



UNMARKED CONSCIOUSNESS

Anthony Blake

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ATOMS AND LEVELS

There are, in contrast with standard representations in which consciousness is either on or off, concepts that consciousness can be of different kinds or levels. William James, for example, urged us to think of a great diversity of possible conditions of consciousness. [See for example *Stream of Consciousness* 1892. James' insights and analysis are acute and far surpass my own feeble efforts.] When I use the term 'unmarked' in my title, I am looking forward to some encounter with mathematical form in its capacity to reflect different possibilities of what is often regarded as our inward condition, quality of knowing and experiencing, or level of consciousness. Needless to say there is a lot of woolly thinking round in this area today, of which I myself am probably guilty; but I believe that, for example, classical mysticism such as that of the Middle Ages, was quite precise and disciplined.

In my talk I am going to steal ideas from Louis and Peter for which, of course, they bear no blame whatsoever. And by using the term 'unmarked' I will already have alerted most of you to the spectre of Spencer Brown hovering over us.

To speak in terms of consciousness we need to approach some idea of levels. It is a common idea, in that the word 'level' is often used, but it is a rather curious one that is rarely examined. One of the ways I want to talk about it is as in contrast with atoms. Atoms in a generic sense, are taken to be the basic irreducible units *out of* which all things are made. Levels, on the other hand, can be understood as that *from* which all things are made. There are two different senses of what is in some sense 'ultimately there'. These two senses have been attached to all kinds of label or categorisation, such as empiricist and idealist. It is an interesting exercise to hold or contain the two senses in one mental embrace, so that one has a kind of felt experience of their simultaneous contrast and sameness. This will prove useful in our ensuing exploration. I will also be saying much more about it.

Atoms of course, are open to further deconstruction into smaller components. When we speak of levels, there is a complementary tendency to speak of going beyond, that is reaching a higher level. So, in our imagination we can work with the contrast and similarity of two seemingly very different ideas, namely those of smallness or size, and higher or beyond.

Levels appear to form an order, at least to a first approximation, suggesting a 'dimension' of more and less of something. This something I would call being, or degree of inner togetherness, a concept that draws on our experience and 'taste' of consciousness since we seem to vary between dispersion and concentration, fragmentation and integration. It should be added that something cannot 'exist' on a higher level unless it has the strength of inner togetherness to do so. This also implies, as we might see later, that higher levels can embrace greater degrees of contradiction than lower ones.

Another contrast I wish to suggest is that between the very large numbers associated with atoms, and the very small numbers associated with levels. Speaking in terms of rarity rather than absolutes, we can agree that rarely do we deal with very small numbers of atoms and rarely do we deal with a very large number of levels. The contrast is accentuated in modern times because of the advent of great powers of computation, making possible the calculation of the results of a myriad of tiny contributions, or the thermodynamic approach. In earlier

times, hierarchical models of the cosmos enabled people to embrace the totality as a whole in their minds, or the holistic or mind of God approach.

When I use terms such as holistic, mind, God and suchlike, I invite you feel and experience them - even though they appear to be all on the 'same side' of things - as exercising contrasts and similarities with each other, in a way not reducible to naive synonyms. However, just associating things together, in a thin gruel of meaning, is the background of all our experience and it is probably so that our brains are constantly making random connections between everything and everything without any concern for quality, meaning or any other differentiate, without which we could not function at all. Beneath all our distinctions is a basic level of mutual relevance which is largely taken for granted or unconscious. Mind begins when we mark something out, which is when all our delightful problems begin.

I will be making some forays into the world of words and language. It is an open question whether our mathematical ability with abstract operations derives from natural language, or whether it marks the evolution of new kinds of data processing in our brains. I must add here, speaking of language and mathematics, that we should also bear music in mind because it might turn out to be highly significant reconciling factor between the two, and we can think of it as the most highly sensuous of abstractions.

In pointing out the contrast between atoms and levels I have also been exemplifying and interpreting the meaning of - and I make a somewhat arbitrary choice of word here - *dilemma*, having to use some word though there is no one word or mathematical sign that can possibly embrace what can be meant. The word 'dilemma' means something like "two alternatives in which a choice can be made, lacking any intrinsic information on which is the right one". I have used this Greek word partly because I will want later on to use the term *tetralemma*, and you can guess from this that a *monalemma* will be having no choice at all; while I point out that the term lemma means something like figure. The word dilemma has a restricted meaning of "not knowing what to do" or "dammed if I do and dammed if I don't" but I simply ask you to open to its myriad implications.

DUALITY

It is evident that it has something to do with twoness, or duality; but there are other words with different feelings to them such as contradiction or opposition, contrast and distinction, and a myriad of such couples as one and many, spirit and matter, and dare I say it male and female; and we should not forget the very ancient tradition of thinking in terms of just oneness and twoness, itself represented in a myriad of ways. [On Oneness and Twoness in Plato see Holger Thesleff, A summary of the main points of *Studies in Plato's Two-Level Model*, Commentationes Humanarum Litterarum 113 (Helsinki: 1999) *Journal of the International Plato Society*]

To treat all of these, and there are vastly more than the few I have mentioned, as if they were of the same nature, is absurd; but we must remember that there is an ubiquitous face-off of the "same" and "other" even between the various instantiations of duality, and also remember Bateson's question of what is the difference that makes the difference. What is significant and obvious is that language contains a qualitative richness for expressing the meaning of such a term as dilemma and that this richness is not superfluous or reducible to a single formulation. It cannot be simple but is usually clear enough (just as I might add just as a curiosity that the apparently simple word 'set' has 250 distinguished meanings in the Oxford Dictionary though just about every English speaker can use them properly) because

words unlike mathematics are often (as I believe Wittgenstein came to argue) *participating in life*. I must point out that literature thrives on ambiguity - another word from the same family as dilemma and twoness and so on - the very thing that is anathema to mathematics.

