

tain experiments I have done: many are, of necessity, still hidden. Even the facts of my own motivations ('What Is Reality?') given in this chapter will change the current experiments. Thus it is in the huge feedback system of which each of us is a very small part.

Many others (in one way or another) have pursued this search for reality and its representations. I owe many debts to those who cleared some of the jungles of beliefs, who removed accumulated layers of nonsense before I started digging. (As an aside, I feel somewhat like the sparrows I watched in Minnesota as a boy: unerringly each sparrow found the undigested edible single kernels of grain in the drying manure. If only it were so easy for us to find the viable kernels of true knowledge in the masses of nonsense given us in books, in the media, in political speeches, in ourselves by ourselves!)

Some searchers end their books (and apparently their search) with pessimistic statements. I give one example of a foremost thinker, Ludwig Wittgenstein:³

6.522: There are, indeed, things that [a] cannot be put into words. They *make themselves manifest* [b]. They are what is mystical.

I added [a] and [b]. For [a] substitute the words 'as yet'. For [b] add the words 'by other means'. This transforms these two statements of Wittgenstein into the explorer's domain. Substitute for his third statement the following:

They are now what is in the Unknown yet to be found.

Thus do I operate: if I see premature closing off of possibilities, as if something is impossible ('mystical'), I paraphrase, re-orient the statements, so as to continue my own metabelief: *The province of the mind has no limits; its own contained beliefs set limits that can be transcended by suitable metabeliefs (like this one).*

Returning to the *Tractatus*, one finds an oft-quoted statement:

7. Whereof one cannot speak [c], thereof one must be silent.

(*Wovon man nicht sprechen kann, darüber muss man schweigen.*)

In the inserted position [c], I add the words 'as yet',

3. Wittgenstein, Ludwig, *Tractatus Logico-Philosophicus*, p. 151.

transforming the statement into an opening injunction, rather than, as it is given by Wittgenstein, an absolute closure by this injunction of a system of thought.

Of that which we cannot yet speak, we remain silent until a new experience or way of expression allows us to speak. (Radio waves in AD 1700 were silent.)

G. Spencer Brown shows (in *The Laws of Form*, pp. 77-8) that Wittgenstein probably was referring to descriptive language rather than injunctive (instructional) language. Injunctive language (in its far-reaching uses) instructs on how to do-make-create something in the inner reality and/or in the external reality. Wittgenstein did not have either later neurophysiological knowledge nor the later knowledge of computers, each of which directly opens the domains expressible in new languages (of the descriptive and injunctive types). Experimental science somehow seems to topple previously expressed absolutes about reality, about meaning, about language, about perception, about cognition, about creating descriptions of minds with limits, specified by the constructor-descriptor. The limits defined are only in the description used, in the simulations of the mind doing the describing.

Realization of the lack of any limits in the mind is not easy to acquire. The domains of direct experience of infinities within greater infinities of experience are sometimes frightening, sometimes 'awe-full', sometimes 'bliss-full'. I quote from a writer who feels this lack of mind limits in his own experiences (Franklin Merrell-Wolff, *The Philosophy of Consciousness Without an Object: Reflections on the Nature of Transcendental Consciousness*, pp. 38-9):

1. The first discernible effect in consciousness was something that I may call a *shift in the base of consciousness*. From the relative point of view, the final step may be likened to a leap into Nothing. At once, that Nothing was resolved into utter Fullness, which in turn gave the relative world a dreamlike quality of unreality. I felt and knew myself to have arrived, at last, at the Real. I was not dissipated in a sort of spatial emptiness, but on the contrary was spread out in a Fullness beyond measure. The roots of my consciousness, which prior to this moment had been (seemingly) more or less deeply implanted in the field of relative consciousness, now were forcibly removed and instantaneously transplanted into a supernal region. This sense of being thus trans-

planted has continued to the present day, and it seems to be a much more normal state of emplacement than ever the old rooting had been.

