HOLISMO

1998

« Holismo »

¿Qué es?

— Es la hipótesis según la cual "El TODO" es más que la simple suma de las partes.

Quiere decir que la TOTALIDAD en cuestión tiene características que no se pueden explicar en los términos de las { propiedades y relaciones } — entre los elementos constituyentes.

El "ORGANICISMO" es una versión particular del "holismo" y se funda en la analogía de los grandes sistemas entre sí — En ellos las partes pierden su carácter de parte, su función y significación!

Y también la existencia!

cuando son separadas, de su interconexión orgánica! con el resto del organismo.

El "Holismo" se aplica y es importante en el estudio de las relaciones: individuo - colectividad en las Teorías idealísticas del "Estado"; y de otras —

"INSTITUCIONES". —

Tiene varias aplicaciones = en diferentes campos como:

a) En la Teoría del Conocimiento: "las oraciones y su significado"!!

b) La especial unidad e integridad de las obras de arte! y sus componentes.

c) En la teoría de la ciencia avanzada = (W. Quine)!

Según Quine, la ciencia no es un ensamblaje de diferentes piezas! aisladas, de "opiniones (creencias!) — "sino un "sistema - interconectado;" de elementos integrados, dependientes, el cual "se ajusta", como un TODO, con las entregas de la experiencia!!

= El "HOLISMO" es hostil al movimiento filosófico del "ANÁLISIS" como técnica filosófica! Ese último es considerado una "falsificación", y mutilación de aquello a que se aplica!!

= Se trata en [el "Individualismo metodológico" =] que son dos enfoques de la metodología prácticamente y "holismo - metodológico —→] de las Ciencias - Sociales! —

La filosofía analítica, divide, fragmenta, como si las partes fueran en sí ... antes

Las respuestas a los problemas anteriores — difieren en el modo siguiente

_____

1) Es necesario o "relevante", para mencionar las:

"Todo" → individuo
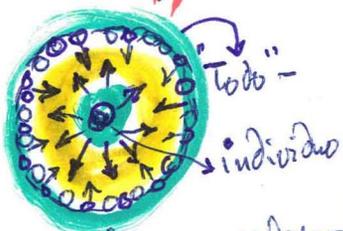
creencias,
actitudes,
decisiones,

o acciones de personas individuales, cuando se intenta: describir, o explicar, fenómenos cómo: los sociales, políticos o económicos!

2) — es necesario postular una "Totalidad social" — que posea sus propias funciones o necesidades,
— o que causen el acontecer de eventos
— o son todas menciones de tales cosas

en realidad, referencias — abreviadas, a las personas individuales — en la sociedad — constituida — gente

3) Ej: ¿Puede decirse que una — nación, o un Comité, posea un pensamiento propio, por-sí"? — Entonces;

(3.1) ¿Pueden las estructuras sociales y los procesos sociales, influir en las actitudes creencias, pensamientos, decisiones ... de los individuos??
O tales influjos deben ser "explicados" en simples términos de interacciones de persona a persona?

(3.2) ¿El estudio de la sociedad es basado necesariamente en el estudio de sus miembros; o existe algún otro medio, para observar y medir! ......

... las realidades sociales como: la voluntad de las naciones! ...... quizás? por medio del estudio del "proceso histórico" en gran escala ??? .....

d) La tendencia de la "metodología" individualista, al contestar a estas preguntas; tiende a, descuidar la importancia del TODO = el estudio científico de la totalidad social!

β) Mientras la "metodología - holística" tiende a "relajar" la influencia de los individuos dentro del "fenómeno-social" =

Parece que toda esta discusión es fútil — como la entre ingenieros, cuando unos defienden más la importancia de los materiales, y otros más la de los mecanismos para hacer una construcción!

4) " Por cierto "ambos son necesarios; pero en modo diferente"; esta es una resp-uesta insuficiente.
= yo añadiría: "la importancia del "material" está en función del "mecanismo" y vice versa!"
= no es solo que tengan cada uno su importancia, en diversas funciones,
III → sino que la importancia es "variable"; según el "tipo de relación" que el individuo tenga con el "todo":
{ — Ni el todo es un Todo en sí - prescindiendo de los componentes
{ — Ni los componentes en piezas en sí, ignorante de la función en el TODO.

Se consigue así una "bipolaridad" - individuo·Todo - o mejor dicho: o una "multipolaridad" [= individuo-otros-individuos + "individuos[Totalidad"]

Esto sucede también en otros campos = en que se aplica el "holismo":

{ a) Una oración individual (lenguaje) posee "significado" {= no solo en-sí-sino en relación al conjunto Total. del lenguaje

{ b) Un conocimiento: 20'5 v posee un "valor individual" pero determinado en la interrelación con el TODO.

Para dar valor a un individuo sea esto una persona, una acción, una oración, o un pensamiento, es preciso colocarlo "situarlo" en el contexto de sus relaciones y funciones con la TOTALIDAD del medio, en el que surje tal individuo.

c) Una actividad política, religiosa, social o económica! forman tales sistemas

5) muerte de lo binario? que es insuficiente
En lugar de pensar estas relaciones como "oposiciones ⇆ binarias"; fijas y diferentes es mejor concebir los extremos como términos polares de un "eje variable que presenta numerosas gradaciones intermedias! (medidas, parciales, diferenciales)

como en la "Lógica-variable" - "FUZZY" o hipo-lógica!
se disuelven las oposiciones en escalas menudas : pluri-polares. que permiten
ajustarse mejor a la realidad experimental.

Esto no implica negar los dos polos : si no observar
los influjos mutuos y las interdependencias : a varios niveles
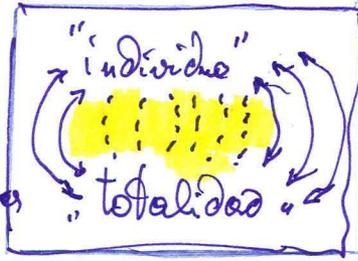
El individuo está sumergido en la Totalidad ; y ésta a su vez se configura con el aporte
de todos los individuos ; no en una escala rígida sino variable.

Ej: A pesar de que los signos gráficos sean totalmente convencionales, logramos entender lenguas diferentes
de la nuestra y traducir el significado de una lengua a otra.

El HOLISMO se mueve también en otra dimensión : hacia más allá del "Todo-experimental".
El TODO experimental no abarca solo los "ámbitos de las ciencias avanzadas": (Quine) sino que
abre la "posibilidad" para avanzar hacia ámbitos desconocidos! Esto quiere decir, que la
experiencia supera la Totalidad! Hablamos de clases de experiencias, que sintetizan todas las
diferentes ramas de las ciencias experimentales :
- Dimensiones que ensanchan los límites de la

- físicas
- biológicas
- físico lógicas
- económicas
- matemáticas

y además encuentra nuevas -

TOTALIDAD!

- 6) Igualmente se eliminaría la oposición-binaria de : Analítico / Sintético -

- hace treinta años, ser bonita o considerarla equivalente a "aséptico" (nada es definido
- hoy se decide si el holismo es tolerable científicamente.

ASUNTO = no se admiten conceptos ideas - individuales ?!!! NO? Es decir

Individual ← → versus "general - universal"! ⎰ Es que uno niega el otro ?!!
singular ←   ⎱ o uno incluye el otro ?!!

= MODELO :

→ No hay "razonamientos" - singulares

⑥ Razonamiento ⟨ generales
                  discretos
                  fijos

⑤ Palabras ⟨ discretas - generales
                          solo
              fijas

④ Conceptos ⟨ discretos → generales   → discretas = discontinuas
   & Valores   fijos   → singulares - individuales   → fijas = inmóviles

③ Percepciones = producción de - imágenes sensibles
                 " singulares - individuales "

② Sensaciones ; ⎰ la sensación : se ajusta a la experiencia o ⎰ fluido ..
                ⎱ pero percibe : " diferencias " - cualidades de varias clases.   ⎱ continua --

① "mundo experimental" = fluido (= cambiante) y continuo : (sin divisiones) =
   [no existe lo individual ni lo general] = Out of quest

Bibliográfica :

James M. Fennelly, "From the Viewpoint of Chusa"
Independent Press 1999. (100 pag.)
una invención académica de la vida y viajes por de Jesús.
Juana la mujer de Chuza se hace discípula de Jesús
una reconstrucción de la Xtiandad primitiva —

Hent de Vries, "Philosophy and the Turn to Religion"
John Hopkins University Press. 1999
Die Karty que es interesa. la relac. entre teolog. negativa - y la
lectura de Heidegger, Levinas y Derrida.

Paul Gutjahr, "An American Bible" 1999 - Stanford Univ. Press

A.S. Khomiakov: "On Spiritual Unity": A Slavophile Reader.
(Library of Russian Philosophy) 1998

Karlis Racevskis. "Modernity's Pretenses: Making
Reality Fit Reason: from Candide to Gulag 1998
(Suny Series in Philosophy & Postmodern Culture)

Holism, Mental and Semantic

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Abstract

Mental (or semantic) holism is the doctrine that the identity of a belief content (or the meaning of a sentence that expresses it) is determined by its place in the web of beliefs or sentences comprising a whole theory or group of theories. It can be contrasted with two other views: atomism and molecularism. Molecularism characterizes meaning and content in terms of relatively *small parts* of the web in a way that allows many different theories to share those parts. For example, the meaning of 'chase' might be said by a molecularist to be *try to catch*. Atomism characterizes meaning and content in terms of *none* of the web; it says that sentences and beliefs have meaning or content independently of their relations to other sentences or beliefs.

One major motivation for holism has come from reflections on the natures of confirmation and learning. As Quine (1953) observed, claims about the world are confirmed not individually, but only in conjunction with theories of which they are a part. And typically, one cannot come to understand scientific claims without understanding a significant chunk of the theory of which they are a part. For example, in learning the Newtonian concepts of 'force', 'mass', kinetic energy' and 'momentum', one doesn't learn any definitions of these terms in terms that are understood beforehand, for there are no such definitions. Rather, these theoretical terms were all learned together in conjunction with procedures for solving problems.

The major problem with holism is that it threatens to make generalization in psychology virtually impossible. If the content of any state depends on all others, it would be extremely unlikely that any two believers would ever share a state with the same content. Moreover, holism would appear to conflict with our ordinary conception of reasoning. What sentences one accepts influence what one infers. if i accept a sentence and then later reject it, i thereby change the inferential role of that sentence, so the meaning of what i accept wouldn't be the same as what i later reject. but then it would be difficult to understand on this view how one could rationally --or even irrationally!-- change one's mind. and agreement and translation are also problematic for much the same reason. holists have responded (1) by proposing that we should think not in terms of "same/different" meaning but in terms of a gradient of similarity of meaning, (2) by proposing "two factor" theories or (3) by simply accepting the consequence that there is no real difference between changing meanings and changing beliefs.

Contents

1. THE DOCTRINES

Semantic holism is the view that the meaning of a sentence is determined by its place in the web of sentences comprising a whole theory. Mental holism is the corresponding view for belief content--that the identity of a belief content is determined by its place in the web of beliefs comprising a theory. Sometimes holists advocate a more sweeping view in which the identity of a belief is determined by its relations to a body of theories, or even *the whole of a person's belief system*. In what follows, I will treat mental and semantic holism as two aspects of a single view.

Holism can be contrasted with two other views: molecularism and atomism. Molecularism characterizes meaning and content in terms of a relatively small part of the web that many different theories may share. For example, the meaning of 'bachelor' might be said by a molecularist to be *man who has never married*. And the meaning of 'and' might be given by a molecularist version of inferential role semantics (see SEMANTICS, CONCEPTUAL ROLE) via specifying that the inference from 'p and q' to p and from p, q to 'p and q' has a special status (e.g. it might be primitively compelling, in Peacocke's terms). Atomism characterizes meaning and content in terms of none of the web; it says that sentences and beliefs have meaning or content independently of their relations to any other sentences or beliefs and therefor independently of any theories in which they appear.

Note the contrast between the semantic issues that are of concern here and those that concern particular phenomena in particular languages. Semantics in the present sense is concerned with the fundamental nature of meaning and what it is about a person that makes his words mean what they do. We might call the present sense the 'metaphysical sense'. Semantics in the other sense -- what we might call the linguist's sense--concerns the issues of how meanings of words fit together to determine the semantic properties and internal structures of sentences. Semantics in the linguist's sense concerns such issues as how many types of pronouns there are (q.v. REFERENCE) and why it is that 'The temperature is rising' and 'The temperature is 60o doesn't entail that 60o is rising. There are interactions among the two enterprises, but semantics in the linguist's sense can proceed without taking much notice of the issue of semantic holism.

2. MOTIVATIONS FOR HOLISM

The best known motivation for semantic/mental holism involves Quine's doctrine of *confirmation* holism, according to which "Our statements about the external world face the tribunal of sense experience not individually but only as a corporate body". (Quine 1953: 41) This view gains its plausibility from the logic of theory revision. An experimental datum confirms (i.e. verifies, gives us some reason to believe) a statement only in conjunction with a great number of theoretical ideas, background assumptions about the experiment, and assumptions from logic and mathematics, any one of which could be (and in the history of science often has been) challenged when problems arise.