At this point, however, I want to call on a mathematical metaphor for the language term *dilemma*. In doing so I am somewhat in a contradiction since I have just averred that ambiguity is foreign to mathematics; but of course the term 'metaphor' means something like 'to carry between' itself signifying what we will later call mind, or that which *bears meaning*, perhaps as a mother might her child. The metaphor I am thinking of is the square root of -1. It appears, obviously, in the context of real and imaginary numbers where the equation $x^2 = -1$, leading to $x = i$ contains the idea that there are an infinite number of solutions. Not only that, there is the treatment of *i* as a structure of alternation between +1 and -1 as in Louis Kaufmann's treatment which looks uncannily like: "It just can't make up its mind, it's in a dilemma."

Speaking of mathematics I want to mention a conversation I had with *Françoise Chaitin-Chatelin* the French wife of the renowned American mathematician George Chaitin in which she not only spoke of the opposition existing between her and husband's approach to mathematics, especially in regard of the meaning of zero in relation to creativity, but went on, in a lecture I heard the next day, to speak of an upper and lower limits of human thinking, an idea which is sometimes given name of epistemic boundedness. In the one limit, she said we had the state of atomic, fragmented, random bits while in the other, we had wholeness, continuity, complete simplicity. It is not too hard to see this idea is exemplified in the now familiar clash of quantum with relativity theory. The idea of epistemic boundedness is taken to stem from considering we are an animal species which must necessarily have come into existence with a specific structure of cognition coupled with a specific terrestrial environment and transmitted through a physical make up that cannot possibly have the capacity to represent in itself all that can be, or the real universe in its total meaning.

The reverse postulate is that every sentient entity of whatever genesis must necessarily embody a sense of the whole. This is a vague statement but can be paralleled with the cosmological principle that the laws of physics must be the same for every observer.

The temptation to believe that we *can* embrace the whole universe, or just 'all', is I believe exemplified in consciousness which has a perverse character of *closure* that makes it the field in which what we sometimes call 'egoism' can manifest. The idea of levels lends itself to the possibility that 'true cognition' will have levels, according to the relativity of being and that, *relative to higher levels*, the cognition possible on lower ones is imperfect and even 'mistaken'.

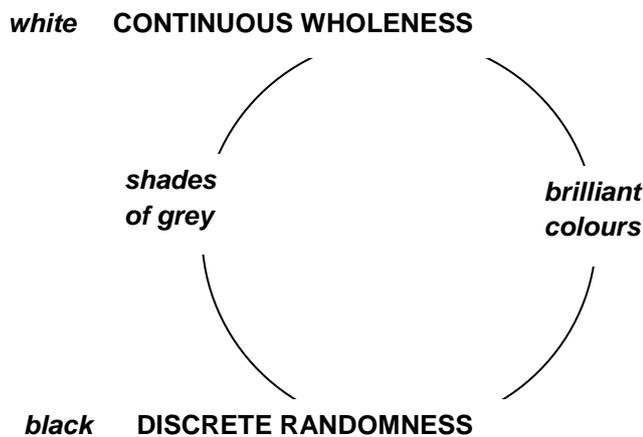
The tie in of cognitive capacity or intelligence with physical composition is, of course, a section of the realm of discourse we have on the nature of intelligence while other sections admit non-physical interpretations, just as it includes aspects based on consciousness and non-consciousness. Incidentally, an interesting book by sociologist Randall Woods [*The Sociology of Philosophy*, Harvard, 2002] argues for a 'law of small numbers' at work in any present moment of philosophy, specifying between three and six alternatives filling the attention-space of any place and period.

One of the interesting aspects of *Chaitin-Chatelin's* simple picture is the technique of 'reading' the meaning of a dilemma in terms of its *extremes* or limits, emphasising the gap or void between them. This is in contrast with drawing a line between the two and hence being

drawn into thinking in terms of gradations; the contrast making another duality. Not only that, but thinking of the gradations can be done either as a series of a very small number of levels, akin to the model Plato uses in the *Republic*, or as a continuum.

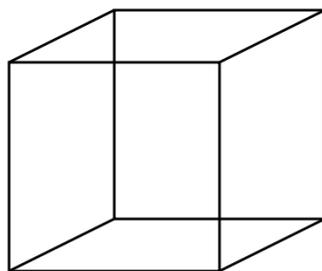
Answering to these four sections, assume these four affections occurring in the soul — understanding (*noesis*) for the highest, reasoning (*dianoia*) for the second, belief (*pistis*) for the third, and for the last, picture thinking or conjecture (*eikasia*) — and arrange them in a proportion, considering that they participate in clearness and precision in the same degree as their objects partake of truth and reality. (*Republic* 511d-e)

The duality re-enters itself and makes and unmakes itself. For example, we can make the following picture:



The picture uses colour as a metaphor for states of duality. My use of the words 'brilliant colours' may become a little clearer in a moment.

The technique of extremes gives an access to creative thinking: simply put, one has to increase the contrast while bringing them into the closest possible proximity. Again, using a pictorial analogy, this might be thought of as having two opposed perceptions at one and the same time, instead of an alternation, as if we could see the cube as both extending into the page and also out of it simultaneously.



[A participant reported that he came across someone who could have this 'impossible' perception who was dyslexic.]

