

Text extracts F5 – Gauging thinkers

(See also <Extract F15\ Virtual reality>, and <PPT2 Models collected\ slides 18, 19>)

The following extracts aim to demonstrate the efforts of ‘gauging’ thinkers at formulating in scientific terms or in words something like nexial-topology, and the difficulty to explain the ‘undifferentiated’ domain.

‘If this were true, we would have to expect conflicts between our theories as soon as their number grows beyond a certain point and as soon as they cover a sufficiently large number of groups of phenomena. In contrast to the article of faith of the theoretical physicist mentioned before, this is the nightmare of the theorist.’ (Wigner 1960)

Of experience

- ‘The *nervous system* and the *endocrine (or hormonal) system* play particularly important parts in maintaining resistance during stress*. They help to keep the structure and function of the body steady, despite exposure to stress-producing or stressor* agents, such as nervous tension, wounds, infections, poison. [This is] the staying power of the body.’ (Selye 1976 pp.2, 12)

- ‘Paradigms determine large areas of experience at the same time.’ (Kuhn 1996 p.129)
‘[The] reactions, expectations, and beliefs [of the post-revolution scientist] – indeed, much of his perceived world – change accordingly. [...] – [according to a] vision through another paradigm.’ (Kuhn 1996 p.128) (See also <Extract F15\ Virtual reality>.)

‘But it is hard to make nature fit a paradigm. [...] Chemists could not... simply accept Dalton’s theory on the evidence... they still had to beat nature into line... When it was done, even the percentage composition of well-known compounds was different. The data themselves had changed. That is the last of the senses in which we may want to say that after a revolution scientists work in a different world.’ (Kuhn 1996 pp.135)

- *Time Indexing technique (can be adapted for indexing scientific and human ‘spaces’)*:
‘Individualizing (indexes) [to highlight context] and temporal devices (dates), etc., should be used conjointly. Thus, obviously, chair₁¹⁶⁰⁰ is not the ‘same’ as chair₁¹⁹⁴⁰, nor is Smith₁^{Monday} the ‘same’ as Smith₁^{Tuesday}.... Through training in the consciousness of abstracting... we become conscious of ... generalizations.’ (Korzybski 1933 p.li)

‘Action is one of the terms of pre-einsteinian physics which has survived unmodified, the only other one being entropy.’ (Korzybski 1933 p.680)

- ‘The irritability of the tissue, as shown in its capacity for response, electrical or mechanical, was found to depend on its physiological activity...When made permanently irresponsive the tissue was said to have been killed...from a confusion of ‘dead’ things with inanimate matter, it has been tacitly assumed that inorganic substances, like dead animal tissues, must necessarily be irresponsive [...] this ‘unexplained’ conception of irritability became the starting point... of *vitalism* ...and introduced as an explanatory principle an all-controlling unknown and inscrutable “force hypermecanique ... Thus it was easy to “explain” the most complex vital... phenomena [by] the super-physical character of response.’ (Bose 1922 p.182)

[...] In animal tissues response becomes feeble at low temperatures. As an optimum temperature it reaches its greatest amplitude, and again, beyond a maximum temperature it is very much reduced.' (Bose 1922 p.188)

[...] In certain types of tissue the stimulated is relatively positive to the less disturbed, while in others it is the reverse... this is accomplished either (1) by 'injuring' or (2) by introducing a perfect block.' (Bose 1922 p. 183)

- 'Action is one of the terms of pre-einsteinian physics which has survived unmodified, the only other one being entropy.' (Korzybski 1933 p.680)

'At present [1933] it appears that two other very general mathematical disciplines will be used increasingly in the future. One of them is the *theory of groups*; the other is *analysis situs*. In the latter we study only these characteristics of figures that are unaffected (invariant) by continuous deformation produced without tearing. Two structural points are relevant for us in this connection: namely that the analysis situs is fundamentally a *differential* and also an *ordinal* discipline, based on asymmetrical relations. In the next chapter, as an illustration of the actional, behaviouristic, functional operational, differential, contact method a short account will be given of the way Einstein structurally treated "simultaneity".' (Korzybski 1933 p.658)