If we combine this confirmation holism with the Logical Positivist (q.v.) doctrine that the meaning of a sentence is its method of verification or confirmation, that is if we combine the doctrine that meaning is confirmation with the claim that confirmation is holistic, we get semantic holism. And this implies that talk of the meaning of a sentence in isolation from other sentences makes no more sense than talk of the meaning of 'of' apart from the contexts in which it occurs.

Positivism and confirmation holism are not the only roads to semantic/mental holism. Another route proceeds from considering how people learn actual scientific theories. One doesn't learn definitions of 'force', 'mass', 'kinetic energy', or 'momentum' in terms that are understood beforehand, for there are no such definitions. Rather, these terms are learned together (in conjunction with procedures for solving problems. As Quine and Putnam argued, local "definitions" in a scientific theory tend to be mere passing expository devices of no lasting importance for the theory itself. And this is quite ubiquitous in theories--a circle of interdefined theoretical terms none of which are definable in terms outside the theory. This fact motivates Lewis' proposal that scientific terms can be defined functionally in terms of their roles in a whole theory (see FUNCTIONALISM; SEMANTICS, CONCEPTUAL ROLE).

3. FUNCTIONALISM, INFERENCE AND BELIEF

Functionalism has become a popular approach in the philosophy of mind generally. For example, the difference between the belief that one will win the lottery and the desire that one will win the lottery is plausibly a functional difference (a difference in the roles of the states), since one but not the other leads to test-driving a Ferrari. But functionalists go further, claiming that the common *content* of these propositional attitudes can also be functionally defined (in terms of the cognitive roles of states which have these contents in the psychological economy, including links to inputs and outputs). It has often been supposed that the most important feature of the functional role of a belief in determining its content is its role in inference, and for that reason functionalism about content or meaning is sometimes called inferential role semantics. The functional role of a thought includes all sorts of causes and effects that are non-semantic, e.g. perhaps depressing thoughts can lower one's immunity, causing one to become ill. Conceptual roles are functional roles minus such non-semantic causes and effects.

A functional theory of the whole mind must make reference to any difference in stimuli or responses that can be mentally significant. The difference between saying 'damn' and 'darn' can be mentally significant. (E.g. one can have a policy of saying one rather than the other.) Your pains lead to 'darn', mine to 'damn', so our pains are functionally different, and likewise our desires to avoid pain, our beliefs that interact with those desires, and so on. So if we functionally define 'pain' in terms of a theory of the whole mind, we are naturally led to the conclusion that two individuals who differ in this way share no mental states. This is why functionalism can lead to holism.

Molecularists object that if you've got a fine-grained way of categorizing, you can just coarsen it. But how? Which causes and effects of pain are constitutive and which are not? The form of a solution could be: "pain = the state constituted by the following causal relations...." where the dots are replaced by a specification of a subset of the mentally significant causal relations into which pain enters. Putnam suggested we look for a normal form for a computational description of pain, and Lycan and Rey have suggested that we construct functional theories at different levels, one of which would be suitable to define 'pain' without distinguishing between 'damn' and 'darn'. But after years of

discussion, there is no real solution, not even a proposal of something functional common to all and only pains. Lycan and Rey expect the issue to be settled only by an empirical psychology.(See Rey, 1996.) Moreover, even if one is optimistic about finding a functional definition of pain, one cannot assume that success will transfer to functionalist accounts of meaning. Success in the case of meaning would seem to require an analytic/synthetic distinction (see the next section) which many have found independently to be problematic.

4. PROBLEMS WITH THE ANALYTIC/SYNTHETIC DISTINCTION

Another route to holism arises from considerations involving the analytic/synthetic distinction (q.v.), that is, the distinction between claims that are true solely in virtue of meaning and claims that depend also on the way the world is. Quineans often hold that the analytic/synthetic distinction is confused. Some philosophers have argued from the idea that there is something wrong with analyticity to holism. We can put the argument in terms of conceptual role semantics. Some inferences (e.g. from 'bachelor' to 'married') are part of meaning-constitutive inferential roles, but others (e.g. from 'bachelor' to 'dislikes commitment') are not. If some inferences are part of meaning-constitutive inferential roles, and if there is no analytic/synthetic distinction, then there is no principled way to draw a line between inferences that constitute meaning and those that do not. (SEE ANALYTIC/SYNTHETIC) So, the argument concludes, all inferences are part of meaning-constitutive inferential roles, and this is a form of holism. (Fodor and LePore, 1992; Devitt, 1995)

But this argument is of course fallacious. A bald man can have some hairs and there is no principled way of drawing a line between the number or distribution of hairs on a bald man and on a non-bald man. But one would not conclude that everyone is bald. Failure to find a principled way of drawing a line needn't require one or the other extreme.
Still, the argument is onto something. How would the molecularist choose among inferences to pick out the meaning-constitutive ones if what is meaning constitutive must be analytic rather than synthetic, yet there is no such distinction? But the problem is really more general, and far from being an argument *for* holism, it casts doubt on holism too. If meaning-constitutivity entails analyticity, any view--molecularist or holist--that postulates anything meaning-constitutive is in trouble if there is no such thing.

One response to this argument has been to doubt the principle that a statement or inference that is meaning constitutive is thereby analytic (Block, 1993). There are two very different points of view which see a gap between meaning-constitutivity and analyticity.
One approach to finding a gap between meaning-constitutivity and analyticity derives from the views of Quine and Davidson, on which there is no clear difference between a change of meaning and a change of belief.

The other appeals to narrow contents (q.v.) Narrow contents are contents that are necessarily shared by "Twins", people who are internally as similar as you like, even though their environments differ. Thus consider the influential example of Putnam's "twin earth" which is a planet identical to earth in every respect except that wherever the earth has H2O, it has a superficially similar but chemically different substance, XYZ. Arguably, I and my twin on Putnam's Twin Earth share a narrow content for 'water' despite the different referents of our words. It is false that meaning-constitutive sentences or inferences are thereby analytic if meaning is narrow. Narrow meanings *themselves* are never *true* or

false and hence cannot be *true in virtue of meaning*. For example, let us suppose that my Twin and I accept the propositions that we express with "Water contains hydrogen". My belief has a true wide content, my Twin's has a false wide content, but the narrow content has to be the same (since we are Twins). Further, we can even imagine a Twin Earth in which a putative meaning-constitutive inference is invalid. If there is any inference that is a good candidate for analytically defining 'water', it is the inference from 'water' to 'liquid'. But consider a Twin earth on which 'water' is used as here to refer to H2O, but where water is very rare; most of the substances referred to as 'liquids' being granular solids that look like liquids. So 'Water is a liquid' as said by them is *false*, even though it is true in our mouths. Perhaps it will be said that what is analytic is not "Water is a liquid" but 'Water has a liquidish look and feel'. But it is easy to imagine circumstances in which the look and feel of water changes. Perhaps what we should be looking for is not a narrow meaning that is true in virtue of meaning but one that is only assertible in virtue of meaning. But it is part of our commitment in the use of natural kind terms that the world plays a part in determining truth values, so we must regard any appearance of warrant solely in virtue of meaning as superficial.

5. THE PROBLEM OF DISAGREEMENT AND TRANSLATION

Holism has some weird-sounding consequences. Suppose we say that all of a sentence's inferential links (within a theory or body of theories) are included in its set of meaning-constitutive inferential roles. But what sentences I accept influence what I infer, so how can I reason so as to change my own mind? If I accept a sentence, say 'Bernini stole the lead from the Pantheon,' and then later reject it, I thereby change the inferential role of that sentence, so the meaning of the sentence that I accept isn't the same as the one that I later reject. So how can I reason about which of my beliefs should be given up? Along similar lines, one can argue that no two people ever agree or disagree and that we can never translate anything perfectly from one language to another. The holist owes us a way to reconcile such conclusions with common sense. This section will explore three holistic responses.

Harman (1973) and Block (1986) have argued that we can avoid the problem by replacing the dichotomy between agreement and disagreement with a gradient of similarity of meaning, perhaps multidimensional. If I first accept and then reject 'Bernini stole the lead from the Pantheon', it is not as if I have rejected something *utterly unrelated* to what I earlier accepted. This position profits from the analogy with the ordinary dichotomy between believing and disbelieving. Reasoning with this dichotomy can lead to trouble, trouble that is avoided if we substitute a graded notion for the dichotomy. For example, I can have a low degree of belief in a long conjunction even though I have a high degree in each of the conjuncts. But if we put this in terms of the dichotomy between believing and disbelieving, we say that I could believe each conjunct while disbelieving the conjunction, and that is a contradiction. The proposal, then, is that we substitute a graded notion of similarity of meaning for the ordinary notion of same/different meaning. It must be conceded, however, that there are no specific suggestions as to what the dimensions of similarity of meaning are or how they relate to one another.

This approach can be combined with the aforementioned "two factor theory" according to which meaning consists of an internal holistic factor and a non-holistic purely referential factor. For purposes of translation and communication, the purely referential factor plays the main role in individuating contents. For purposes of psychological explanation, the internal factor plays the main role. (See Loar, 199?)

There is another (compatible) holistic response to the problem of disagreement which is associated with the views of Quine, Davidson and Putnam, namely that there is something wrong with the terms in which the problem is posed. They explicitly reject the very distinction between disagreeing and changing the subject that is presupposed by the statement of the problem. Putnam (1988) and Stich (1983) have argued, along these lines, that translation is not an objective process; it depends on subjective value-laden decisions as to how to weigh considerations of similarity in reference and social and functional role. It is controversial whether this Quinean response avoids the problem of disagreement only by rendering meaning something unsuitable for science.

Another holistic response is exemplified by Lewis' observation that there is no need to suppose that a satisfier of a functional description must fit it perfectly--fitting *most* of it is good enough (Lewis, 1995). Lewis proposes that in framing the functional roles, we replace the set of inferences that are the basis for a functionalized account of belief with the disjunction of all the conjunctions of *most* of them. E.g. if we think there are three inferences, A, B and C that are closely linked to the meaning of 'if', we might define 'if' as the relation that satisfies either A&B or A&C or B&C. (Of course, we thereby increase the danger that more than one relation will satisfy our definition.) Then disagreement will be possible between people who accept most of the inferences that define their subject matters.

I have just been canvassing holistic responses to the problem, but of course atomism and molecularism are also responses. Fodor's (1987) version of atomism construes meanings as purely referential. Fodor goes so far as to insist that there could be punctate minds, minds that have only one belief. This view must, however, find some way of accommodating the insights that motivate holism.

6. PSYCHOLOGICAL LAWS   Las leyes universales son holísticas?

Fodor and LePore (1992) object to holistic accounts of mental content on the ground that they would preclude psychological laws, for example: the belief that one is in immediate danger causes release of adrenalin. According to holism, there is no such thing as "the" belief that one is in immediate danger because the belief that you designate in this way is not quite the same as the belief that I designate in this way. Beliefs are too fine grained to be referred to in this way. One strategy for dealing with this issue is to observe that many candidate psychological laws can generalize about contents without actually specifying them.. Consider this candidate for a law: For *any* action *a* and any goal *g*, if one wants *g* and also believes that *a* is required for *g*, then one will try to do *a*. This is a universally quantified law (because of the role of 'any'), albeit a trivial one. Universally quantified laws are a good scientific bet, and these can involve holistic content. By quantifying over goals, one can state laws without committing oneself to two agents ever having exactly the same goal. The point just made says that the holist can allow one kind of psychological law (the quantified kind) but not another (the kind that mentions specific contents such as the belief that one is in danger). But the holist may go further, arguing that there is something wrong with the putative laws of specific contents. The point is that "The belief that one is in immediate danger causes release of adrenalin" stands to psychological law as "Large slippery rocks on mountain-tops can damage cars on roads below", stands to physical law. Laws should quantify over such specific items, not mention them explicitly.

However, Fodor and LePore are right that any particular type of holistic state will exist only rarely and transiently. In this respect, holistic mental states are like the states of computers. A total computer configuration as specified by the contents of every register in the internal memory and every cell on the hard disk will occur only rarely and transiently. There are deterministic laws of the

evolution of total computer states, but they deal with such transient states. So psychological explanation will have to be seen by holists as like explanation of what computers do, in part a matter of fine grained laws of the evolution of systems, in part coarse-grained accounts of how the systems work that do not have the status of laws.

7. "NARROW CONTENT" HOLISM

There is a great deal of controversy about whether there is such a thing as narrow content or meaning, but if narrow content exists, there is good reason to think it is holistic. We already have seen one reason having to do with the fact that there is no analytic/synthetic distinction for narrow content. But there is another reason as well that focuses on change of narrow content with learning. Putnam (1983) and Block (1994) give an argument that uses some relatively uncontroversial premises about identity and difference in narrow content at a single time to squeeze out a conclusion to the effect that one's narrow contents can be expected to change whenever one receives substantial new information, however trivial. The argument depends on a variant of the famous "twin earth" example. Consider twins who grow up in different communities where 'grug' is used to denote different substances, beer in one and whiskey in the other, but the difference hasn't made any difference to the twins. At age 10, they are as similar as you like, and so the narrow contents of their 'grug's are the same. By age 12, they know as much about "grug" as teenagers normally know, including the (different) translations of 'grug' into English. One knows that "grug" in his language is beer, the other that "grug" is whiskey. The argument motivates the claim that their 'grug's differ in narrow content at 12 despite being the same at 10, so the information that they acquired (which is designed to be run-of-the-mill) changed the narrow contents. (But see Devitt, 1995, for a reply.)

