me and may help us (in general) to think, and then show how these five are caught in a very simple explanation, based not on definition but on experience. In this, I have indicated the all-pervasiveness of at least these cybernetic ideas, and hence their importance and significance. I believe that all we have, if we have anything at all, is experience: if we want a reality, that is where our realities can lie.

It is my hunch that this way of thinking is not only powerful. It is also general. That is, there are many qualities other than intelligence which are well treated in this manner. Perhaps all qualities are. I would think so.

This, of course, sounds like a credo. And it is. It must be. The premise it is developed from is no less a belief than any other premise. And the argument leads to positions that are firmly founded in belief. Adapting and extending:

Credo, ergo sum!
Credo, ergo cogito!
Esse es cogitare, cogitare es esse!
Credo!

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