Of images

- 'Diagrammatizing and even following with one's hand, the visualized order of occurrences, helps enormously. [...] We shall also be greatly helped in our power of visualization when we become acquainted with the structure of the Minkowski four-dimensional worlds.' (Korzybski 1933 p.664)

- 'If icons are central to our thought, not peripheral frills, then the issue of alternative representation becomes fundamental to the history of changing ideas in science (and even to the quite legitimate notion of scientific progress!) How shall we draw the geometry of contingency?' (Gould 1995 p.67)

'Why do scientists grasp the importance of visual imagery, while most humanists accept the hegemony of the word? Scholarly publication in the humanities generally degrades imagery and in many ways. Many thick tomes have no pictures at all... Images when present, are often only "illustrative", are often collected in separate sections, divorced from textual reference and therefore subsidiary.' (op.cit. p.40)

'Visual imagery is central to our lives. [...] Much can be learned from the study of imagery (including its neglect). [...] Iconography is usually seen as superfluous [and] motives that attend the choice and form of images are less conscious than those of scientists [biases] – and therefore underlying personal and social biases become exposed in the pictures that we use.' (op.cit. p.41)

'I am particularly intrigued by the subject of "canonical icons", i.e., the standard imagery attached to key concepts of our social and intellectual lives. Nothing is more unconscious, and therefore more influential though its subliminal effect, than a standard and widely used picture for a subject that could, in theory, be rendered visually in a hundred different ways, some with strikingly different philosophical implications.' (op.cit. p.41)

'*The Ladder or Linear March of Evolution*: ...The most serious and pervasive of all misconceptions about evolution equates the concept with some notion of progress, usually inherent and predictable, and leading to a human pinnacle. Yet neither evolutionary theory nor life's actual fossil record support such an idea. Darwinian natural selection only produces adaptation to changing local environments, not any global theme of progress. [...] We can interpret local adaptation as "improvement" in a particular circumstance, ... but a historical chain of sequential local adaptations does not accumulate to a story of continuous progress...' (op. cit. pp.42-43)

'The problem of diversity is so topologically distinct from the problem of transformation [anatomical change] that a different iconography must be employed for basic illustration. [...] The cone... resides largely in textbooks and professional publications for scientists [rather than for the general public] – but it constrains thought no less.' (Gould 1995 p.61)

- The 'idealizing primal establishment of the meaning-structure "geometry" '(Husserl 1939 p.180) appears as the corner stone of the 'problem-horizon of reason' (op.cit. p.180), but 'what we learn [in

text books] is how to deal with ready-made concepts... substituted for the actual production of the primal idealities' (op.cit. p.169). This production is the '*animal rationale* in every man' (op.cit. p.180) and requires 'the capacity for reactivating the primal beginnings... [which] has not been handed down with it [the learned geometry].' (Husserl 1939 p.170)

- 'The gestures we use as we speak are integrally connected to both our speech and our thought processes. [In] this new scientific direction... [the] method is the comparison of matched gestures, which overlap in meaning with the accompanying speech, and mismatched gestures, which either complement or conflict with the linguistic meaning... The researchers observed children explaining their answers to piagetian conservation tasks (conservation of mass, number or volume when physical appearance is altered). Some children produce mis-matched gestures,.....say that "a tall thin container has a large volume" because it's taller, but simultaneously make a gesture indicating width. These children, it turns out, are the ones who are most ready to learn about conservation, either by instruction or experimentation. [...] The contrast between matches and mis-matches turns out to be a remarkable tool. [...] Mis-matched gestures... bring in another cognitive model besides that presented in speech. However, Goldin-Meadow argues that mismatches are advantageous [...] Mismatched gestures not only allow speakers to express models that are inaccessible to speech but also give listeners access to those models. [...] Apparently conflicting mismatches often reflect different aspects of a potentially unified larger cognitive framework. [...] Another strand of Goldin-Meadow's work, [the] purely gestural communication... of deaf children with hearing parents [shows that their] gestural system [... is] "language-like", informational, ...conventionalised, segmented, and even "grammaticized". [...] She and her co-workers are currently researching such applied issues as the need to interpret children's gestures alongside speech in legal and psychiatric questioning. [... Her book] may help to reshape the basic premises and methods of psychologists and other social scientists.' (Sweetser 2004 pp.606-607).