Issues about holism continue to be at the heart of debate in philosophy of language and mind. Thirty years ago, it was widely assumed that to be a holist was to be a skeptic about any science of meaning or content, but in recent years there has been a spirited debate about whether "cognitive science" can tolerate it.

Bibliography

Block, N. 1986, "Advertisement for a Semantics for Psychology" *Midwest Studies in Philosophy*, Volume X, edited by P.A. French, et. al., 615 678. (Discussion of inferential role semantics)

Block, N. 1993 Holism, Hyper-analyticity and Hyper-compositionality," *Mind and Language* 8, 1, 1993: 1-27. (Defense of holism from a critique by Fodor and LePore.)

Block, N. 1994: "An Argument for Holism", in Proceedings of the Aristotelian Society, New Series, Vol. XCIV, 1995, p.151-169.

Devitt, M. 1995: *Coming to Our Senses: A Naturalistic Program for Semantic Localism.* Cambridge: Cambridge University Press. (Spirited defense of molecularism.)

Fodor, J. 1987: *Psychosemantics: The Problem of Meaning in the Philosophy of Mind*. Cambridge: MIT Press. (Defense of an atomistic view of content and meaning.)

Fodor, J. & LePore, E.: 1992: *Holism: A Shoppers' Guide*. Oxford: Blackwell. (Critique of arguments for holism.)

Harman, G. 1973: *Thought*, Princeton: Princeton University Press. (Defense of a language of thought. Uses a functionalist point of view.)

Lewis, D. 1995: "Lewis, David: Reduction of Mind", in S. Guttenplan, ed. *A Companion to Philosophy of Mind*, Blackwell: Oxford. (Summary and defense of Lewis' views on mind and meaning.)

✗ Nagel E. the Structure of The Science . 1961. New York London.

Loar, B., "Psychological and Social Content", in ...(Argument that narrow content is the only content)

Putnam, H. 1983: *Realism and Reason: Philosophical Papers*, Vol. 3

Putnam, H. 1988: *Representation and Reality* Cambridge: MIT Press. (Critique of cognitive science views of mind and meaning.)

Rey, G. 1996 ??

Stich, S. 1983: *From Folk Psychology to Cognitive Science*. Cambridge: MIT Press. (Argument against appealing to content in psychological explanation.

Quine, W. 1953: "Two Dogmas of Empiricism", in *From a Logical Point of View*. Cambridge: Harvard University Press. The classic argument against the analytic/synthetic distinction.

Quine W, Nagel E, Putnam = (parece) son los iniciadores de esta concepción.

Los nuevos:
Ned Block.
M. Devitt.; Coming to our senses .1995
Fodor y Lepore E : Holism. 1992 Oxford : Blackwell
D. Lewis en: A Companion to philosophy of Mind 1995 Blackwell. Oxford = antología

THE NEW HOLISM---BUT IS IT WHOLE ENOUGH? *(para la ciencia?)*

In the short space of two weeks, the New Scientist printed two articles that confront the obvious complexity of nature. Not only is this complexity persistent under the attack of the Second Law of Thermodynamics, but it seems to actually increase with time. Do formative or guiding principles exist that science does not take into account? The two articles have very different answers.

The creative cosmos.

> "Most people accept without question that the physical world is coherent and harmonious. Yet according to the traditional scientific picture, the Universe is just a random collection of particles with blind forces acting upon them. There is, then a deep mystery as to how a seemingly directionless assembly of passive entities conspire to produce the elaborate structure and complex organisation found in nature."

The author of this introductory paragraph, P. Davies, asks, as we all do, "What is the origin of this creative power?" In groping for an answer, he presents first a common example of "blind" organization: the hexagonal convection cells in a pan of heated water. Using for a stepping stone the cooperative action of atoms in a laser, he leaps to the development of an embryo from a single strand of DNA! All such systems are "open"; that is, energy can flow in and out. They are also nonlinear, which means that chaotic, unpredictable action may occur. Davies implies that such action can be "creative," almost as if they possessed free will!

His final example is that of the network with large numbers of interacting sites or nodes. With random inputs, large networks do exhibit self-organization. Network theory is now very popular in the field of artificial intelligence. (Remember the computer Hal in 2001?) Davies's conclusion: "...Neo-Darwinism, combined with the mathematical principles emerging from network theory and related topics, will, I am convinced, explain the 'miracle' of life satisfactorily." (Davies, Paul; "The Creative Cosmos," New Scientist, p. 41, December 17, 1987.) *qué optimista! anti-holeidos*

The superorganism. One week later, O. Sattaur expanded on the Gaia concept. He quotes J. Lovelock's definition: *es holista?*

> "...the physical and chemical condition of the surface of the Earth, of the atmosphere and of the oceans has been, and is, actively made fit and comfortable by the presence of life itself...in contrast to the conventional wisdom which held that life adapted to planetary conditions as it, and they, evolved their separate ways."
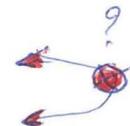
Mainstream science has shown scant love for the Gaia concept, probably because of its holistic nature. The idea of the earth being greater than the sum of its organic and inorganic parts---a superorganism---is foreign to reductionistic science. In Gaia, our planet is a giant, self-regulating entity, something larger than and independent of humanity. Is this scientific?

D. Abram deplores modern, mechanistic, reductionistic science as "immature." He thinks that the Gaia hypothesis may well signal the growing up of science. Sattaur concludes the article with Lovelock's assertion that the fate of humanity is interlocked with that of the earth, and that we are not the masters. If we reject Gaia's imperative, she may retaliate! (Sattaur, Omar; "Cuckoo in the Nest," New Scientist, p. 16, December 24/31, 1987.)

Comment. God is not mentioned in either article. Extrapolating the Gaia hypoth esis to cosmic dimensions, we get closer to God. At the reductionist end of the spectrum, we could assume that everything the universe (life and all) is and will be is encoded into the smallest par ticles known---the quarks. The properties of the quarks, after all, must be consistent with the development of the cosmos. Here, God would be only a quarksmith, and everything would evolve from them!

From Science Frontiers #56, MAR-APR 1988. © 1997 William R. Corliss

Holism In Social Science ; Eun rassonamiento que considera imposible eliminar la "interpretación" en las ciencias sociales

What is Holism?

- The argument concerning the ineliminability of interpretation in the social sciences and the human sciences does not just bear upon the question of the **covering law thesis** it also bears upon the question of **holism**. Holism is the doctrine that an object of study, e.g. a language or society needs to be **understood as a whole:** it is not enough to understand its components taken separately.

- Contrast measurement by a standard measuring machine with human interpretation. A measuring machine is built to measure **just one** measurable property in a situation. But human interpretation, at least at its most conscientious, is done through considering the whole context of the object of interpretation. Consider the **interpretation**, by a scholar, of a **book**. (This paradigm of interpretation is central to the **hermeneutic approach** to the human sciences - see lecture 5).

  - We could have a measuring machine that was measuring the height of each letter in the book. Its measurement of the height of the last letter in the book will be made without reference to its measurement of the first letter.
  - But it would be a bad scholar who, in interpreting the meaning of the last page of the book, did not even consider whether the meaning of the first page was relevant to it.
  - Moreover a conscientious scholar would reread the first page to see whether his/her interpretation of it needed to be revised in the light of the rest of the book.
  - Also a conscientious scholar would consider the context beyond the book: other works by the author, the cultural context in which it was written and read etc.

Interpreting Behaviour

- This is not just a point about books. We use **concepts** in order to **understand our experience** (e.g. a psychiatrist might make use of a concept of aggression in order to make sense of a child's experience of anger).

- Here we have a question of interpretation concerning the **purpose, meaning, and significance** of a child's experience. A conscientious person would not seek to make such an interpretation without considering the child's more **general experience**, and indeed the **cultural context** in which it occurred.

- Now an interpreter can decide that it is not worth going beyond the context of the child's family, or village, or country in considering these matters, but such a division between **relevant context** and irrelevant context is always problematic. In the end there is no unproblematic limit to the relevant context, except the context of human history (who is to rule out the possibility of another culture helping us to make sense of a child's anger: perhaps they do things better in other cultures, amongst the Navaho, for example).

Social Context

• On this view human consciousness has to be interpreted in its social context, thus human society is not made up of **analytically separable** units, whose properties can each be reliably measured in isolation.

• But this does not mean that society is a sort of super-human with its own consciousness. Nor does it mean that history is the product of impersonal **covering laws**.

• But this is not to rule out systematic approaches to history, such as that of Marxism. We still may be able to discern **general tendencies** in history, but which tendencies are further developed will, from the point of view of the social and human sciences, be a matter for human struggle, not a matter of the mechanical operation of iron laws of history or society.

• If there are covering laws proper, then these are the covering laws of physics, although it is possible to question whether even these apply as covering laws to all human behaviour (see the discussion of quantum mechanics).

Any comments...?   Take a look at the comments made...

back to the key points of lecture 3
back to the overview of the lectures   back to the general course home page

"John Perry [Discute la opinión de Davidson contraria al holismo]

Davidson's Sentence Holism

Davidson claims that the building block theory is wrong because direct contact between linguistic theory and events, actions and objects described in non-linguistic terms must be made at the level of sentences, not at the level of individual words, and must be made via the concept of truth, rather than that of reference:

> Words have no function save as they play a role in sentences: their semantic features are abstracted from the semantic features of sentences, just as the semantic features of sentences are abstracted from their part in helping people achieve goals or realize intentions. If the name `Kilimanjaro' refers to Kilimanjaro, then no doubt there is some relation between English- (or Swahili-) speakers, the word, and the mountain. But it is inconceivable that one should be able to explain this relation without first explaining the role of the word in sentences; and if this is so, there is no chance of explaining reference directly in nonlinguistic terms.... gif

> When it comes to interpreting [a Tarski-style theory of truth] as a whole, it is the notion of truth, as applied to closed sentences, which must be connected with human ends and activities. gif

The thought here comes in two parts. First, the meaning of words is to be explained by their connection with human actions and the beliefs, desires and intentions that motivate them. Second, this means that the connection must be made at the level of sentences. I'll suppose that Davidson's position would allow that the connection could be made at the level of imperatives as well as declaratives, however. Corresponding to truth-conditions for declaratives we will have compliance-conditions for imperatives.

Why sentences? Perhaps the simplest answer is because it is sentences that express thoughts. This is not just something we learn in elementary school; it is shown by the structure of propositional attitude constructions:

(1)

Harold believes that Russia is in turmoil.

(2)

Gretchen wants Elwood to close the door.

In (1), we characterize Harold's belief by a that-clause, and what does the descriptive work in this clause is the sentence ``Russia is in turmoil." This is the sentence we use to describe Harold's belief, and it is the sentence we would expect him to use to express it. In (2), the tense-less sentence ``Elwood to close the door" characterizes Gretchen's desire, and if she is in a suitable position of

authority over Elwood, we would expect her to issue a request or a command using these very words.

The close connection between thoughts and sentences makes sentences a natural place to see meaning flowing from thought to language, according principles something like the following:

(A) $S \rightarrow P$

If competent speakers assert S when they want their audiences to believe P, then utterances of S are true iff P.

(B)

If competent speakers use $\square_{t_i}$ to issue a command to X when they want X to do A, then such utterances are complied with iff X does A.

To elaborate on Davidson's example, suppose we have a corpus of sentences containing the word ``Kilimanjaro,'' which are used to assert various things and request or command various things:

(3)

Kilimanjaro is big.

belief =

(4)

Kilimanjaro is cloudy.

(5)

Kilimanjaro is a long ways away.

(6)

Go climb Kilimanjaro.

intention

(7)

Look at Kilimanjaro.

(8)

Point to Kilimanjaro.

Our linguist discovers the beliefs that motivate sincere speakers to utter such statements as (3), (4) and (5). She discovers the actions that will be deemed to comply with such imperatives as (6), (7), and (8). So there is a direct contact, in the linguistic theory, between these sentences and various intentions, goals and beliefs with various propositional contents (or involving the acceptance of various sentences, or whatever one wants); we list some of the facts that correspond to (3)-(8):

(F3)

Sincere speakers utter (3) when they believe that Kilimanjaro is big and want their audience to believe this too.

(F6)

Speakers with authority utter (6) when they want their audience to go climb Kilimanjaro

From this, we get the semantic theory, of which we list some of the postulated facts:

(S3)

Utterances of (3) are true iff Kilimanjaro is big.

(S6)

Utterances of (6) are complied with iff the audience of the utterance climbs Kilimanjaro.

Given the semantic facts about sentences, at least as our theorist has postulated them, a certain pattern emerges:

(P)

When the word ``Kilimanjaro'' is found in a sentence, the truth or compliance conditions of utterances using that sentence will involve Kilimanjaro.

From this, our theorist derives the following:

(S9)

``Kilimanjaro'' stands for Kilimanjaro.

(S9) is not an additional fact about the language. It is a way of ``summing up'' a pattern that emerges in these facts. gif

The rejected alternative is to suppose that the direct contact between language and the world is made at the level of reference. On this view, (S9) would not be derived from (S3)-(S8), but would be a fact that was part of the explanation of (S3)-(S8). But this would mean that (S9) would have to be based on some principles that link reference to non-linguistic facts in the way that (A) and (B) link sentences to human goals and intentions. What would these principles be?