There are also so-called 'impossible colours', but these are not entirely impossible:

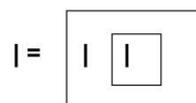
Red and green are called opponent colors because people normally cannot see redness and greenness simultaneously in a single color. The same is true for yellow and blue. Researchers have long regarded color opponency to be hardwired in the brain, completely forbidding perception of reddish green or yellowish blue. Under special circumstances, though, people can see the “forbidden” colors, suggesting that color opponency in the brain has a softwired stage that can be disabled. In flickering light, people see a variety of geometric hallucinations with properties suggestive of a geometric opponency that pits concentric circles in opposition to fan shapes. Summary of *Scientific American Magazine* article February 2010 'Impossible Colors: see Hues That Can't Exist' by Vincent A. Billock and Brian H. Tsou]

The conjunction of separation and proximity answers to a sexual metaphor which reminds us of yet more aspects of duality as in the coupling - a double entendre - of the biological with the mental, now always keeping in mind that we cannot possibly begin to reach the meaning of such words without enduring the vicissitudes of countless slippery contradictions. The deliberate practice of attending to and intensifying contradiction - already it must be noted voiced in dialectical materialism but rarely put to constructive use - is to be found in the Russian system of innovation called TRIZ *teoriya resheniya izobretatelskikh zadatch*, in English rendered 'theory of inventive problem-solving' which asks us to drive ourselves towards a deeper communion with contradiction that has a core focus, possibly rooted in physical reality, or just reality as such in the sense of that which can never be escaped from and is always ahead of any of our actions. Practitioners of TRIZ stress that the approach is quite opposed to simply making improvements which, in our picture earlier we labelled 'shades of grey' here signifying compromise, and aims for the brilliant colours that are, I might say, born out of the naked sparks of contradiction. To quote Simone Weil again: "All true good carries with it conditions which are contradictory and as a consequence is impossible. He who keeps his attention really fixed on this impossibility and acts will do what is good." Or William Blake: " Blake, as you know, said: *Contraries are Positives: A Negation is not a Contrary. There is a place where Contraries are equally True.*

FORM IN SEQUENCE

To begin to make a return towards the neighbourhood of mathematics I want to put in front of you the two words "containment" and "absence", words only because I cannot possibly put any idea or meaning as such in front of you, only show you an object, a sign. Let me first speak of containment, which I will do in a way that would seem largely psychological; and I want you to bear in mind the dilemma in mathematics between psychological and abstract content, that is between what one does to think it and how it itself thinks.

Louis Kaufmann has drawn our attention to von Foerster's reflexive statement "I am the observing of my observation of myself" and expressed it thus :



[Kaufman, 'I Am a Fibonacci Form' in *Cybernetics and Human Knowing*, Vol. 11, no.3]

It appears in the guise of a reiterated operation, signified by the box. But, psychologically, the larger bracket or box is not the same as the smaller. I want to dig inside this picture, and try to get at the thinking that might come before it arises.

I write out (or draw) a series of I's, imagining that each is discrete.

. . . I_p. I_q. I_r. . .

In this representation there are no boxes or operators signifying transactions between them, the periods put in purely to emphasise their discreteness . This is more a picture than a mathematical construction. I want to say that each 'I' is *unconscious* of the others.

Now let us imagine that an 'I' is not cut off from the others but reacts to its previous identity, and presume that this word 'reaction' can include such meanings as represent, remember, or even be aware of. I will indicate the reactions between by means of short vertical lines. We then have:

. . . I_p | I_q | I_r |

[According to von Foerster's second-order cybernetics, this series would represent a *non-trivial machine* in which its state relies on its previous state.]

The first series I want to call *automatic*. It is in fact close to the picture discussed by René Descartes about which he observed that each element was a moment unable by its own power to link itself to the next, hence requiring a higher power, or God. Incidentally, it was from a similar consideration that Locke in the 18th century, in the heat of the controversy at that time over the existence of the soul, developed the term *consciousness* to signify a continuity of self by some physical linkage of memory producing the experience of remembering-me. The idea that we consists of a series of discrete moments of I-ness is, of course, very Buddhist; and, speaking of Locke, we are reminded of his contemporary David Hume whose picture of the self turned out very close to that of Buddhism.

We can speak of each of the I's in the second expression as *reactions* of the organism to its environment and internal states and consider such physical reactions are felt as "me", so that in effect one is reacting to oneself. Roughly put, it means that some awareness of oneself produces another state of myself, and to call these various states also I's is not only a matter of convenience for our discourse but an intended statement about our experience. I want to call this series *sensitive* which signifies something related to our assumed sense of awareness, an awareness that might not be particularly human; and in this sort of awareness we just react and consist so to say just of reaction. As we react, the previous moment of ourselves becomes an object as the new I is generated. This is the arising of the subject-object dualism which, we suggest, exists only in this sensitive level.

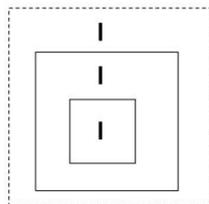
Descartes' series of moments becomes a movie. Again I cannot resist an aside that points out that the way we actually perceive the succession of discrete images projected in the cinema as a continuous action is still not fully understood. [There was a novel called *Flicker* (1991) by Theodore Roszak which played with the idea that the cinema was invented as a Gnostic dualistic heresy.]

Now, whether my sketch so far to your experience or not depends on how you see it which I will suggest leads both you and me into a dilemma, but this is something I cannot directly address here. I want to go on to *another level* beyond the sensitive in which the next moment retains the previous moment and experiences it together with itself, which is only

possible *if these two are contained together*. All this is subsumed in the image or symbol of the box. I want to say that such containment means more than an operation and, to use now archaic terms, it is a matter of *being*. This means in effect there is a different quality of I-ness. It is this level only I want to designate as *conscious*, which is to deviate from common usage in which we assume that during all the day we are and remain conscious which, as you may surmise, means something like *acting together with ourselves*.

This leads me back to the first expression with its boxes. In the way I am speaking now, I have abandoned or altered two main features. Firstly, I no longer have any equations. I might say, provocatively, that equations are predicated on treating what is different *in kind* as the same *in function* and thus, incidentally, supports reductionism at every turn. Secondly, the writing of marks in a line is inherently symbolic of time and succession, so necessarily does not serve any treatment of levels which are, by nature one might say, co-eternal. The device of re-entry of the form uses recurrence to simulate eternity. There is an implicit circularity that is very close to the Platonic reflection of the Ideal in circles. These brief remarks only serve to indicate a direction of thinking but they are meant to emphasise that the very way in which make our indications comes of deep-held presuppositions that can be regarded as recasting of ancient ideas of time and creation. For the moment, I will simply show a way of writing the reflexive expression that naively uses the common instinct that the vertical dimension corresponds with the 'direction' of levels.