Of localisation & extension

Locally variable rather than localised

- 'The ether of the general theory of relativity therefore differs from that of classical mechanics or the special theory of relativity respectively, in so far as it is not "absolute", but is determined in its locally variable properties by ponderable matter.' (Einstein in Saunders & Brown 1991 p.18)

No Boundary – no 'system' – non-objects

- '[...] we may also see how easily men may fall into grave errors...such as believing that extension must be localized... that it occupies more space at one time than at another.' (Spinoza 1901 p.30)
'The exclusion of all idea of cause – that is, the thing must not need explanation by anything outside of itself.' (op.cit. p.33)
- 'Ever since the discovery of the kinship between the various Indo-European languages, scholars have puzzled over the original homeland of the Indo-European speakers. The similarities in their various languages pointed to a common ancestral language, and divergences were explained as the result of migrations from a shared place of origin.' (Feuerstein, Kak & Frawley 1995 p.52)
'By comparing phonetic and grammatical changes in diverse Indo-European languages, scholars have invented a series of hypothetical steps, suggesting a certain sequence among the languages involved. Moreover, reconstructing the lost Proto-Indo-European mother language, they also hoped to learn something from the reconstructed vocabulary. What kind of social, cultural, and natural environment did it suggest? The problem with such linguistic reconstructions is that they are purely hypothetical. The meaning of reconstructed words in Proto-Indo-European is completely unprovable.' (op. cit. p.56)
'The reconstructed Proto-Indo-European vocabulary is... controversial when it comes to descriptions of the natural environment, such as plants and animals. J. P. Mallory critically surveyed the evidence and

concluded the following: "If we try to draw the environmental evidence together... we arrive at a landscape..." (op. cit.p.56)

'The British archaeologist Stuart Piggott summarized the vagaries of linguistic comparisons very poignantly thus: "The method has its dangers. [...] the great Sanskrit scholar A. B .Keith once remarked that by taking the linguistic evidence too literally one could conclude that the original Indo-European speakers knew butter, but not milk; snow and feet, but not rain and hands!" ' (op. cit. p.57)

- 'If the laws of positioning could not be influenced by physical factors....., and were given once and for all, such an ether would have to be described as absolute (i.e. independent of the influence of any other object).' (Einstein in Saunders 1991 p.14)

- 'Under such *natural structural* conditions it is a fundamental fallacy to ascribe to "lengths" or "shapes" or "times" any "absolute" significance. ... "matter", "space", and "time" ... appear as relations between events and some specified observer, and forms of representations. [...] We would evaluate the[se] *terms* as forms of representation, and non-objects.' (Korzybski 1933 p.664)

- 'The universe would be completely self-contained and not affected by anything outside itself. It would neither be created nor destroyed. It would just BE.' (Hawking 1998 p.141).

- 'When you are "nowhere" physically, you are "everywhere" spiritually.' (Wolters p.142)
'For even if a man is deeply versed in the understanding and knowledge of all spiritual things ever created, he can never by such understanding come to know an uncreated spiritual thing.' (Wolters p.145)

- 'Do not think that because I call it ... a "cloud" it is the sort of cloud you see in the sky, [...] I mean "a lack of knowing"... for you cannot see it with your inward eye. For this reason it is called "a cloud", not of the sky, of course, but "of unknowing".' (Wolters p.66)

- 'Gravitational energy is non-local, which is to say that one cannot determine what the measure of this energy is by merely examining the curvature of space-time in limited regions. The energy – and therefore the mass – of a gravitational field refuses to be pinned down in any clear location. [...] These are hints that our treasured intuitive views as to the nature of physical reality are less close to the truth than one would have thought... such conclusions must already be drawn on the basis of classical theory.' (Penrose in Saunders & Brown 1991 pp.24-25)

'Obscure' wording of the 'space': an 'ideal world', a 'mysterious place', a globe-'space'