We might suppose that, say, the words are directly associated with images, so that ``Kilimanjaro'' was associated with an image of that mountain. This is the idea that is Wittgenstein's target, and Davidson also seems to associate the building-block theory with this idea. gif Wittgenstein would argue that it wouldn't mean anything that the word was associated with an image of Kilimanjaro if the it didn't have the right role in the relevant language games, and if it did have the right role in the language games, then ``Kilimanjaro'' would stand for Kilimanjaro, no matter what connections there were between that word and images in ones mind.

So the argument comes to this.

(10) What makes (S9) true is that people use the word ``Kilimanjaro'' when they want to say **a)** something about Kilimanjaro, or when they want to request or command that something be done to, at or with Kilimanjaro. **b)**

(11) But saying something about Kilimanjaro, or commanding that something be done to, at or with Kilimanjaro, is done by uttering a sentence; it is the utterance of the sentence that has the property of being a statement about or command relating to Kilimanjaro.

(12) But that is to say that the semantic facts about ``Kilimanjaro'' derive from the semantic facts about the sentences of which it is a part.

I think, however, that this argument is wrong, and that Wittgenstein's example of the builder's language game can show us why.

John Perry
Wed Aug 21 13:58:07 PDT 1996

Davidson, filósofo analista del lenguaje = está en contra del "holismo" — porque, para él la "referencia" no tiene valor semántico! no tiene realidad.

Esta oposición depende de la "naturaleza" de la entidad -objeto- considerado!

Against the Necessary/Contingent Dichotomy

Por tanto son "modalidades del ser. No hay realmente una dicotomía.

Three ways of attacking the dichotomy:

1. Suggest that one side of the dichotomy is empty or trivial.
2. Argue that the line is impossible to draw.
3. Argue that the dichotomy doesn't make sense.

" One-sided attacks "

The comforting thing about one-sided attacks is that they come from both sides!

" Rationalist "   ←——— " ———→   " Empiricist "

Rationalists emphasise rational and hence necessary truths and may take the view that all truths are necessary. Leibniz, for example, does make a clear statement of the necessary/contingent distinction, but his *principle of sufficient reason* has been held to entail that all true propositions are analytic, and he also held that all analytic propositions are necessary, whence he or we might conclude that all true propositions are necessarily true.

Empiricists emphasise the importance of experience in the origins and justification of knowledge, and are therefore likely to regard all important truths as contingent. John Stuart Mill believed that all knowledge including logic and mathematics is *a posteriori*. He does seem to have admitted some purely verbal truths, but does not count logic and mathematics among these, so, if there are necessary truths they are not of much consequence.

Attacking the line

Quine takes front stage here.

" Holism "   ←——— " ———→   " Indeterminacy "

Quine's holistic position is an update on Mill's empiricist standpoint which argues that experimental confirmation or refutation applies only to complete theories, including the logical system in which they are embedded, rather than to specific propositions. When a system is refuted the repair job could result in a change to the logic, and so the logic is just as contingent as any other part of the theory.

Quine figures again by presenting arguments about the untenability of the analytic/synthetic distinction based on the "indeterminacy of translation" of natural languages. Indeterminacy undermines the synonymy relations on which analyticity is supposedly based. If analyticity makes no sense then our grounds for believing any proposition necessary are greatly weakened.

Wholeness and the implicate order

« HOLISMO. »

David Bohm

ROUTLEDGE

1980.

London and New York

Contents

« Wholeness and the implicated Order » (handwritten)

Acknowledgments

Introduction

This book is a collection of essays (see Acknowledgments) representing the development of my thinking over the past twenty years. A brief introduction will perhaps be useful in order to indicate what are the principal questions that are to be discussed, and how they are connected.

I would say that in my scientific and philosophical work, my main concern has been with understanding the nature of reality in general and of consciousness in particular as a coherent whole, which is never static or complete, but which is in an unending process of movement and unfoldment. Thus, when I look back, I see that even as a child I was fascinated by the puzzle, indeed the mystery, of what is the nature of movement. Whenever one *thinks* of anything, it seems to be apprehended either as static, or as a series of static images. Yet, in the actual experience of movement, one *senses* an unbroken, undivided process of flow, to which the series of static images in thought is related as a series of 'still' photographs might be related to the actuality of a speeding car. This question was, of course, already raised in essence philosophically more than 2,000 years ago in Zeno's paradoxes; but as yet, it cannot be said to have a satisfactory resolution.

Then there is the further question of what is the relationship of thinking to reality. As careful attention shows, thought itself is in an actual process of movement. That is to say, one can feel a sense of flow in the 'stream of consciousness' not dissimilar to the sense of flow in the movement of matter in general. May not thought itself thus be a part of reality as a whole? But then, what could it mean for one part of reality to 'know' another, and to what extent would this be possible? Does the content of thought

merely give us abstract and simplified 'snapshots' of reality, or can it go further, somehow to grasp the very essence of the living movement that we sense in actual experience?

It is clear that in reflecting on and pondering the nature of movement, both in thought and in the object of thought, one comes inevitably to the question of wholeness or totality. The notion that the one who thinks (the Ego) is at least in principle completely separate from and independent of the reality that he thinks about is of course firmly embedded in our entire tradition. (This notion is clearly almost universally accepted in the West, but in the East there is a general tendency to deny it verbally and philosophically while at the same time such an approach pervades most of life and daily practice as much as it does in the West.) General experience of the sort described above, along with a great deal of modern scientific knowledge concerning the nature and function of the brain as the seat of thought, suggest very strongly that such a division cannot be maintained consistently. But this confronts us with a very difficult challenge: How are we to think coherently of a single, unbroken, flowing actuality of existence as a whole, containing both thought (consciousness) and external reality as we experience it?

Clearly, this brings us to consider our overall *world view*, which includes our general notions concerning the nature of reality, along with those concerning the total order of the universe, i.e., *cosmology*. To meet the challenge before us our notions of cosmology and of the general nature of reality must have room in them to permit a consistent account of consciousness. Vice versa, our notions of consciousness must have room in them to understand what it means for its content to be 'reality as a whole'. The two sets of notions together should then be such as to allow for an understanding of how reality and consciousness are related.

These questions are, of course, enormous and could in any case probably never be resolved ultimately and completely. Nevertheless, it has always seemed important to me that there be a continuing investigation of proposals aimed at meeting the challenge that has been pointed out here. Of course, the prevailing tendency in modern science has been against such an enterprise, being directed instead mainly toward relatively detailed and concrete theoretical predictions, which show at least some promise of eventual pragmatic application. Some explanation of why I want to go so strongly against the prevailing general current seems therefore to be called for.

Aside from what I feel to be the intrinsic interest of questions
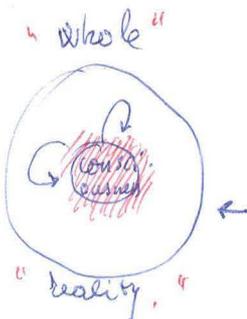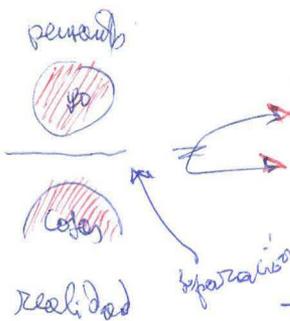
that are so fundamental and deep, I would, in this connection, call attention to the general problem of fragmentation of human consciousness, which is discussed in chapter 1. It is proposed there that the widespread and pervasive distinctions between people (race, nation, family, profession, etc., etc.), which are now preventing mankind from working together for the common good, and indeed, even for survival, have one of the key factors of their origin in a kind of thought that treats *things* as inherently divided, disconnected, and 'broken up' into yet smaller constituent parts. Each part is considered to be essentially independent and self-existent.

When man thinks of himself in this way, he will inevitably tend to defend the needs of his own 'Ego' against those of the others; or, if he identifies with a group of people of the same kind, he will defend this group in a similar way. He cannot seriously think of mankind as the basic reality, whose claims come first. Even if he does try to consider the needs of mankind he tends to regard humanity as separate from nature, and so on. What I am proposing here is that man's general way of thinking of the totality, i.e. his general world view, is crucial for overall order of the human mind itself. If he thinks of the totality as constituted of independent fragments, then that is how his mind will tend to operate, but if he can include everything coherently and harmoniously in an overall whole that is undivided, unbroken, and without a border (for every border is a division or break) then his mind will tend to move in a similar way, and from this will flow an orderly action within the whole.

Of course, as I have already indicated, our general world view is not the *only* factor that is important in this context. Attention must, indeed, be given to many other factors, such as emotions, physical activities, human relationships, social organizations, etc, but perhaps because we have at present no coherent world view, there is a widespread tendency to ignore the psychological and social importance of such questions almost altogether. My suggestion is that a proper world view, appropriate for its time, is generally one of the basic factors that is essential for harmony in the individual and in society as a whole.

In chapter 1 it is shown that science itself is demanding a new, non-fragmentary world view, in the sense that the present approach of analysis of the world into independently existent parts does not work very well in modern physics. It is shown that both in relativity theory and quantum theory, notions implying the undivided wholeness of the universe would provide a much more

La física moderna exige una consideración globalizadora de la materia.

orderly way of considering the general nature of reality.

In chapter 2 we go into the role of language in bringing about fragmentation of thought. It is pointed out that the subject-verb-object structure of modern languages implies that all action arises in a separate subject, and acts either on a separate object, or else reflexively on itself. This pervasive structure leads in the whole of life to a function that divides the totality of existence into separate entities, which are considered to be essentially fixed and static in their nature. We then inquire whether it is possible to experiment with new language forms in which the basic role will be given to the verb rather than to the noun. Such forms will have as their content a series of actions that flow and merge into each other, without sharp separations or breaks. Thus, both in form and in content, the language will be in harmony with the unbroken flowing movement of existence as a whole.

What is proposed here is not a new language as such but, rather, a new *mode* of using the existing language – the *rheomode* (flowing mode). We develop such a mode as a form of experimentation with language, which is intended mainly to give insight into the fragmentary function of the common language rather than to provide a new way of speaking that can be used for practical communications.

In chapter 3 the same questions are considered within a different context. It begins with a discussion of how reality can be considered as in essence a set of forms in an underlying universal movement or process, and then asks how our knowledge can be considered in the same manner. Thus, the way could be opened for a world view in which consciousness and reality would not be fragmented from each other. This question is discussed at length and we arrive at the notion that our general world view is itself an overall movement of thought, which has to be viable in the sense that the totality of activities that flow out of it are generally in harmony, both in themselves and with regard to the whole of existence. Such harmony is seen to be possible only if the world view itself takes part in an unending process of development, evolution, and unfoldment, which fits as part of the universal process that is the ground of all existence.

The next three chapters are rather more technical and mathematical. However, large parts of them should be comprehensible to the non-technical reader, as the technical parts are not entirely necessary for comprehension, although they add significant content for those who can follow them.

Chapter 4 deals with hidden variables in the quantum theory.

The quantum theory is, at present, the most basic way available in physics for understanding the fundamental and universal laws relating to matter and its movement. As such, it must clearly be given serious consideration in any attempt to develop an overall world viewing.

The quantum theory, as it is now constituted, presents us with a very great challenge, if we are at all interested in such a venture, for in this theory there is no consistent notion at all of what the reality may be that underlies the universal constitution and structure of matter. Thus, if we try to use the prevailing world view based on the notion of particles, we discover that the 'particles' (such as electrons) can also manifest as waves, that they can move discontinuously, that there are no laws at all that apply in detail to the actual movements of individual particles and that only statistical predictions can be made about large aggregates of such particles. If on the other hand we apply the world view in which the universe is regarded as a continuous field, we find that this field must also be discontinuous, as well as particle-like, and that it is as undermined in its actual behaviour as is required in the particle view of relation as a whole.

It seems clear, then, that we are faced with deep and radical fragmentation, as well as thoroughgoing confusion, if we try to think of what could be the reality that is treated by our physical laws. At present physicists tend to avoid this issue by adopting the attitude that our overall views concerning the nature of reality are of little or no importance. All that counts in physical theory is supposed to be the development of mathematical equations that permit us to predict and control the behaviour of large statistical aggregates of particles. Such a goal is not regarded as merely for its pragmatic and technical utility: rather, it has become a presupposition of most work in modern physics that prediction and control of this kind is all that human knowledge is about.

This sort of presupposition is indeed in accord with the general spirit of our age, but it is my main proposal in this book that we cannot thus simply dispense with an overall world view. If we try to do so, we will find that we are left with whatever (generally inadequate) world views may happen to be at hand. Indeed, one finds that physicists are not actually able just to engage in calculations aimed at prediction and control: they do find it necessary to use images based on *some* kind of general notions concerning the nature of reality, such as 'the particles that are the building blocks of the universe'; but these images are now highly confused (e.g. these particles move discontinuously and are also waves). In

short, we are here confronted with an example of how deep and strong is the need for *some* kind of notion of reality in our thinking, even if it be fragmentary and muddled.