2. Closely related to the foregoing is a *transformation in the meaning of the 'Self', or 'I'*. Previously, pure subjectivity had seemed to me to be like a zero or vanishing point, a 'somewhat' that had position in consciousness but no body. So long as that which man calls his 'Self' had body, it stood within the range of analytic observation. Stripping off the sheaths of this body until none is left is the function of the discriminative technique in meditation. At the end there remains that which is never an object and yet is the foundation upon which all relative consciousness is strung like beads upon a string. As a symbol to represent this ultimate and irreducible subject to all consciousness, the 'I' element, I know nothing better than zero or an evanescent point. The critical stage in the transformation is the realization of the 'I' as zero. But, at once, that 'I' spreads out into an unlimited 'thickness'. It is as though the 'I' became the whole of space. The Self is no longer a pole or focal point, but it sweeps outward, everywhere, in a sort of unpolarized consciousness, which is at once Self-identity and the objective content of consciousness. It is an unequivocal transcendence of the subject-object relationship. Herein lies the rationale of the inevitable ineffability of mystical insight. All language is grounded in the subject-object relationship, and so, at best, can only misrepresent transcendent consciousness when an effort is made to express its immediately given value.

I change his last statement by means present in his own writings into, once again, a transforming injunction: 'That language (not "all language") grounded in the subject-object relationship, misrepresents transcendent consciousness when, in that language, an effort is made to express the immediately given value (of transcendent consciousness).'

G. Spencer Brown's doorway⁴ out of this dilemma is the development of an injunctive language that gives instructions (suitable to the listener-reader-experiencer) on how to evoke-enter-create transcendent consciousness in one's Self.

I have found Merrell-Wolff's own writings on his own experience to have injunctive qualities for me, for changing my 'subject-object' consciousness into the new domains that he so beautifully expresses.

The distinction between descriptive language and injunctive language disappears in the domains of inner experience (and probably in the domain of external experience also) as follows:

⁴ G. Spencer Brown, *The Laws of Form*, p. 78.

A mind isolated from all known stimuli-reaction probabilities (in a state of being with attenuated or missing feedback with the outer reality) for a long enough time, frequently enough, enters new (for that mind) domains. Once that mind has the experience of entering-creating new domains, it has self-referential programmes-beliefs-metabeliefs that can be used (at some future times) to transform its own state of being into further new domains. (One learns rules of exploring new domains under the special conditions.)

To achieve this new level of learning-to-learn, one sets aside previous limits set upon domain exploration: one drops irrelevant beliefs about inner/outer realities previously stored; one examines beliefs-about-beliefs (metabeliefs), especially those about 'the limits of the human mind'. One drops the usual self-limiting languages (useful in dealing with other persons not so equipped) found in the external reality. One gives up entrancement-seduction by 'systems of thought', by other persons, by successes-failures in the consensus realities of others linked to one's self and of one's self in those realities.

However, without the disciplines outlined above and without experience of solitude-isolation-confinement in the external world, these considerations may be meaningless. Once one has been immersed long enough in the above, description of new domains by others now become injunctive to one's Self. Their descriptions invoke-evoke new domains in Self, in one's own mind.

Thus can language instruct one to move into new states of being, new domains of experience.

Of particular interest to me are the domains represented by the mathematical concepts of: *zero* (the origin at which numbers and variables cease having any value); *infinity* (the non-terminus approaching which numbers and variables assume values that cannot yet be represented); *the point* (the smallest possible value of any number or of any variable that approaches, but does not reach, zero); various *differential operators* ($\nabla^2 - 0$, for example), which can move through their defined domains free of constraints by the domain in/upon which they operate.

Of particular interest is the *relation of identity*, one variable to another, in the consciously functioning domain. Assuming one's conscious Self to have a 'size' in a certain domain (say equivalent

to that of a human brain in the external reality domain), one *identifies* one's Self with that 'size'. Start cutting down that 'size' until one is a point: in any domain, a point is not zero. *Identify* one's whole Self with a point. This kind of point has consciousness, memory, the complete knowledge of the individual Self. It can remain a fixed point in a defined domain, a moving point in the same domain, or a point in *any domain*. Such a point has no mass, no charge, no spin, no gravitational constant and, hence, is free to move in any physical field.

And so on and on – for identities of Self with differential operators, with infinities, with zero. Identify self with a differential operator that can move through a field unconstrained by the presence of the field. Assume that one's self is infinite, what is the experience? Assume that one's Self is zero, what is the experience? The reader is left with these exercises to perform on/in himself/herself.

I would like to end this discussion with a quotation from a researcher who investigates the bases of reality – G. Spencer Brown:⁵

Unfortunately we find systems of education today that have departed so far from the plain truth, that they now teach us to be proud of what we know and ashamed of ignorance. This is doubly corrupt. It is corrupt not only because pride is in itself a mortal sin, but also because to teach pride in knowledge is to put up an effective barrier against any advance upon what is already known, since it makes one ashamed to look beyond the bonds imposed by one's ignorance.