A less differentiated view, induced or guided, of this 'space' is better expressed with simple animated images than with language. Translating it into languages (eg words or numbers) produces long and intricate works difficult to follow in their details, and which are often forced to coin new words. Such works are considered obscure, too abstract, 'difficult', intuitive, speculative, or dogmatic by the dominant L-R perspectives, and are understood as inductive (inductive inference rather than 'induced'). 'Advanced' perspectives re-create them by using abductive methods, flat images to reconstruct animation, and a cryptic or abstruse vocabulary that lengthens words to reinterpret – in highly specialised ways – the non-differentiate as generic or generalised. I refrained for three years from doing this, and instead found the imaging of topology more adequate, but the imposed requirements of *detailed and general* explanation (remote from any actual particular situation) and of scholastic production in words rather than live imaging, eventually forced a progressive

redeployment of the 'advanced' sort, into this complex and now 'difficult' dissertation. The following quotations are attempts at expressing in words this global 'space' ('non-local', in natural science vocabulary) (see also <Extract F18\ Rules of localisation-extension in the literature>):

- 'What does health look like?.' (Williamson & Pearse 1980 p.23)
 'The bionomist is perpetually faced with the insistence of the living entity to build up, i.e. to "grow" in specific diversification of structure and capability of facultisation....' (op.cit. p. 271)
 'Eutropy, positive, actional... tendency to Wholeness arises with the behaviour of motility in a field of choice, the tendency to Allness arises with the behaviour of motion in a field of chance. [...] Neither then may eutropy be regarded as "negative" entropy... [but as] the emergence of originality, the origination of new "origens". [...] There is no inherent antipathy between the two conventions, Space-Time and Memory-Will' (op.cit. p.273)
 'Motility in Will... is not *effective*: nor is it "causal", inducing a chain of sequential events. On the contrary, motility spontaneously inducing fields of unity – so bringing together apposite diversities in Memory – is orientational of the content of Memory.' (op.cit. p.190)
 'Essentially this synthesis is one of the "self" with the "not-self".' (Williamson & Pearse 1980 p. 205)
- 'Husserl actually draws upon two different versions of the *epoché* in *Ideas* (as elsewhere), which versions he does not separate as clearly as one might have hoped: the "universal *epoché*" on the one hand, and a much weaker "local *epoché*" (as one could label it) on the other. The former version requires the phenomenologist to put *all* his existence assumptions regarding the external world into brackets *at once*, whereas the weaker version merely requires him to bracket *particular* existence assumptions, [...] Only the universal *epoché* seems to conflict with our externalist reading: if no extra-mental existence assumptions whatsoever are admitted, then phenomenologically there cannot be object-dependent indexical contents, as externalism would have it. By contrast, there may be some such contents, even many of them, without indexical content generally having to be dependent on a particular extra-mental object. Which leaves enough room for the method of local *epoché* to apply to any given particular case.' [...]
 'Now the only function of the universal *epoché* is to establish the *Residuum Thesis*, which holds that the realm of (empirical) consciousness is "absolute" in that it does not depend on the existence of an external, spatio-temporal world (cf. *Ideas*, sec. 51, 55).' (Beyer 2004).
- 'Thus we can see that it is before all things necessary for us to deduce all our ideas from physical things – that is from real entities, proceeding as far as may be according to the series of causes, ...never passing to universals and distractions. [...] It would be impossible for human infirmity to follow up the series of particular mutable things, both on account of their multitude, surpassing all calculation, and on account of the infinitely diverse surrounding one and the same thing, any one of which may be the cause for its existence or non-existence [...] the essences of particular mutable things are not to be gathered from their series or order of existence, which would furnish us with beyond their extrinsic denominations, their relations or, at most, their circumstances, all of which are very different from their innermost essence.' (Spinoza 1901 p.34)
- 'At present [1933] it appears that two other very general mathematical disciplines will be used increasingly in the future. One of them is the *theory of groups*; the other is *analysis situs*. In the latter we study only these characteristics of figures that are unaffected (invariant) by continuous deformation produced without tearing. Two structural points are relevant for us in this connection: namely that the analysis situs is fundamentally a *differential* and also an *ordinal* discipline, based on asymmetrical relations. In the next chapter, as an illustration of the actional, behaviouristic, functional operational, differential, contact method a short account will be given of the way Einstein structurally treated "simultaneity".' (Korzybski 1933 p.658)
- 'As a living experience, natural awareness is [...] – neither a subject nor an object, neither time nor space.' [...]