I want to interpose the observation that, according to current research, the right brain favours vertical lines and the left brain horizontal ones. A further detail is that on the horizontal the left brain favours left to right, as in our western writing, while the right brain favours right to left. A vertical arrangement signifies levels because the right brain is sensitive to them while the left is not. Whatever the writing of the left brain it will always tend towards treating things as all on the same level.



The I's *mark* here the different *levels* and can be thought of the *names* of 'selves' who live in the different boxes; because levels are *subjective* i.e. 'of the subject'. They all call themselves 'I' but they are *not* the same. To stretch words, the top 'I' is more-I than the others! When we enter a higher level we can *mark* this. This cannot use a previous level of mark. We have degrees or steps of markedness, a concept we will return to later in the context of semiotics.

In speaking of levels I am involving them as possibilities not as actualities (that which is actual can only happen). There is a kind of tautological sense that we can be conscious only if we choose to be, *and also already grasp what it means to be so*; or even just to say that we choose to be conscious, but such a choice is only possible if we are already conscious. Incidentally, as you well know, the etymological meaning of the word is "to know together" though please read C. S. Lewis's *Study of Words* for a deeper exploration of the meaning of this word, which can also imply *knowing with others*.

It is a remarkable thing that in French there is a single word *conscience* for both the English words 'consciousness' and 'conscience' and *expérience* for both 'experience' and 'experiment'. Translation brings us into deep questions of the relation of words to meanings, where we allow the latter the character of reality but, in doing so, plunge ourselves into dilemmas.

A very good representation of science itself is the close proximity of the two ideas of "being with oneself" and "knowing with others" and is I feel a very good indicator of what consciousness means for the deep structure of our experience. In one of its facets, consciousness is inherently scientific. Or, one can equally well say, consciousness is of the nature of mind while, as my old friend Patrick de Mare would say, mind is not in brains or persons but between them. That is to say, brains or persons cannot contain mind because they are at a lower level. An analogue is that a knot cannot exist in higher dimensions.

BEYOND CONSCIOUSNESS

I am treating von Foerster's idea as *multilevel* embracing, in the terminology I have introduced, no less than three levels: automatic, sensitive, and conscious. These levels co-exist and give a description which forms a duality with the re-iterated sequence of the equation we saw earlier. With consciousness we enter the truly human realm. It is not generated biologically, that is by definition, from lower levels, and this is intrinsic to our nature. It contains and goes beyond the mechanisms of our automatism. We now verge on the threshold of what in the Eastern Christian church were called the Divine Energies, responsible for creation and salvation, a concept rejected by the Western Branch of Christendom; there is, as you might suspect, a plethora of dilemmas attending the dichotomy of East and West in Eurasian and now global history. Again, briefly in passing, creation and salvation form a duality that in some religions was actually expressed by the idea that there were two kinds of God, as in some interpretations of the contrast between the Old and the New Testaments.

Thinking in terms of the previous diagram, we can imagine higher levels than those shown and ask, What then would be the status or reality of I's on such levels? Well, they might well correspond with what until recent times were regarded as angels or even God.

I said I would introduce and make use of two ideas. One of them was containment and the other was *absence*. In a fairly evident sense, I would say that higher levels are absent in lower levels just because they are higher, which implies the principle of levels called *autonomy*. I have to point out that we should be as conscious as possible in considering levels and not fall into the illusion of taking ourselves as some kind of onlooker capable of turning our gaze up and down the levels at will. We probably feel this instinctively which is then why so many people reject any idea of high levels than their own felt experience - which might be just sensitive - as either unreal or some sort of cultural conditioning. I will presume that we can gaze so to say only at lower levels and that by analogy we might feel that we are gazed upon from higher levels. This of course was once common in the piety that assumed we were being seen by God or angels but has almost entirely disappeared in our present epoch; though there remains the speculation that we are being seen from the future of ourselves.

To make a tentative attempt to find some indication of higher levels I ask this sort of question: "What is it that switches on consciousness?" The question addressing what switches consciousness on, and possibly off, can easily be dismissed, but bear with me. It is

being proposed here that, as a possible way of indication, one can make a contrast with the sense of causality which is always from the outside, and consider a totally opposite sense of what comes from the inside - or from what is *between* the known or experienced - as one might intimate from the various series discussed earlier. This kind of step appears in mathematics in such elements as bracketing or containment and operations which stem from absence. The latter point may seem obscure, but simply means that there cannot be any operations between things unless there are gaps between them. Those of you who know about Kabbalah may remember that the advanced adepts ignore the letters but attend to the gaps between them from whence the angels appear.

I'm going to jump the gun and called the level above consciousness "creativity". I'm doing this because I am drawing on the scheme devised by a polymath Englishman John Bennett [as in his book *Energies: Material, Vital, Cosmic*, Claymont Communications, 1990] who influenced me a great deal and I want to acknowledge his work though without stopping to expand it in any detail. I have in fact used his terminology already in the words automatic, sensitive and conscious. Concerning the level I am calling creative it has to be enough that I point out the phenomenological experience that can be summed up by the words "creativity must be beyond consciousness", an idea that is to be often enough found in common discourse on the subject. You will well know reports of creative acts arising unexpectedly and apparently with no conscious volition, the literature is endless.

Often the term 'subconscious' is used for this, which word implies an inferior state 'below' consciousness; it is obviously difficult to consciously conceive of an operation from a level *above* consciousness. To so, first requires that we can see or at least glimpse that consciousness is a privation of our being. One way of starting to reflect on such a possibility is to take into consideration that our conscious life is dominated by the idea of our own agency. The conscious world remains divided; but it has the power of making a question. It is rather like a problem that cannot solve itself but can ask for help.

A creative act commonly has the property of initiating an "I see" moment, a moment coming from nowhere as far as our consciousness is concerned, carrying with it the feeling sense of living in a different world of enhanced meaning but sublime simplicity. Creativity switches consciousness on: it does not do what consciousness has to, which is for example to work out consequences, establish a language, communicate with others and so on which come with reflexivity. As you may have guessed I identify reflexivity with consciousness.