To any person prepared to enter with respect into the realm of his great and universal ignorance, the secrets of being will eventually unfold, and they will do so in a measure according to his freedom from natural and indoctrinated shame in his respect of their revelation.

To arrive at the simplest truth, as Newton knew and practised, requires *years of contemplation*. Not activity. Not reasoning. Not calculating. Not busy behaviour of any kind. Not reading. Not talking. Not making an effort. Not thinking. Simply *bearing in mind* what it is one needs to know. And yet those with the courage to tread this path to real discovery are not only offered practically no guidance on how to do so, they are actively discouraged and have to set about it in secret, pretending meanwhile to be diligently engaged in the frantic diversions and to conform with the deadening personal opinions which are being continually thrust upon them.

In these circumstances, the discoveries that any person is able to

⁵ G. Spencer Brown, op. cit., p. 110.

undertake represent the places where, in the face of induced psychosis, he has, by his own faltering and unaided efforts, returned to sanity. Painfully, and even dangerously, maybe. But nonetheless returned, however furtively.

then pulls the circle, the paper and *us* in behind him, leaving nothing . . . just the Void.'

George Gallagher and his wife Betty helped me to put some of this high-powered maths in perspective. George has a beautiful ability to simplify with the use of short, precise analogy.

It was quite a show . . . some of the intellectuals ('mystics') of our culture all getting together to compare interpretations of a new mathematical theory . . . in the midst of mineral baths, massage and sunshine.

Heinz Von Foerster's review of The Laws of Form, by G. Spencer Brown, as it appeared in The Last Whole Earth Catalog, p. 12, Portola Institute, Menlo Park, California 94025.

The laws of form have finally been written! With a 'Spencer Brown' transistorized power razor (a Twentieth Century model of Occam's razor). G. Spencer Brown cuts smoothly through two millennia of growth of the most prolific and persistent of semantic weeds, presenting us with his superbly written *Laws of Form*. This Herculean task which now, in retrospect, is of profound simplicity rests on his discovery of the form of laws. Laws are not descriptions, they are commands, injunctions: 'Do!' Thus, the first constructive proposition in this book (page 3) is the injunction: 'Draw a distinction!', an exhortation to perform the primordial creative act.

After this, practically everything else follows smoothly: a rigorous foundation of arithmetic, of algebra, of logic, of a calculus of indications, intentions and desires; a rigorous development of laws of form, may they be of logical relations, of descriptions of the universe by physicists and cosmologists, or of functions of the nervous system which generates descriptions of the universe of which it is itself a part.

The ancient and primary mystery which still puzzled Ludwig Wittgenstein (*Tractatus Logico-Philosophicus*, A. J. Ayer (ed), Humanities Press, New York, 1961, 166 pp.), namely that the world we know is constructed in such a way as to be able to see itself, G. Spencer Brown resolves by a most surprising turn of perception. He shows, once and for all, that the appearance of this mystery is unavoidable. But what is unavoidable is, in one sense, no mystery. The fate of all descriptions is ' . . . what is revealed will be concealed, but what is concealed will again be revealed.'

At this point, even the most faithful reader may turn suspicious: how can the conception of such a simple injunction as 'Draw a distinction!' produce this wealth of insights? It is indeed amazing - but, in fact, it does.

The clue to all this is Spencer Brown's ingenious choice for the notation of an operator \neg which does several things at one time. This mark is a token for drawing a distinction, say, by drawing a circle on a sheet of paper which creates a distinction between points inside and outside of this circle; by its asymmetry (the concave side being its

Sometimes the reading gets rough because of Spencer Brown's remarkable gift for parsimony of expression. But the 30 pages of 'notes' following the 12 Chapters of presentation come to the reader's rescue precisely at that moment when he lost his orientation in the lattice of a complex crystal. Consequently, it is advisable to read them almost in parallel with the text, if one can suppress the urge to keep on reading Notes.

In an introductory note Spencer Brown justifies the mathematical approach he has taken in this book: 'Unlike more superficial forms of expertise, mathematics is a way of saying less and less about more and more.' If this strategy is pushed to its limit, we shall be able to say nothing about all. This is, of course, the state of ultimate wisdom and provides a nucleus for a calculus of love, where distinctions are suspended and all is one. Spencer Brown has made a major step in this direction, and his book should be in the hands of all young people - no lower age limit required.