Mind itself has [...] no beginning, no end. [...] The "field" of awareness is completely open "space", but this space is neither "outside" the body nor "inside" the mind. (Tulku 1976)

- 'The boundary condition of the universe is that it has no boundary.' (Hawking 1998 p.141)
'The universe would be completely self-contained and not affected by anything outside itself. It would neither be created nor destroyed. It would just BE.' (op.cit. 1998 p.141)
'But if the universe is really completely self-contained, having no boundary or edge, it would have neither beginning nor end: it would simply be.' (op.cit. 1998 p.146)
- ' "Headlessness", the feeling of no self that mystics of all times have aspired to, is an instantaneous way of "waking up" and becoming more aware...' (Harding 2000 back cover)
- 'According to Dr. Lee Zhan Tin, a professor at Gangzhou City Fine Art College, China, western culture is the yang culture...[and] Eastern culture is the Yin culture [...]. It treats people as a small universe. The body is a reflection of the bigger universe. Therefore, it is emphasising [the] study of the body as a method to study the universe.' (Wen Wei Ou 1999)

The practice of a 'form' acted out in gesture is an ancient method to alter body, mind or one's lifeworld in a nexial or topographic way (eg ritual, mystical Qigong form of Wen Wei Ou 1999, Reiki visualisation symbols of Porter 1997 – see <PPT2 Models collected\ slides 17 & 16> respectively).

Space as boundaried: badly behaved Hidden, Below, negative sea, Abyss...

- '*The Apeiron: Its Repression and Resurgence*: The Greek word *peras* means limit or boundary, and "a-peiron," means without boundaries, boundless or indeterminate. *Apeiron* is variously interpreted as "the unintelligible; the many; the moving; the ugly; the bad...the inchoate flux of opposites or contraries...the principle of disorder or disharmony" (Angeles, 1981, pp.14–15). We can associate *apeiron* with the boundless chaos of primordial nature. [...] the *Anaximander* fragment of the 6th century BCE. Here *apeiron* is portrayed as the "boundless giver of boundaries." [...] To the ancient Greeks, the *apeiron* posed a significant challenge. [...] It was therefore imperative for them to tame *apeiron*, given the primary impulse... [...] Achieving this end essentially has meant containing what at first appeared uncontainable: the boundless *apeiron*. [...] Being, says Heidegger, is the prespatial action "that provides the space in which space as we usually know it can unfold" (1962/1972, p.14). [...] Similarly, Merleau-Ponty speaks of "brute" or "wild Being" (1968, p.170) – meaning organically grounded, primally embodied [...] Conventional thinking will need to be turned upside down and inside out. [...] we require, an ..."epistemotherapy" that ...regrounds us in the lived body.' (Rosen 2004 pp.3,6)
- 'The other great difficulty..., a null result to second order in powers of v/c on the detection of "ether wind". The absence of first-order effects –... that electrostatic phenomena...– was well known; ...no experiment sensitive only to effects of first order could detect the ether wind.' (Saunders & Brown 1991 p.41)
- 'We cannot say that the conventional theory is equivalent in all respects to the canonical second quantized theory with respect to the particle complex structure; this is true only for a limited class of global operators (which preserve particle number). In particular, the equivalence does not hold for local multiplicative operators, for these connect positive-and negative- frequency states. (They are "odd" operators...) [...] For these the RHS of (14), if considered a perturbation, would induce transitions from particle to anti-particle states, which would be a complete disaster.' (Saunders & Brown 1991 p.100)
- 'The Dirac hole theory was developed in response to a growing crisis over the Dirac theory of the electron. It predicts the existence of antiparticles in a relativistic quantum theory; the antiparticle came into existence as a 'hole' in a sea of negative-energy particles.[...] the phenomenology, of pair creation

and annihilation processes, the basic mechanisms of relativistic dynamics. [...] If this concept was initially tied to the negative-energy sea, that is not the case any longer. The negative-energy sea remains a widespread heuristic device to introduce antimatter. But nowadays no one would claim that the negative-energy sea actually exists; it is no longer taken as a literal description of the vacuum.' (Saunders 1991 p.65)