My suggestion is that at each stage the proper order of operation of the mind requires an overall grasp of what is generally known, not only in formal, logical, mathematical terms, but also intuitively, in images, feelings, poetic usage of language, etc. (Perhaps we could say that this is what is involved in harmony between the 'left brain' and the 'right brain'.) This kind of overall way of thinking is not only a fertile source of new theoretical ideas: it is needed for the human mind to function in a generally harmonious way, which could in turn help to make possible an orderly and stable society. As indicated in the earlier chapters, however, this requires a continual flow and development of our general notions of reality.

Chapter 4 is then concerned with *making a beginning* in the process of developing a coherent view of what kind of reality might be the basis of the correct mathematical predictions achieved in the quantum theory. Such attempts have generally been received among the community of physicists in a somewhat confused way, for it is widely felt that if there is to be any general world view it should be taken as the 'received' and 'final' notion concerning the nature of reality. But my attitude has, from the beginning, been that our notions concerning cosmology and the general nature of reality are in a continuous process of development, and that one may have to start with ideas that are merely some sort of improvement over what has thus far been available, and to go on from there to ideas that are better. Chapter 4 presents the real and severe problems that confront any attempt to provide a consistent notion of 'quantum-mechanical reality', and indicates a certain preliminary approach to a solution of these problems in terms of hidden variables.

In chapter 5 a different approach to the same problems is explored. This is an inquiry into our basic notions of order. Order in its totality is evidently ultimately undefinable, in the sense that it pervades everything that we are and do (language, thought, feeling, sensation, physical action, the arts, practical activity, etc.). However, in physics the basic order has for centuries been that of the Cartesian rectilinear grid (extended slightly in the theory of relativity to the curvilinear grid). Physics has had an enormous development during this time, with the appearance of many radically new features, but the basic order has remained essentially unchanged.

The Cartesian order is suitable for analysis of the world into separately existent parts (e.g. particles or field elements). In this chapter, however, we look into the nature of order with greater generality and depth, and discover that both in relativity and in quantum theory the Cartesian order is leading to serious contradictions and confusion. This is because both theories imply that the actual state of affairs is unbroken wholeness of the universe, rather than analysis into independent parts. Nevertheless, the two theories differ radically in their detailed notions of order. Thus, in relativity, movement is continuous, causally determinate and well defined, while in quantum mechanics it is discontinuous, not causally determinate and not well defined. Each theory is committed to its own notions of essentially static and fragmentary modes of existence (relativity to that of separate events, connectable by signals, and quantum mechanics to a well-defined quantum state). One thus sees that a new kind of theory is needed which drops these basic commitments and at most recovers some essential features of the older theories as abstract forms derived from a deeper reality in which what prevails is unbroken wholeness.

In chapter 6 we go further to begin a more concrete development of a new notion of order, that may be appropriate to a universe of unbroken wholeness. This is the *implicate* or *enfolded* order. In the enfolded order, space and time are no longer the dominant factors determining the relationships of dependence or independence of different elements. Rather, an entirely different sort of basic connection of elements is possible, from which our ordinary notions of space and time, along with those of separately existent material particles, are abstracted as forms derived from the deeper order. These ordinary notions in fact appear in what is called the *explicate* or *unfolded* order, which is a special and distinguished form contained within the general totality of all the implicate orders.

In chapter 6 the implicate order is introduced in a general way, and discussed mathematically in an appendix. The seventh and last chapter, however, is a more developed (though non-technical) presentation of the implicate order, along with its relationship to consciousness. This leads to an indication of some lines along which it may be possible to meet the urgent challenge to develop a cosmology and set of general notions concerning the nature of reality that are proper to our time.

Finally, it is hoped that the presentation of the material in these essays may help to convey to the reader how the subject itself has actually unfolded, so that the form of the book is, as it were, an example of what may be meant by the content.

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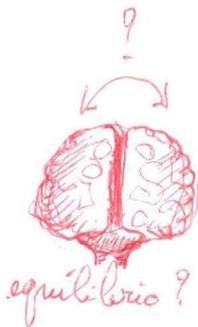
Fragmentation and wholeness

The title of this chapter is 'Fragmentation and wholeness'. It is especially important to consider this question today, for fragmentation is now very widespread, not only throughout society, but also in each individual; and this is leading to a kind of general confusion of the mind, which creates an endless series of problems and interferes with our clarity of perception so seriously as to prevent us from being able to solve most of them.

Thus art, science, technology, and human work in general, are divided up into specialities, each considered to be separate in essence from the others. Becoming dissatisfied with this state of affairs, men have set up further interdisciplinary subjects, which were intended to unite these specialities, but these new subjects have ultimately served mainly to add further separate fragments. Then, society as a whole has developed in such a way that it is broken up into separate nations and different religious, political, economic, racial groups, etc. Man's natural environment has correspondingly been seen as an aggregate of separately existent parts, to be exploited by different groups of people. Similarly, each individual human being has been fragmented into a large number of separate and conflicting compartments, according to his different desires, aims, ambitions, loyalties, psychological characteristics, etc., to such an extent that it is generally accepted that some degree of neurosis is inevitable, while many individuals going beyond the 'normal' limits of fragmentation are classified as paranoid, schizoid, psychotic, etc.

The notion that all these fragments are separately existent is evidently an illusion, and this illusion cannot do other than lead

to endless conflict and confusion. Indeed, the attempt to live according to the notion that the fragments are really separate is, in essence, what has led to the growing series of extremely urgent crises that is confronting us today. Thus, as is now well known, this way of life has brought about pollution, destruction of the balance of nature, over-population, world-wide economic and political disorder, and the creation of an overall environment that is neither physically nor mentally healthy for most of the people who have to live in it. Individually there has developed a wide-spread feeling of helplessness and despair, in the face of what seems to be an overwhelming mass of disparate social forces, going beyond the control and even the comprehension of the human beings who are caught up in it.

Indeed, to some extent, it has always been both necessary and proper for man, in his thinking, to divide things up, and to separate them, so as to reduce his problems to manageable proportions; for evidently, if in our practical technical work we tried to deal with the whole of reality all at once, we would be swamped. So, in certain ways, the creation of special subjects of study and the division of labour was an important step forward. Even earlier, man's first realization that he was not identical with nature was also a crucial step, because it made possible a kind of autonomy in his thinking, which allowed him to go beyond the immediately given limits of nature, first in his imagination and ultimately in his practical work.

Nevertheless, this sort of ability of man to separate himself from his environment and to divide and apportion things ultimately led to a wide range of negative and destructive results, because man lost awareness of what he was doing and thus extended the process of division beyond the limits within which it works properly. In essence, the process of division is a way of *thinking about things* that is convenient and useful mainly in the domain of practical, technical and functional activities (e.g., to divide up an area of land into different fields where various crops are to be grown). However, when this mode of thought is applied more broadly to man's notion of himself and the whole world in which he lives (i.e. to his self-world view), then man ceases to regard the resulting divisions as merely useful or convenient and begins to see and experience himself and his world as actually constituted of separately existent fragments. Being guided by a fragmentary self-world view, man then acts in such a way as to try to break himself and the world up, so that all seems to correspond to his way of thinking. Man thus obtains an apparent

proof of the correctness of his fragmentary self-world view though, of course, he overlooks the fact that it is he himself, acting according to his mode of thought, who has brought about the fragmentation that now seems to have an autonomous existence, independent of his will and of his desire.

Men have been aware from time immemorial of this state of apparently autonomously existent fragmentation and have often projected myths of a yet earlier 'golden age', before the split between man and nature and between man and man had yet taken place. Indeed, man has always been seeking wholeness – mental, physical, social, individual.

It is instructive to consider that the word 'health' in English is based on an Anglo-Saxon word 'hale' meaning 'whole': that is, to be healthy is to be whole, which is, I think, roughly the equivalent of the Hebrew 'shalem'. Likewise, the English 'holy' is based on the same root as 'whole'. All of this indicates that man has sensed always that wholeness or integrity is an absolute necessity to make life worth living. Yet, over the ages, he has generally lived in fragmentation.

Surely, the question of why all this has come about requires careful attention and serious consideration.

In this chapter, attention will be focused on the subtle but crucial role of our general forms of thinking in sustaining fragmentation and in defeating our deepest urges toward wholeness or integrity. In order to give the discussion a concrete content we shall to some extent talk in terms of current scientific research, which is a field that is relatively familiar to me (though, of course, the overall significance of the questions under discussion will also be kept in mind).

What will be emphasized, first of all in scientific research and later in a more general context, is that fragmentation is continually being brought about by the almost universal habit of taking the content of our thought for 'a description of the world as it is'. Or we could say that, in this habit, our thought is regarded as in direct correspondence with objective reality. Since our thought is pervaded with differences and distinctions, it follows that such a habit leads us to look on these as real divisions, so that the world is then seen and experienced as actually broken up into fragments.

The relationship between thought and reality that this thought is about is in fact far more complex than that of a mere correspondence. Thus, in scientific research, a great deal of our thinking is in terms of *theories*. The word 'theory' derives from the Greek 'theoria', which has the same root as 'theatre', in a word meaning

'to view' or 'to make a spectacle'. Thus, it might be said that a theory is primarily a form of *insight*, i.e. a way of looking at the world, and not a form of *knowledge* of how the world is.

In ancient times, for example, men had the theory that celestial matter was fundamentally different from earthly matter and that it was natural for earthly objects to fall while it was natural for celestial objects, such as the moon, to remain up in the sky. With the coming of the modern era, however, scientists began to develop the viewpoint that there was no essential difference between earthly matter and celestial matter. This implied, of course, that heavenly objects, such as the moon, ought to fall, but for a long time men did not notice this implication. In a sudden flash of insight Newton then *saw* that as the apple falls so does the moon, and so indeed do all objects. Thus, he was led to the theory of universal gravitation, in which all objects were seen as falling toward various centres (e.g. the earth, the sun, the planets, etc.). This constituted a new way of *looking* at the heavens, in which the movements of the planets were no longer seen through the ancient notion of an essential difference between heavenly and earthly matter. Rather, one considered these movements in terms of rates of fall of all matter, heavenly and earthly, toward various centres, and when something was seen not to be accounted for in this way, one looked for and often discovered new and as yet unseen planets toward which celestial objects were falling (thus demonstrating the relevance of this way of looking).

The Newtonian form of insight worked very well for several centuries but ultimately (like the ancient Greek insights that came before) it led to unclear results when extended into new domains. In these new domains, new forms of insight were developed (the theory of relativity and the quantum theory). These gave a radically different picture of the world from that of Newton (though the latter was, of course, found to be still valid in a limited domain). If we supposed that theories gave true knowledge, corresponding to 'reality as it is', then we would have to conclude that Newtonian theory was true until around 1900, after which it suddenly became false, while relativity and quantum theory suddenly became the truth. Such an absurd conclusion does not arise, however, if we say that all theories are insights, which are neither true nor false but, rather, clear in certain domains, and unclear when extended beyond these domains. This means, however, that we do not equate theories with hypotheses. As the Greek root of the word indicates, a hypothesis is a supposition, that is, an idea that is 'put under' our reasoning, as a

provisional base, which is to be tested experimentally for its truth or falsity. As is now well known, however, there can be no *conclusive* experimental proof of the truth or falsity of a *general* hypothesis which aims to cover the whole of reality. Rather, one finds (e.g., as in the case of the Ptolemaic epicycles or of the failure of Newtonian concepts just before the advent of relativity and quantum theory) that older theories become more and more unclear when one tries to use them to obtain insight into new domains. Careful attention to how this happens is then generally the main clue toward new theories that constitute further new forms of insight.

So, instead of supposing that older theories are falsified at a certain point in time, we merely say that man is continually developing new forms of insight, which are clear up to a point and then tend to become unclear. In this activity, there is evidently no reason to suppose that there is or will be a final form of insight (corresponding to absolute truth) or even a steady series of approximations to this. Rather, in the nature of the case, one may expect the unending development of new forms of insight (which will, however, assimilate certain key features of the older forms as simplifications, in the way that relativity theory does with Newtonian theory). As pointed out earlier, however, this means that our theories are to be regarded primarily as ways of looking at the world as a whole (i.e. world views) rather than as 'absolutely true knowledge of how things are' (or as a steady approach toward the latter).

When we look at the world through our theoretical insights, the factual knowledge that we obtain will evidently be shaped and formed by our theories. For example, in ancient times the fact about the motions of the planets was described in terms of the Ptolemaic idea of epicycles (circles superimposed on circles). In Newton's time, this fact was described in terms of precisely determined planetary orbits, analysed through rates of fall toward various centres. Later came the fact as seen relativistically according to Einstein's concepts of space and time. Still later, a very different sort of fact was specified in terms of the quantum theory (which gives in general only a statistical fact). In biology, the fact is now described in terms of the theory of evolution, but in earlier times it was expressed in terms of fixed species of living beings.

More generally, then, given perception and action, our theoretical insights provide the main source of organization of our factual knowledge. Indeed, our overall experience is shaped in this way. As seems to have been first pointed out by Kant, all

experience is organized according to the categories of our thought, i.e., on our ways of thinking about space, time, matter, substance, causality, contingency, necessity, universality, particularity, etc. It can be said that these categories are general forms of insight or ways of looking at everything, so that in a certain sense, they are a kind of theory (but, of course, this level of theory must have developed very early in man's evolution).