It is of course quite rare for a mathematician to speak of his work as "revealed" in some way and Ramanujan was an exception though sometimes one wonders about Spencer Brown. By not giving a mark to the unmarked state he was, I would like to say, acknowledging creativity at the heart of the dilemma that nothing or absence by being named amounts to something. It fits that in the 80s he announced he was enlightened and defined enlightenment as knowledge of the laws of creativity.

You may have noticed that I am embarked on an approach that is opposite to that of combinatorial hierarchy. In brief, the levels I am concerning myself with become ever more simple instead of evermore complex. And let us remember T. S. Eliot's wonderful line, "The condition of complete simplicity, costing not less than everything". I'm trying to speak of a "less that is more" and invert the picture of the higher as stronger or more powerful, following instead the theme of absence. In Christianity the higher can enter the lower levels only by *kenosis* or privation; that is, by a kind of sacrifice, as symbolised in the crucifixion. This implies - though it is quite a leap - that creativity can only enter us 'in disguise' as it were.

Creativity can switch consciousness on *just because it is unconscious*. In colloquial terms, creativity does not have the hang ups of consciousness. In relation to consciousness, creativity is an absence. In ordinary parlance, it is simply the unknown. But how, might you say, can this unknown be in any way active? I am trying to stay with this question for it is a wonderful dilemma!

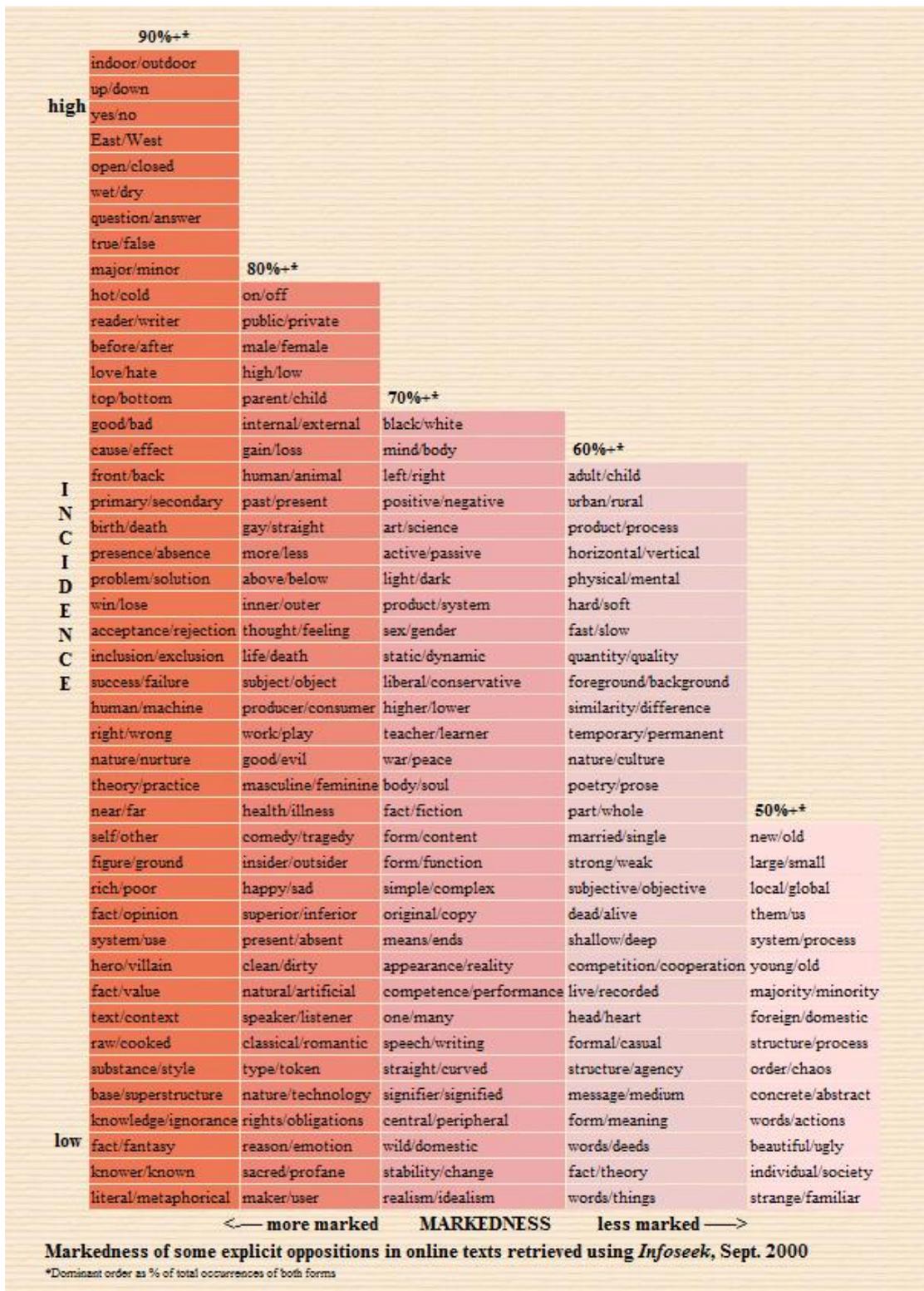
Incidentally, back to this word dilemma, I must mention that in a wonderful book called *Zen and the Art of Creative Management* by my old friend Albert Low, once in the Union Gas Company of Canada but now a Zen master in Montréal, he pointed out that a dilemma is such that it cannot be resolved by computation and requires a decision, that is a human act, rather than a robotic or egoistic act. I will, for the moment, suggest that this requires creativity to enter consciousness, *to redeem consciousness from its past*. As James Joyce put it, "History is a nightmare from which I am trying to awaken."