- 'We may conclude that the negative-energy sea is what the particle vacuum looks like using the wrong notion of complex numbers (the natural complex structure). If the particle vacuum is to appear really empty, then we must use the particle complex structure at the Hilbert space level.' (Saunders 1991 p.106)

- 'Gödel extended Einstein's General Theory of Relativity with cosmological models —now known as "Gödel Universes"—with extraordinary properties, including the possibility of closed, timelike curves.' (Sklar 2002)

'Gödel's discovery of models of general relativity with closed causal curves,' (Sklar 2006)

The philosophically good enfolded-unfolded

- 'An inquiry into our language: [...] suddenly to invent a whole new language... is clearly not practicable. What can be done is... to introduce a *new mode* of language. [...] The *rheomode* ("rheo" is from a Greek verb, meaning "to flow") [...] a mode in which movement is to be taken as primary in our thinking... by allowing the verb rather than the noun to play a primary role.[...] Hidden variables in quantum theory.' 'Quantum theory as an indication of a new order in physics: implicate and explicate physical law.' 'The enfolding-unfolding universe and consciousness.' (Bohm 1980 pp.30-31)

An ancient perspectivalist review of iconic analogies we reformulate

In this perspectivalist review of different general frameworks of explanation (delineated below by [1], [2], [3], [4]) each set of iconic analogies is found reformulated in different historical periods, uses different topographic and nexial imaging, and are still found, respectively, in our modern models (whose deployment topology can model), human metaphors, natural sciences, and intuition-instinct.

'*Tracing Dao to its source* is the opening treatise of the Huainanzi, [and is] among the earliest and most seminal of the documents that illustrate how Han thinkers [syncretic way of thinking] came to see their world...' (Lau 1998 p.3) '[It is an] argument against ... expansionism, and the zero-sum consolidation... that was driving...' (op.cit. p.5, from the postface) "It investigates the cycles of calamity and good fortune, of benefit and injury." (op.cit. p.9) 'The underlying structure of most of the syncretic texts and their commentarial appendices tends to be an illustration of what we will call an emanating and centripetal "radial" order [... with a] mosaic structure.' (op.cit. pp.10, 12)

[1] 'It shelters the heavens and supports the earth,
 Extends beyond the four points of the compass
 And opens up the eight points of the compass [...]
 Flowing from its source it becomes a gushing spring,
 What was empty slowly becomes full;
 First turbid and then surging forward,
 What was murky slowly becomes clear.
 Hence, stand it up vertically, and it stuffs up the heavens and the earth;
 Lay it horizontally on its side, and it fills the four seas.
 Dealing it out it becomes endless, yet is without morning or evening.
 Unroll it, and it blankets the six directions;
 Roll it up, and it is less than a handful.
 Compact, it can stretch out;
 Dark, it can be bright. [...]

It is the thinnest of gruels, the finest and most subtle texture.' (Lau 1998 p.61)
[2] 'By virtue of it, mountains are high;
By virtue of it, abysses are deep;
By virtue of it, animals run;
By virtue of it, birds fly;
By virtue of it, the phoenix soars.' (op.cit. p.63)
'Thus, with the heavens as his canopy, there is nothing that is unsheltered;
With the earth as his boxframe, there is nothing that has no conveyance; (op.cit. p.71)
He knows the lay and the boundaries of the various divisions and quadrants of the cosmos. [...]
Hence, there is nothing you can do about the world.
[3] You can only follow what is natural in pushing the myriad things ahead. [...]
The likeness of the sound and shape is attained without fuss.' (op.cit. p.73)
'Observe what is being accumulated,
And you will know which direction it is heading for: fortune or calamity.' (op.cit. p.97)
[4] [Water] 'is without private likes' (op.cit. p.103)
'Following the water gauge and adhering to the plumb line,
He does in every way what is fitting to the circumstances.' (op.cit. p.111)
'Vaguely they feel as if something is missing
Or as if pinning after something lost.' (op.cit. p.119)
'If we seek for the cause behind this, we cannot get a hold of it,
Yet this is doing injury daily to one's vitality.' (Lau 1998 p.121)