Clarity of perception and thought evidently requires that we be generally aware of how our experience is shaped by the insight (clear or confused) provided by the theories that are implicit or explicit in our general ways of thinking. To this end, it is useful to emphasize that experience and knowledge are one process, rather than to think that our knowledge is *about* some sort of separate experience. We can refer to this one process as experience-knowledge (the hyphen indicating that these are two inseparable aspects of one whole movement.)

Now, if we are not aware that our theories are ever-changing forms of insight, giving shape and form to experience in general, our vision will be limited. One could put it like this: experience with nature is very much like experience with human beings. If one approaches another man with a fixed 'theory' about him as an 'enemy' against whom one must defend oneself, he will respond similarly, and thus one's 'theory' will apparently be confirmed by experience. Similarly, nature will respond in accordance with the theory with which it is approached. Thus, in ancient times, men thought plagues were inevitable, and this thought helped make them behave in such a way as to propagate the conditions responsible for their spread. With modern scientific forms of insights man's behaviour is such that he ceases the insanitary modes of life responsible for spreading plagues and thus they are no longer inevitable.

What prevents theoretical insights from going beyond existing limitations and changing to meet new facts is just the belief that theories give true knowledge of reality (which implies, of course, that they need never change). Although our modern way of thinking has, of course, changed a great deal relative to the ancient one, the two have had one key feature in common: i.e. they are both generally 'blinkered' by the notion that theories give true knowledge about 'reality as it is'. Thus, both are led to confuse the forms and shapes induced in our perceptions by theoretical insight with a reality independent of our thought and our way of looking. This confusion is of crucial significance, since it leads us to approach nature, society, and the individual in terms of more

or less fixed and limited forms of thought, and thus, apparently, to keep on confirming the limitations of these forms of thought in experience.

This sort of unending confirmation of limitations in our modes of thinking is particularly significant with regard to fragmentation, for as pointed out earlier, every form of theoretical insight introduces its own essential differences and distinctions (e.g., in ancient times an essential distinction was between heavenly and earthly matter, while in Newtonian theory it was essential to distinguish the centres toward which all matter was falling). If we regard these differences and distinctions as ways of looking, as guides to perception, this does not imply that they denote separately existent substances or entities.

On the other hand, if we regard our theories as 'direct descriptions of reality as it is', then we will inevitably treat these differences and distinction as divisions, implying separate existence of the various elementary terms appearing in the theory. We will thus be led to the illusion that the world is actually constituted of separate fragments and, as has already been indicated, this will cause us to act in such a way that we do in fact produce the very fragmentation implied in our attitude to the theory.

It is important to give some emphasis to this point. For example, some might say: 'Fragmentation of cities, religions, political systems, conflict in the form of wars, general violence, fratricide, etc., are the reality. Wholeness is only an ideal, toward which we should perhaps strive.' But this is not what is being said here. Rather, what should be said is that wholeness is what is real, and that fragmentation is the response of this whole to man's action, guided by illusory perception, which is shaped by fragmentary thought. In other words, it is just because reality is whole that man, with his fragmentary approach, will inevitably be answered with a correspondingly fragmentary response. So what is needed is for man to give attention to his habit of fragmentary thought, to be aware of it, and thus bring it to an end. Man's approach to reality may then be whole, and so the response will be whole.

For this to happen, however, it is crucial that man be aware of the activity of his thought *as such*; i.e. as a form of insight, a way of looking, rather than as a 'true copy of reality as it is'.

It is clear that we may have any number of different kinds of insights. What is called for is not an *integration* of thought, or a kind of imposed unity, for any such imposed point of view would itself be merely another fragment. Rather, all our different ways of thinking are to be considered as different ways of looking at

the one reality, each with some domain in which it is clear and adequate. One may indeed compare a theory to a particular view of some object. Each view gives only an appearance of the object in some aspect. The whole object is not perceived in any one view but, rather, it is grasped only *implicitly* as that single reality which is shown in all these views. When we deeply understand that our theories also work in this way, then we will not fall into the habit of seeing reality and acting toward it as if it were constituted of separately existent fragments corresponding to how it appears in our thought and in our imagination when we take our theories to be 'direct descriptions of reality as it is'.

Beyond a general awareness of the role of theories as indicated above, what is needed is to give special attention to those theories that contribute to the expression of our overall self-world views. For, to a considerable extent, it is in these world views that our general notions of the nature of reality and of the relationship between our thought and reality are implicity or explicitly formed. In this respect, the general theories of physics play an important part, because they are regarded as dealing with the universal nature of the matter out of which all is constituted, and the space and time in terms of which all material movement is described.

Consider, for example, the atomic theory, which was first proposed by Democritus more than 2,000 years ago. In essence, this theory leads us to look at the world as constituted of atoms, moving in the void. The ever-changing forms and characteristics of large-scale objects are now seen as the results of changing arrangements of the moving atoms. Evidently, this view was, in certain ways, an important mode of realization of wholeness, for it enabled men to understand the enormous variety of the whole world in terms of the movements of one single set of basic constituents, through a single void that permeates the whole of existence. Nevertheless, as the atomic theory developed, it ultimately became a major support for a fragmentary approach to reality. For it ceased to be regarded as an insight, a way of looking, and men regarded instead as an absolute truth the notion that the whole of reality is actually constituted of nothing but 'atomic building blocks', all working together more or less mechanically.

Of course, to take any physical theory as an absolute truth must tend to fix the general forms of thought in physics and thus to contribute to fragmentation. Beyond this, however, the particular content of the atomic theory was such as to be especially conducive to fragmentation, for it was implicit in this content that the entire world of nature, along with the human being, including his brain, his nervous system, his mind, etc., could in principle be understood completely in terms of structures and functions of aggregates of separately existent atoms. The fact that in man's experiments and general experience this atomic view was confirmed was, of course, then taken as proof of the correctness and indeed the universal truth of this notion. Thus almost the whole weight of science was put behind the fragmentary approach to reality.

It is important to point out, however, that (as usually happens in such cases) the experimental confirmation of the atomic point of view is limited. Indeed, in the domains covered by quantum theory and relativity, the notion of atomism leads to confused questions, which indicate the need for new forms of insight, as different from atomism as the latter is from theories that came before it.

Thus, the quantum theory shows that the attempt to describe and follow an atomic particle in precise detail has little meaning. (Further detail on this point is given in chapter 5). The notion of an atomic path has only a limited domain of applicability. In a more detailed description the atom is, in many ways, seen to behave as much like a wave as a particle. It can perhaps best be regarded as a poorly defined cloud, dependent for its particular form on the whole environment, including the observing instrument. Thus, one can no longer maintain the division between the observer and observed (which is implicit in the atomistic view that regards each of these as separate aggregates of atoms). Rather, both observer and observed are merging and interpenetrating aspects of one whole reality, which is indivisible and unanalysable.

Relativity leads us to a way of looking at the world that is similar to the above in certain key respects (See chapter 5 for more detail on this point). From the fact that in Einstein's point of view no signal faster than light is possible, it follows that the concept of a rigid body breaks down. But this concept is crucial in the classical atomic theory, for in this theory the ultimate constituents of the universe have to be small indivisible objects, and this is possible only if each part of such an object is bound rigidly to all other parts. What is needed in a relativistic theory is to give up altogether the notion that the world is constituted of basic objects or 'building blocks'. Rather, one has to view the world in terms of universal flux of events and processes. Thus, as indicated by A and B in figure 1.1, instead of thinking of a particle, one is to think of a 'world-tube'.
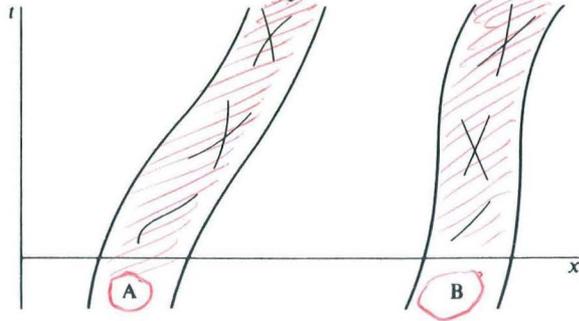
Figure 1.1

This world tube represents an infinitely complex process of a structure in movement and development which is centred in a region indicated by the boundaries of the tube. However, even outside the tube, each 'particle' has a field that extends through space and merges with the fields of other particles.

A more vivid image of the sort of thing that is meant is afforded by considering wave forms as vortex structures in a flowing stream. As shown in figure 1.2, two vortices correspond to stable patterns of flow of the fluid, centred more or less at A and B. Evidently, the two vortices are to be considered as abstractions, made to stand out in our perception by our way of thinking. Actually, of course, the two abstracted flow patterns merge and unite, in one whole movement of the flowing stream. There is no sharp division between them, nor are they to be regarded as separately or independently existent entities.
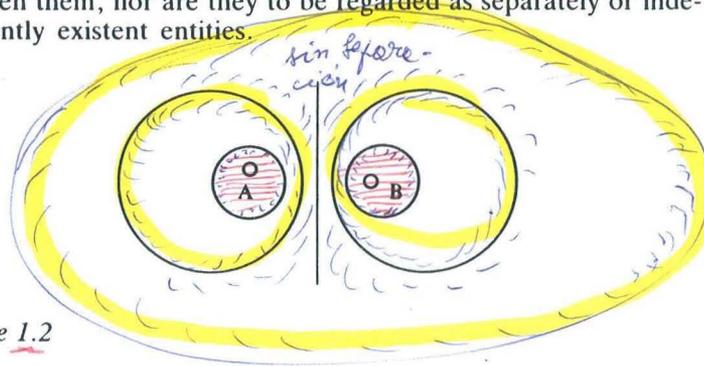
Figure 1.2

Relativity theory calls for this sort of way of looking at the atomic particles, which constitute all matter, including of course

human beings, with their brains, nervous systems, and the observing instruments that they have built and that they use in their laboratories. So, approaching the question in different ways, relativity and quantum theory agree, in that they both imply the need to look on the world as an *undivided whole*, in which all parts of the universe, including the observer and his instruments, merge and unite in one totality. In this totality, the atomistic form of insight is a simplification and an abstraction, valid only in some limited context.

The new form of insight can perhaps best be called *Undivided Wholeness in Flowing Movement*. This view implies that flow is, in some sense, prior to that of the 'things' that can be seen to form and dissolve in this flow. One can perhaps illustrate what is meant here by considering the 'stream of consciousness'. This flux of awareness is not precisely definable, and yet it is evidently prior to the definable forms of thoughts and ideas which can be seen to form and dissolve in the flux, like ripples, waves and vortices in a flowing stream. As happens with such patterns of movement in a stream some thoughts recur and persist in a more or less stable way, while others are evanescent.

The proposal for a new general form of insight is that all matter is of this nature: That is, there is a universal flux that cannot be defined explicitly but which can be known only implicitly, as indicated by the explicitly definable forms and shapes, some stable and some unstable, that can be abstracted from the universal flux. In this flow, mind and matter are not separate substances. Rather, they are different aspects of one whole and unbroken movement. In this way, we are able to look on all aspects of existence as not divided from each other, and thus we can bring to an end the fragmentation implicit in the current attitude toward the atomic point of view, which leads us to divide everything from everything in a thoroughgoing way. Nevertheless, we can comprehend that aspect of atomism which still provides a correct and valid form of insight; i.e. that in spite of the undivided wholeness in flowing movement, the various patterns that can be abstracted from it have a certain relative autonomy and stability, which is indeed provided for by the universal law of the flowing movement. Now, however, we have the limits of this autonomy and stability sharply in mind.

Thus we can, in specified contexts, adopt other various forms of insight that enable us to simplify certain things and to treat them momentarily and for certain limited purposes as if they were autonomous and stable, as well as perhaps separately existent.

Yet we do not have to fall into the trap of looking at ourselves and at the whole world in this way. Thus our thought need no longer lead to the illusion that reality actually is of fragmentary nature, and to the corresponding fragmentary actions that arise out of perception clouded by such illusion.

The point of view discussed above is similar, in certain key ways, to that held by some of the Ancient Greeks. This similarity can be brought out by considering Aristotle's notion of causality. Aristotle distinguished four kinds of causes:

Material
Efficient
Formal
Final

A good example in terms of which this distinction can be understood is obtained by considering something living, such as a tree or an animal. The material cause is then just the matter in which all the other causes operate and out of which the thing is constituted. Thus, in the case of a plant, the material cause is the soil, air, water and sunlight, constituting the substance of the plant. The efficient cause is some action, external to the thing under discussion, which allows the whole process to get under way. In the case of a tree, for example, the planting of the seed could be taken as the efficient cause.

It is of crucial significance in this context to understand what was meant by formal cause. Unfortunately, in its modern connotation, the word 'formal' tends to refer to an outward form that is not very significant (e.g. as in 'formal dress' or 'a mere formality'). However, in the Ancient Greek philosophy, the word *form* meant, in the first instance, an inner *forming activity* which is the cause of the growth of things, and of the development and differentiation of their various essential forms. For example, in the case of an oak tree, what is indicated by the term 'formal cause' is the whole inner movement of sap, cell growth, articulation of branches, leaves, etc., which is characteristic of that kind of tree and different from that taking place in other kinds of trees. In more modern language, it would be better to describe this as *formative cause*, to emphasize that what is involved is not a mere form imposed from without, but rather *an ordered and structured inner movement that is essential to what things are.*

Any such formative cause must evidently have an end or product which is at least implicit. Thus, it is not possible to refer to

the inner movement from the acorn giving rise to an oak tree, without simultaneously referring to the oak tree that is going to result from this movement. So formative cause always implies final cause.