SEMIOTICS

There is a level, perhaps many, beyond creativity I wish to address but only later. At this juncture, I want to delve a little into language and semiotics. In a commingling of anthropology and linguistics, semiotics – the study of meaning - harbours a dominant idea of duality, a term I am now using to segue from the word dilemma I have been using to another Greek word *dyad*. Dyads can be quite peaceful or intensely disturbing. These emotional adjectives are relevant because there is certainly an aspect of meaning that is indubitably emotional, and we can only say that whereas thought attends to the bare form that is always the same, feeling gives the colour and spice that reflects the vital diversity that is to be found advocated in Leibniz, as physicist Julian Barbour avers in his fascinating interpretation of the Leibnizian "best of all possible worlds" ['The Deep and Suggestive Principles of Leibnizian Philosophy', *The Harvard Review of Philosophy II*, Spring (2003)]

Pairing of some sort pervades language. There are obvious examples such as: cold and hot, interestingly enough having to be overcome in physics by a monism of heat alone, this then illustrating the very traditional asymmetric relation of oneness and twoness that was integral to Plato's thinking, for example. Then there is the now contentious male and female, where the latter word signifies not-male; in other words, the female is taken to be a deviation from the norm or given of the male (the opposite of course to biology). The great cultural anthropologist Claude Levi-Strauss was renowned for the dyad of raw and cooked (or prepared, done), cooking being a signature of a culture [*Le Cru et le cuit*, 1964]

Semiotics makes use of a notion of *markedness* which describes how we mark or voice something that is the exception rather than the rule. It is fascinating how closely this aspect of discourse parallels Spencer Brown's laws of form using the very words "marked state". In discourse involving the sexes the marked state is usually the female, while male is in the background as the norm, or even the higher ([which, interestingly enough, is the reverse of biological reality]). What we mark or voice is the deviation, because we take for granted what is unmarked. This is of course a relative arrangement but there are statistics that show strong biases in this regard. The following table is taken from 'Semiotics for Beginners' by Daniel Chandler(<http://www.aber.ac.uk/media/Documents/S4B/semiotic.html>) in which the more marked term is on the right of each pair, the columns showing the proportion of bias.



Semiotics concludes that just about every term involves its contrary – in the meaning of William Blake for example – and embraces a wide range of meanings for that which contains the two and is between them. There is in physics acknowledged by and large just two kinds of twoness as exemplified in first electric charge and second conjugate properties, these representing also the clash of classical and quantum mechanics. The sort of examples we

find in ordinary language are rather more relative and asymmetrical, as shown in the table of frequencies of occurrence in which the right-hand term is the marked one..

A traditional understanding used in interpreting dyads – which means being able to articulate their variety - is that if we have in terms A and B then one of them A, say, will tend to view the couplet of which it is a part as a whole, in an *inclusive* way while the other, B say will tend to the opposite and look at the couplet as a disjunction, a mutual *exclusion*.

Louis Kaufmann has pointed out that in Spencer Brown the cross operator signifies three ideas: a name, that of the marked state; an operator or instruction "cross", and distinction itself, or boundary. The boundary can be called a kind of absence because there is nothing there but in a very unusual sense: in the kind of verbal language I have been using it indicates the creative act of making a distinction, it initiates or switches on the calculus. In this act everything is contained. The cross operator mark is just the *memory* of the act as soon as it is written, it ceases to be in act and has become "actual". I have just use a linguistic mark, namely quotes, to signify an intrusion of the marked state called actual, implying that I am in some way reversing the probably assumed asymmetry of the two states. In other words, it is what is not said that is important.

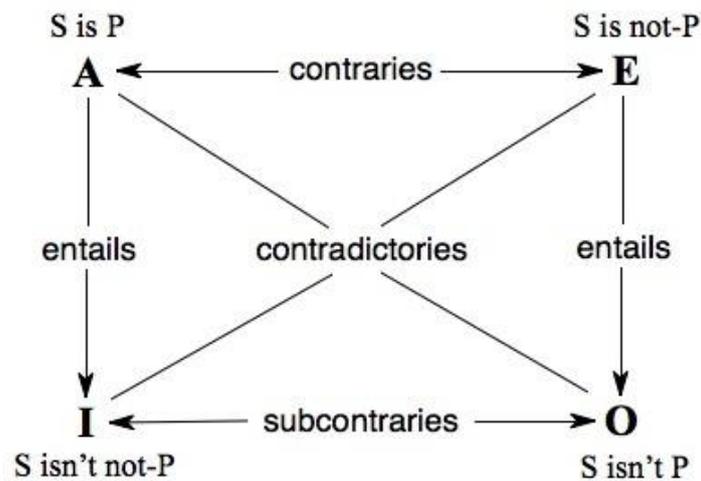
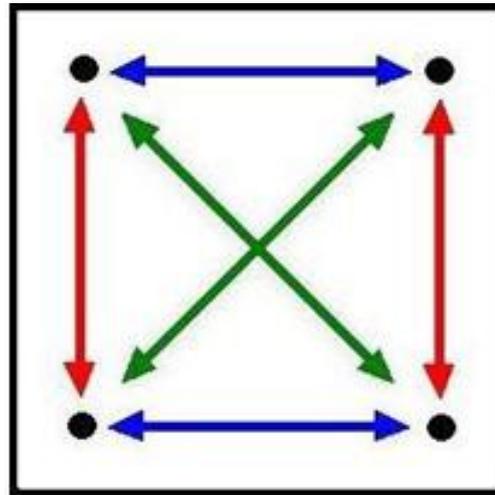
The asymmetry of dyads is most important. It appears in many guises. Man and woman are equal but different, which will always manifests as a dilemma because no one can work out what this must mean. It is up to decide in *every concrete instance*. To decide *in general* is to ignore the need for creativity. Creativity is no mere icing on the cake of routine accomplishment but, I feel, essential for anything authentic. As Chaitin says, he only feels he understand a theorem if he can create a new proof of it.

I have been bringing into the picture via semiotics the idea of complementarity - as you know a major concern of Neils Bohr but the universal import of it still barely accepted. Also, the two sides can be seen as divided as in Kierkegaard's, "I say to you *Either/Or*" or as 'coupled' in a somewhat sexual sense. We can have the bare abstract notion of A and not-A as together making up the universe but there can be more and, indeed the bare idea of A and not-A can be enhanced by or *unfolded into* at least two other terms. The fourfold figure is addressed in Buddhist logic, though often given the Greek name of *tetralemma* (interestingly, Albert Low avers that every real dyad is actually fourfold, but only when it becomes conscious or reflexive, prior to decision). In semiotics, Griemas is recognised as the key pioneer of the fourfold scheme, the idea from which it stems is that the meaning of any term is inextricably bound up with the meaning of reflections or echoes of itself.

In relation to *Laws of Form* McFarlane has argued that one needs more than one kind of distinction. In his paper *Distinction and the Foundations of Arithmetic* (2001, 2007) he concludes that three kinds of distinction are required to execute arithmetic. We are here moving towards a general notion of four kinds of distinction, arguing that this is an inevitable consequence of the dilemma of distinction, but without any rigour.

The feeling or meaning shape of the fourfold scheme can be found in ancient sayings such as the Pythagorean "Justice is a number squared". Griemas's semiotic square, as it is called, can take many guises but the picture given below shows the standard characteristic of involving three different kinds of duality, sometimes given the words: contraries (blue), contradictions (green) and complementarities (red). Below is a picture of the three dualities and below it an example in abstract or logical terms. It is perhaps obvious that speaking of just three types of duality is itself an abstraction, as is hinted by the term 'subcontraries' in

the latter. There can be as many kinds of duality as there are pairs of terms. There is no form *a priori* separate from the content.



FOURFOLD DISTINCTION

As I said, some of the interpretations of Griemas' semiotic square correspond to the four terms of Buddhist logic, or the *Catuskoti*. In this structure we go beyond duality by entering more deeply into it.

A not-A

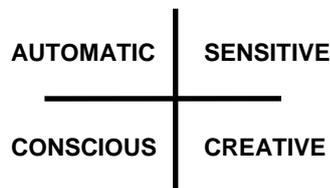
A and not-A Neither A nor not-A

It is interesting to reflect by the way that the fourth term is very close to the Sheffer stroke which was one of Spencer Brown's starting points: $A|B$ signifying neither A nor B. The use of a vertical stroke is generally used to signify some kind of distinction and used in various ways, perhaps including Conway's definition of number. The primary distinction need not be

of the form A and not-A. Another common representation uses both negation and inversion to produce the following four terms:

S	-S
1/S	-1/S

The fourth term or state is a precursor to the *sunyata* or void of Buddhism, though Buddhist logic actually developed into nine terms, the ninth at the centre of eight being the void. In alchemy, which is strongly based on the quaternity, the fourth was sometimes referred to as the "recalcitrant fourth"; and was signified in Plato's *Timaeus* as the missing guest. In general it signifies an absence or a void which we associated with creativity. Whereas we associate the third, A and not-A, with consciousness; containing impulse and reaction to impulse together. Hence our discourse translates into a form of four mental energies.



The idea of four energies of mind lead me to draw two lines dividing the square into an intersection of two further distinctions, the first of which can be associated with ideas of the conscious and unconscious, though in an ambiguous sense as will be obvious on inspection.

Our rapid and perhaps sometimes obscure excursion into this semiotic square is rather like articulating the meaning of the boundary made in distinction. Spencer Brown spoke of the mode of distinction used in his calculus as "perfect continence". This term signifies the holistic continuity of one of the two extremes of Chaitin-Chatelin's picture of the range of human reason. You will probably suspect that I am after a dissolution of her upper limit which is, I believe, stemming from 'marked consciousness'.

To add to the display of extant forms of representation of the play of duality, the nature of dilemma and the mutuality of oneness and twoness, I can show the fourfold scheme by a technique in which we assume two contrasting natures that can be mixed in various proportions. In doing this, I will revert to the terminology of the marked state by using the two terms *marked* (M) and *unmarked* (U) in the following way:

MM	MU
UM	UU

In her book *The Optical Unconscious*, Rosalind Kraus develops from Gestalt theory a four-fold scheme in which the technique of mixtures is apparent:

FIGURE	GROUND
FIELD	VOID

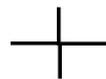
I suspect that this would resonate with Peter Rawlings physics, the vacuum corresponding to the ground or marked-unmarked state, for instance, but cannot presume to say this adds anything of value to his work. It is also possible to bring it to bear on *Laws of Form* where we start with the marked and unmarked state, putting them in the guise of the two main laws

$$\neg\neg = \neg \quad \text{and} \quad \neg\neg =$$

to relate to the use of double terms referred to before. What then of the third and fourth? Well, I remember the shock and delight in which I heard Spencer-Brown define mathematics as making marks on a surface and pointing out that the surface of articulation has to be within a certain range of possibilities to allow for mathematics as we know it. The third term is thence the surface itself, or the page, which has as a natural symbol a *box* which we can write as:



The fourth term I identify with the distinction itself, and will write it thus:



This is largely based on aesthetics. It sums to this picture:



The last two terms, the lower ones, are not 'voiced' as it were in the calculus and the symbols I have used may be regarded as whimsical; but inspection will show the promise of another operator - perhaps the one Spencer Brown called 'score' and can be thought of as the inverse of cross - which could bring us into number and arithmetic. The fourth term can be thought of also as four operators that, in conjunction, cancel each other out. I think of it as the *differing difference*, or creative. I cannot resist adding that four-fold structures played a big part in the Russian period of TRIZ, before it was overcome by Anglo-Saxon rigidity. In speaking of problem-solving, practitioners were alert to the premature closure and restriction of thinking by starting from a defined problem in the first place. They often used science fiction as a thinking tool. For example, they did imaginative work on such projects as space travel. In one exercise, the precipitating task was to get one space ship to another star; but they went further. Next was solving the problem of how to get a whole population to another star; but then even further to do so in a way that does not involve travel at all and, finally, if there were in fact no stars. Such imaginative thinking can be applied anywhere to anything.