Of course, we also know final cause as *design*, consciously held in mind through thought (this notion being extended to God, who was regarded as having created the universe according to some grand design). Design is, however, only a special case of final cause. For example, men often aim toward certain ends in their thoughts but what actually emerges from their actions is generally something different from what was in their design, something that was, however, *implicit* in what they were doing, though not consciously perceived by those who took part.

In the ancient view, the notion of formative cause was considered to be of essentially the same nature for the mind as it was for life and for the cosmos as a whole. Indeed, Aristotle considered the universe as a single organism in which each part grows and develops in its relationship to the whole and in which it has its proper place and function. With regard to the mind, we can understand this sort of notion in more modern terms by turning our attention to the flowing movement of awareness. As indicated earlier, one can, in the first instance, discern various thought patterns in this flow. These follow on each other relatively mechanically, through association determined by habit and conditioning. Evidently, such associative changes are external to the inner structure of the thoughts in question, so that these changes act like a series of efficient causes. However, to see the *reason* for something is not a mechanical activity of this nature: Rather, one is aware of each aspect as assimilated within a single whole, all of whose parts are inwardly related (as are, for example, the organs of the body). Here, one has to emphasize that the act of reason is essentially a kind of perception through the mind, similar in certain ways to artistic perception, and not merely the associative repetition of reasons that are already known. Thus, one may be puzzled by a wide range of factors, things that do not fit together, until suddenly there is a flash of understanding, and therefore one sees how all these factors are related as aspects of one totality (e.g. consider Newton's insight into universal gravitation). Such acts of perception cannot properly be given a detailed analysis or description. Rather, they are to be considered as aspects of the *forming* activity of the mind. A particular structure of concepts is then the *product* of this activity, and these products are what are linked by the series of efficient causes that

operate in ordinary associative thinking – and as pointed out earlier, in this view, one regards the forming activity as primary in nature as it is in the mind, so that the product forms in nature are also what are linked by efficient causes.

Evidently, the notion of formative cause is relevant to the view of undivided wholeness in flowing movement, which has been seen to be implied in modern developments in physics, notably relativity theory and quantum theory. Thus, as has been pointed out, each relatively autonomous and stable structure (e.g., an atomic particle) is to be understood not as something independently and permanently existent but rather as a product that has been formed in the whole flowing movement and that will ultimately dissolve back into this movement. How it forms and maintains itself, then, depends on its place and function in the whole. So, we see that certain developments in modern physics imply a sort of insight into nature that is in respect to the notions of formative and final cause, essentially similar to ways of looking that were common in earlier times.

Nevertheless, in most of the work that is being done in physics today the notions of formative and final cause are not regarded as having primary significance. Rather, law is still generally conceived as a self-determined system of efficient causes, operating in an ultimate set of material constituents of the universe (e.g. elementary particles subject to forces of interaction between them). These constituents are not regarded as formed in an overall process, and thus they are not considered to be anything like organs adapted to their place and function in the whole (i.e. to the ends which they would serve in this whole). Rather, they tend to be conceived as separately existent mechanical elements of a fixed nature.

The prevailing trend in modern physics is thus much against any sort of view giving primacy to formative activity in undivided wholeness of flowing movement. Indeed, those aspects of relativity theory and quantum theory which do suggest the need for such a view tend to be de-emphasized and in fact hardly noticed by most physicists, because they are regarded largely as features of the mathematical calculus and not as indications of the real nature of things. When it comes to the informal language and mode of thought in physics, which infuses the imagination and provokes the sense of what is real and substantial, most physicists still speak and think, with an utter conviction of truth, in terms of the traditional atomistic notion that the universe is constituted of elementary particles which are 'basic building blocks' out of which

everything is made. In other sciences, such as biology, the strength of this conviction is even greater, because among workers in these fields there is little awareness of the revolutionary character of development in modern physics. For example, modern molecular biologists generally believe that the whole of life and mind can ultimately be understood in more or less mechanical terms, through some kind of extension of the work that has been done on the structure and function of DNA molecules. A similar trend has already begun to dominate in psychology. Thus we arrive at the very odd result that in the study of life and mind, which are just the fields in which formative cause acting in undivided and unbroken flowing movement is most evident to experience and observation, there is now the strongest belief in the fragmentary atomistic approach to reality.

Of course, the prevailing tendency in science to think and perceive in terms of a fragmentary self-world view is part of a larger movement that has been developing over the ages and that pervades almost the whole of our society today: but, in turn, such a way of thinking and looking in scientific research tends very strongly to re-enforce the general fragmentary approach because it gives men a picture of the whole world as constituted of nothing but an aggregate of separately existent 'atomic building blocks', and provides experimental evidence from which is drawn the conclusion that this view is necessary and inevitable. In this way, people are led to feel that fragmentation is nothing but an expression of 'the way everything really is' and that anything else is impossible. So there is very little disposition to look for evidence to the contrary. Indeed, as has already been pointed out, even when such evidence does arise, as in modern physics, the general tendency is to minimize its significance or even to ignore it altogether. One might in fact go so far as to say that in the present state of society, and in the present general mode of teaching science, which is a manifestation of this state of society, a kind of prejudice in favour of a fragmentary self-world view is fostered and transmitted (to some extent explicitly and consciously but mainly in an implicit and unconscious manner).

As has been indicated, however, men who are guided by such a fragmentary self-world view cannot, in the long run, do other than to try in their actions to break themselves and the world into pieces, corresponding to their general mode of thinking. Since, in the first instance, fragmentation is an attempt to extend the analysis of the world into separate parts beyond the domain in which to do this is appropriate, it is in effect an attempt to divide what

is really indivisible. In the next step such an attempt will lead us also to try to unite what is not really unitable. This can be seen especially clearly in terms of groupings of people in society (political, economic, religious, etc.). The very act of forming such a group tends to create a sense of division and separation of the members from the rest of the world but, because the members are really connected with the whole, this cannot work. Each member has in fact a somewhat different connection, and sooner or later this shows itself as a difference between him and other members of the group. Whenever men divide themselves from the whole of society and attempt to unite by identification within a group, it is clear that the group must eventually develop internal strife, which leads to a breakdown of its unity. Likewise when men try to separate some aspect of nature in their practical, technical work, a similar state of contradiction and disunity will develop. The same sort of thing will happen to the individual when he tries to separate himself from society. True unity in the individual and between man and nature, as well as between man and man, can arise only in a form of action that does not attempt to fragment the whole of reality.

Our fragmentary way of thinking, looking, and acting, evidently has implications in every aspect of human life. That is to say, by a rather interesting sort of irony, fragmentation seems to be the one thing in our way of life which is universal, which works through the whole without boundary or limit. This comes about because the roots of fragmentation are very deep and pervasive. As pointed out, we try to divide what is one and indivisible, and this implies that in the next step we will try to identify what is different.

So fragmentation is in essence a confusion around the question of difference and sameness (or one-ness), but the clear perception of these categories is necessary in every phase of life. *To be confused about what is different and what is not, is to be confused about everything*. Thus, it is not an accident that our fragmentary form of thought is leading to such a widespread range of crises, social, political, economic, ecological, psychological, etc., in the individual and in society as a whole. Such a mode of thought implies unending development of chaotic and meaningless conflict, in which the energies of all tend to be lost by movements that are antagonistic or else at cross-purposes.

Evidently, it is important and indeed extremely urgent to clear up this deep and pervasive kind of confusion that penetrates the whole of our lives. What is the use of attempts at social, political,

economic or other action if the mind is caught up in a confused movement in which it is generally differentiating what is not different and identifying what is not identical? Such action will be at best ineffective and at worst really destructive.

Nor will it be useful to try to impose some fixed kind of integrating or unifying 'holistic' principle on our self-world view, for, as indicated earlier, any form of fixed self-world view implies that we are no longer treating our theories as insights or ways of looking but, rather, as 'absolutely true knowledge of things as they really are'. So, whether we like it or not, the distinctions that are inevitably present in every theory, even an 'holistic' one, will be falsely treated as divisions, implying separate existence of the terms that are distinguished (so that, correspondingly, what is not distinguished in this way will be falsely treated as absolutely identical).

We have thus to be alert to give careful attention and serious consideration to the fact that our theories are not 'descriptions of reality as it is' but, rather, ever-changing forms of insight, which can point to or indicate a reality that is implicit and not describable or specifiable in its totality. This need for being thus watchful holds even for what is being said here in this chapter, in the sense that this is not to be regarded as 'absolutely true knowledge of the nature of fragmentations and wholeness'. Rather, it too is *a theory* that gives insight into this question. It is up to the reader to see for himself whether the insight is clear or unclear and what are the limits of its validity.

What, then, can be done to end the prevailing state of fragmentation? At first sight this may seem to be a reasonable question but a closer examination leads one to ask whether it is in fact a reasonable question, for one can see that this question has presuppositions that are not clear.

Generally speaking, if one asks how one can solve some technical problem, for example, it is presupposed that while we begin not knowing the answer, our minds are nevertheless clear enough to discover an answer, or at least to recognize someone else's discovery of an answer. But if our whole way of thinking is penetrated by fragmentation, this implies that we are not capable of this, for fragmentary perception is in essence a largely unconscious habit of confusion around the question of what is different and what is not. So, in the very act in which we try to discover what to do about fragmentation, we will go on with this habit and thus we will tend to introduce yet further forms of fragmentation.

This does not necessarily mean, of course, that there is no way

out at all, but it does mean that we have to give pause so that we do not go with our habitual fragmentary ways of thinking as we seek solutions that are ready to hand. The question of fragmentation and wholeness is a subtle and difficult one, more subtle and difficult than those which lead to fundamentally new discoveries in science. To ask how to end fragmentation and to expect an answer in a few minutes makes even less sense than to ask how to develop a theory as new as Einstein's was when he was working on it, and to expect to be told what to do in terms of some programme, expressed in terms of formulae or recipes.

One of the most difficult and subtle points about this question is just to clarify what is to be meant by the relationship between the content of thought and the process of thinking which produces this content. A major source of fragmentation is indeed the generally accepted presupposition that the process of thought is sufficiently separate from and independent of its content, to allow us generally to carry out clear, orderly, rational thinking, which can properly judge this content as correct or incorrect, rational or irrational, fragmentary or whole, etc. Actually, as has been seen, the fragmentation involved in a self-world view is not only in the content of thought, but in the general activity of the person who is 'doing the thinking', and thus, it is as much in the process of thinking as it is in the content. Indeed, content and process are not two separately existent things, but, rather, they are two aspects of views of one whole movement. Thus fragmentary content and fragmentary process have to come to an end *together*.

What we have to deal with here is a one-ness of the thinking process and its content, similar in key ways to the one-ness of observer and observed; that has been discussed in connection with relativity theory and quantum theory. Questions of this nature cannot be met properly while we are caught up, consciously or unconsciously, in a mode of thought which attempts to analyse itself in terms of a presumed separation between the process of thinking and the content of thought that is its product. By accepting such a presumption we are led, in the next step, to seek some fantasy of action through efficient causes that would end the fragmentation in the content while leaving the fragmentation in the actual process of thinking untouched. What is needed, however, is somehow to grasp the overall *formative cause* of fragmentation, in which content and actual process are seen together, in their wholeness.

One might here consider the image of a turbulent mass of vortices in a stream. The structure and distribution of vortices,

which constitute a sort of content of the description of the movement, are not separate from the formative activity of the flowing stream, which creates, maintains, and ultimately dissolves the totality of vortex structures. So to try to eliminate the vortices without changing the formative activity of the stream would evidently be absurd. Once our perception is guided by the proper insight into the significance of the whole movement, we will evidently not be disposed to try such a futile approach. Rather, we will look at the whole situation, and be attentive and alert to learn about it, and thus to discover what is really an appropriate sort of action, relevant to this whole, for bringing the turbulent structure of vortices to an end. Similarly, when we really grasp the truth of the one-ness of the thinking process that we are actually carrying out, and the content of thought that is the product of this process, then such insight will enable us to observe, to look, to learn about the whole movement of thought and thus to discover an action relevant to this whole, that will end the 'turbulence' of movement which is the essence of fragmentation in every phase of life.

Of course, such learning and discovery will require a great deal of careful attention and hard work. We are ready to give such attention and work in a wide range of fields, scientific, economic, social, political, etc. As yet, however, little or none of this has gone into the creation of insight into the process of thought, on the clarity of which the value of all else depends. What is primarily needed is a growing realization of the extremely great danger of going on with a fragmentary process of thought. Such a realization would give the inquiry into how thought actually operates that sense of urgency and energy required to meet the true magnitude of the difficulties with which fragmentation is now confronting us.