I want to attempt to indicate the, or a, level beyond creativity. What switches on creativity? In theology, this comes under the idea of God giving men free will. Needless to say, common ideas about free will are rather stupid and self-defeating and I have to make a plea for us to consider it as essentially creative and, perhaps, most commonly at work in what can be called "free acts of attention". It is rather like being able to choose before there are any

alternatives to choose amongst. Reference to theology and its scriptures may not appear helpful; after all, do not these require belief in something unproven and probably mistaken? I can only say that, of course, we find what I am signifying in the guise of God as absent, which on one level equals unreal, and that scriptures are about illusions. It cannot be otherwise. What we are facing is the absence of absence; what is not not there; the root of equality. Of particular import in the discourse is that something speaks from a place in which there is no underlying structure, and things like mathematics do not even exist, rather in the sense that knots do not tie in four dimensions.

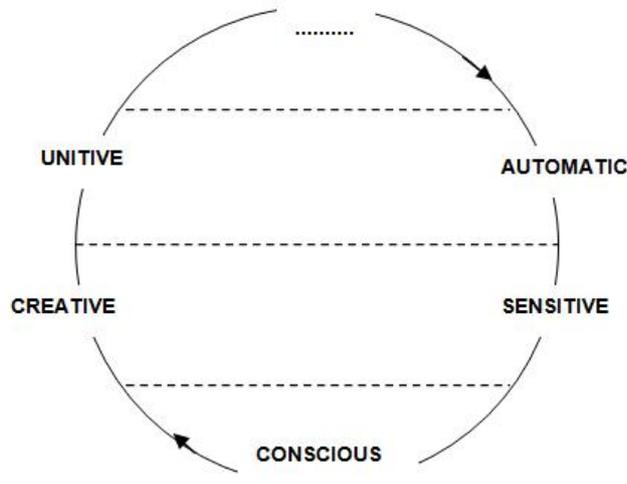
A question that has plagued me, one you might consider misbegotten, is what is the nature and meaning of the *Word of God* as in the writings of sacred scriptures. Obviously, they have all been concocted by human writers but this does not convince me to rest there. Following the nomenclature of John Bennett I am going to call the level beyond creativity as unity or unitive energy, a usage instantly recognisable as similar to many others such as in the language of Teilhard de Chardin. Now, in contrast with *unmarked consciousness* I look towards a *marked unity*, which might be known as revelation. We have to be *told* and yet it is the *articulation of silence*, a speech that is heard and spoken in every concrete particular of the universe. If we take the structure of the universe as conscious, and the Big Bang as creative, then the unitive energy is before anything began. In the fourfold schema of Scotus Erigena that Wolfgang Pauli so much admired, there is a *perfecting and fulfilment of* the creation that goes beyond creator and creature. I think one can glimpse how this speaks to the dilemma spinning out of the thought that God gave free will to man; not least because it says that man is equal to God. To some degree it is invoked by the idea of the set in which every member is equal to all the members of the set except itself.

Such a vision accords with Keat's *negative capability* he considered his greatest virtue. It may elicit in us an understanding of love which truly cannot be a property of any creature but that by which they freely belong to God by their nothingness. In Sufism there is a notion of *lahut* the ultimate, beyond nothing, which draws all that exists onwards to perfect itself by itself. I think of children suffering from Down's syndrome who draw from people the greatest sacrifices and the deepest caring. I think of how religion passed from images of egoistic power to the most vulnerable and suffering. It is an intimacy of unity, not an overall transcendent satanic oneness. It is the true one - and I am speaking now in echo of Cantor's ultimate infinity. Such things we are not conscious of but they are spoken. In the unitive energy every concrete particular has a unique voice and all are heard.

This uniqueness of reality has a bearing on our concept of levels. It is easy to see that the linearity of their vertical order should be questioned. Such an order is surely a residual abstraction from a more concrete and interesting structure. One of the simplest ways to pay this attention is to bend the linear hierarchy into a circle (or even a spiral). This gratuitous act displays a special correspondence between the highest and the lowest instead of their apparent distance, a correspondence that offers a further commentary on the meaning of duality or twoness. Such a device was used in the ancient system of *ring composition* to enable a sequential story or exposition contain a deeper message strictly *within* it [Mary Douglas, *Thinking in Circles*, Yale, 2010].

The levels we have been discussing are shown below in circular form. It can be argued that they are like this *because we take as our reference or vantage point the level of consciousness*. This we are almost bound to do. The diagram reflects the idea that consciousness is dual or two-faced and, to the right, there is the marked and, to the left, the

unmarked. In the terminology of ring composition the bottom point is known as the *turn*. The diagram is objectively subjective and subjectively objective. In some psychologies this place or state is called the divided self and carries the idea that at our core we are divided from ourselves, which is our curse and glory.



SONNET 126

*O thou, my lovely boy, who in thy power
 Dost hold Time's fickle glass, his sickle, hour;
 Who hast by waning grown, and therein show'st
 Thy lovers withering, as thy sweet self grow'st.
 If Nature, sovereign mistress over wrack,
 As thou goest onwards, still will pluck thee back,
 She keeps thee to this purpose, that her skill
 May time disgrace and wretched minutes kill.
 Yet fear her, O thou minion of her pleasure!
 She may detain, but not still keep, her treasure:
 Her audit (though delayed) answered must be,
 And her quietus is to render thee.*

()
 ()

The Sonnets delve into the question of how or whether love can overcome the wrack of time, since as Eliot said, "That which is only living [sensitive] can only die". Helen Vendler points out that the last couplet is left empty and: "Inside the parentheses there lies, so to speak, the mute effigy of the rendered youth". Others have said that they signify the graves of the poet himself and his lover. It is worth while looking into the several meanings of the word 'render' obviously invoked by Shakespeare from making intelligible, to settling accounts and even as in 'to render unto Caesar'. It is my conceit that the parentheses indicate the creative and unitive levels that lie beyond the consciousness of language but without which language and mathematics could not work at all or have any meaning.