APPENDIX: RÉSUMÉ OF DISCUSSION ON WESTERN AND EASTERN FORMS OF INSIGHT INTO WHOLENESS

In the very early phases of the development of civilization, man's views were essentially of wholeness rather than of fragmentation. In the East (especially in India) such views still survive, in the sense that philosophy and religion emphasize wholeness and imply the futility of analysis of the world into parts. Why, then, do we not drop our fragmentary Western approach and adopt these Eastern notions which include not only a self-world view that denies division and fragmentation but also techniques of medita-

proporciones: { homología - { alegoría - { analogía
{ de cosas   de discurso   de ideas y sentido
o conceptos

tion that lead the whole process of mental operation non-verbally to the sort of quiet state of orderly and smooth flow needed to end fragmentation both in the actual process of thought and in its content?

To answer such a question, it is useful to begin by going into the difference between Western and Eastern notions of measure. Now, in the West the notion of measure has, from very early times, played a key role in determining the general self-world view and the way of life implicit in such a view. Thus among the Ancient Greeks, from whom we derive a large part of our fundamental notions (by way of the Romans), to keep everything in its right measure was regarded as one of the essentials of a good life (e.g. Greek tragedies generally portrayed man's suffering as a consequence of his going beyond the proper measure of things). In this regard, measure was not looked on in its modern sense as being primarily some sort of comparison of an object with an external standard or unit. Rather, this latter procedure was regarded as a kind of outward display or appearance of a deeper 'inner measure', which played an essential role in everything. When something went beyond its proper measure, this meant not merely that it was not conforming to some external standard of what was right but, much more, that it was inwardly out of harmony, so that it was bound to lose its integrity and break up into fragments. One can obtain some insight into this way of thinking by considering the earlier meanings of certain words. Thus, the Latin 'mederi' meaning 'to cure' (the root of the modern 'medicine') is based on a root meaning 'to measure'. This reflects the view that physical health is to be regarded as the outcome of a state of right inward measure in all parts and processes of the body. Similarly, the word 'moderation', which describes one of the prime ancient notions of virtue, is based on the same root, and this shows that such virtue was regarded as the outcome of a right inner measure underlying man's social actions and behaviour. Again, the word 'meditation', which is based on the same root, implies a kind of weighing, pondering, or measuring of the whole process of thought, which could bring the inner activities of the mind to a state of harmonious measure. So, physically, socially and mentally, awareness of the inner measure of things was seen as the essential key to a healthy, happy, harmonious life.

It is clear that measure is to be expressed in more detail through proportion or ratio; and 'ratio' is the Latin word from which our modern 'reason' is derived. In the ancient view, reason is seen as insight into a totality of ratio or proportion, regarded as relevant inwardly to the very nature of things (and not only outwardly as a form of comparison with a standard or unit). Of course, this ratio is not necessarily merely a numerical proportion (though it does, of course, include such proportion). Rather, it is in general a qualitative sort of universal proportion or relationship. Thus, when Newton perceived the insight of universal gravitation, what he saw could be put in this way: 'As the apple falls, so does the moon, and so indeed does everything.' To exhibit the form of the ratio yet more explicitly, one can write:

$$A : B :: C : D :: E : F$$

where A and B represent successive positions of the apple at successive moments of time, C and D those of the moon, and E and F those of any other object.

Whenever we find a theoretical reason for something, we are exemplifying this notion of ratio, in the sense of implying that as the various aspects are related in our idea, so they are related in the thing that the idea is about. The essential reason or ratio of a thing is then the totality of inner proportions in its structure, and in the process in which it forms, maintains itself, and ultimately dissolves. In this view, to understand such ratio is to understand the 'innermost being' of that thing.

It is thus implied that measure is a form of insight into the essence of everything, and that man's perception, following on ways indicated by such insight, will be clear and will thus bring about generally orderly action and harmonious living. In this connection, it is useful to call to mind Ancient Greek notions of measure in music and in the visual arts. These notions emphasized that a grasp of measure was a key to the understanding of harmony in music (e.g., measure as rhythm, right proportion in intensity of sound, right proportion in tonality, etc.). Likewise, in the visual arts, right measure was seen as essential to overall harmony and beauty (e.g., consider the 'Golden Mean'). All of this indicates how far the notion of measure went beyond that of comparison with an external standard, to point to a universal sort of inner ratio or proportion, perceived both through the senses and through the mind.

Of course, as time went on, this notion of measure gradually began to change, to lose its subtlety and to become relatively gross and mechanical. Probably this was because man's notion of measure became more and more routinized and habitual, both with regard to its outward display in measurements relative to an external unit and to its inner significance as universal ratio relevant

to physical health, social order, and mental harmony. Men began to learn such notions of measure mechanically, by conforming to the teachings of their elders or their masters, and not creatively through an inner feeling and understanding of the deeper meaning of the ratio or proportion which they were learning. So measure gradually came to be taught as a sort of rule that was to be imposed from outside on the human being, who in turn imposed the corresponding measure physically, socially and mentally, in every context in which he was working. As a result, the prevailing notions of measure were no longer seen as forms of insight. Rather, they appeared to be 'absolute truths about reality as it is', which men seemed always to have known, and whose origin was often explained mythologically as binding injunctions of the Gods, which it would be both dangerous and wicked to question. Thought about measure thus tended to fall mainly into the domain of unconscious habit and, as a result, the forms induced in perception by this thought were now seen as directly observed objective realities, which were essentially independent of how they were thought about.

Even by the time of the Ancient Greeks, this process had gone a long way and, as men realized this, they began to question the notion of measure. Thus Protagoras said: 'Man is the measure of all things', thus emphasizing that measure is not a reality external to man, existing independently of him. But many who were in the habit of looking at everything externally also applied this way of looking to what Protagoras said. Thus, they concluded that measure was something arbitrary, and subject to the capricious choice or taste of each individual. In this way they of course overlooked the fact that measure is a form of insight that has to fit the overall reality in which man lives, as demonstrated by the clarity of perception and harmony of action to which it leads. Such insight can arise properly only when a man works with seriousness and honesty, putting truth and factuality first, rather than his own whims or desires.

The general rigidification and objectification of the notion of measure continued to develop until, in modern times, the very word 'measure' has come to denote mainly a process of comparison of something with an external standard. While the original meaning still survives in some contexts (e.g., art and mathematics) it is generally felt as having only a secondary sort of significance.

Now, in the East the notion of measure has not played nearly so fundamental a role. Rather, in the prevailing philosophy in the Orient, the immeasurable (i.e. that which cannot be named,

described, or understood through any form of reason) is regarded as the primary reality. Thus, in Sanskrit (which has an origin common to the Indo-European language group) there is a word 'matra' meaning 'measure', in the musical sense, which is evidently close to the Greek 'metron'. But then there is another word 'maya' obtained from the same root, which means 'illusion'. This is an extraordinarily significant point. Whereas to Western society, as it derives from the Greeks, measure, with all that this word implies, is the very essence of reality, or at least the key to this essence, in the East measure has now come to be regarded commonly as being in some way false and deceitful. In this view the entire structure and order of forms, proportions, and 'ratios' that present themselves to ordinary perception and reason are regarded as a sort of veil, covering the true reality, which cannot be perceived by the senses and of which nothing can be said or thought.

It is clear that the different ways the two societies have developed fit in with their different attitudes to measure. Thus, in the West, society has mainly emphasized the development of science and technology (dependent on measure) while in the East, the main emphasis has gone to religion and philosophy (which are directed ultimately toward the immeasurable).

If one considers this question carefully, one can see that in a certain sense the East was right to see the immeasurable as the primary reality. For, as has already been indicated, measure is an insight created by man. A reality that is beyond man and prior to him cannot depend on such insight. Indeed, the attempt to suppose that measure exists prior to man and independently of him leads, as has been seen, to the 'objectification' of man's insight, so that it becomes rigidified and unable to change, eventually bringing about fragmentation and general confusion in the way described in this chapter.

One may speculate that perhaps in ancient times, the men who were wise enough to see that the immeasurable is the primary reality were also wise enough to see that measure is insight into a secondary and dependent but nonetheless necessary aspect of reality. Thus they may have agreed with the Greeks that insight into measure is capable of helping to bring about order and harmony in our lives, while at the same time, seeing perhaps more deeply, that it cannot be what is most fundamental in this regard.

What they may further have said is that when measure is identified with the very essence of reality, *this* is illusion. But then, when men learned this by conforming to the teachings of tradition,

the meaning became largely habitual and mechanical. In the way indicated earlier, the subtlety was lost and men began to say simply: 'measure is illusion'. Thus, both in the East and in the West, true insight may have been turned into something false and misleading by the procedure of learning mechanically through conformity to existent teachings, rather than through a creative and original grasp of the insights implicit in such teachings.

It is of course impossible to go back to a state of wholeness that may have been present before the split between East and West developed (if only because we know little, if anything, about this state). Rather, what is needed is to learn afresh, to observe, and to discover for ourselves the meaning of wholeness. Of course, we have to be cognisant of the teachings of the past, both Western and Eastern, but to imitate these teachings or to try to conform to them would have little value. For, as has been pointed out in this chapter, to develop new insight into fragmentation and wholeness requires a creative work even more difficult than that needed to make fundamental new discoveries in science, or great and original works of art. It might in this context be said that one who is similar to Einstein in creativity is not the one who imitates Einstein's ideas, nor even the one who applies these ideas in new ways, rather, it is the one who learns from Einstein and then goes on to do something original, which is able to assimilate what is valid in Einstein's work and yet goes beyond this work in qualitatively new ways. So what we have to do with regard to the great wisdom from the whole of the past, both in the East and in the West, is to assimilate it and to go on to new and original perception relevant to our present condition of life.

In doing this, it is important that we be clear on the role of techniques, such as those used in various forms of meditation. In a way, techniques of meditation can be looked on as measures (actions ordered by knowledge and reason) which are taken by man to try to reach the immeasurable, i.e., a state of mind in which he ceases to sense a separation between himself and the whole of reality. But clearly, there is a contradiction in such a notion, for the immeasurable is, if anything, just that which cannot be brought within limits determined by man's knowledge and reason.

To be sure, in certain specifiable contexts, technical measures, understood in a right spirit, can lead us to do things from which we can derive insight if we are observant. Such possibilities, however, are limited. Thus, it would be a contradiction in terms to think of formulating techniques for making fundamental new dis-

coveries in science or original and creative works of art, for the very essence of such action is a certain freedom from dependence on others, who would be needed as guides. How can this freedom be transmitted in an activity in which conformity to someone else's knowledge is the main source of energy? And if techniques cannot teach originality and creativity in art and science, how much less is it possible for them to enable us to 'discover the immeasurable'?

Actually, there are no direct and positive things that man can do to get in touch with the immeasurable, for this must be immensely beyond anything that man can grasp with his mind or accomplish with his hands or his instruments. What man *can* do is to give his full attention and creative energies to bring clarity and order into the totality of the field of measure. This involves, of course, not only the outward display of measure in terms of external units but also inward measure, as health of the body, moderation in action, and meditation, which gives insight into the measure of thought. This latter is particularly important because, as has been seen, the illusion that the self and the world are broken into fragments originates in the kind of thought that goes beyond its proper measure and confuses its own product with the same independent reality. To end this illusion requires insight, not only into the world as a whole, but also into how the instrument of thought is working. Such insight implies an original and creative act of perception into all aspects of life, mental and physical, both through the senses and through the mind, and this is perhaps the true meaning of meditation.

As has been seen, fragmentation originates in essence in the fixing of the insights forming our overall self-world view, which follows on our generally mechanical, routinized and habitual modes of thought about these matters. Because the primary reality goes beyond anything that can be contained in such fixed forms of measure, these insights must eventually cease to be adequate, and will thus give rise to various forms of unclarity or confusion. However, when the whole field of measure is open to original and creative insight, without any fixed limits or barriers, then our overall world views will cease to be rigid, and the whole field of measure will come into harmony, as fragmentation within it comes to an end. But original and creative insight within the whole field of measure *is* the action of the immeasurable. For when such insight occurs, the source cannot be within ideas already contained in the field of measure but rather has to be in the immeasurable, which contains the essential formative cause of all that happens in the field of measure. The measurable and the

immeasurable are then in harmony and indeed one sees that they are but different ways of considering the one and undivided whole.

When such harmony prevails, man can then not only have insight into the meaning of wholeness but, what is much more significant, he can realize the truth of this insight in every phase and aspect of his life.

As Krishnamurti[1] has brought out with great force and clarity, this requires that man gives his full creative energies to the inquiry into the whole field of measure. To do this may perhaps be extremely difficult and arduous, but since everything turns on this, it is surely worthy of the serious attention and utmost consideration of each of us.

2

The rheomode – an experiment with language and thought

1 INTRODUCTION

In the previous chapter it has been pointed out that our thought is fragmented, mainly by our taking it for an image or model of 'what the world is'. The divisions in thought are thus given disproportionate importance, as if they were a widespread and pervasive structure of independently existent actual breaks in 'what is', rather than merely convenient features of description and analysis. Such thought was shown to bring about a thoroughgoing confusion that tends to permeate every phase of life, and that ultimately makes impossible the solution of individual and social problems. We saw the urgent need to end this confusion, through giving careful attention to the one-ness of the content of thought and the actual process of thinking which produces this content.

In this chapter the main emphasis will be to inquire into the role of language structure in helping to bring about this sort of fragmentation in thought. Though language is only *one* of the important factors involved in this tendency, it is clearly of key importance in thought, in communication, and in the organization of human society in general.

Of course, it is possible merely to observe language as it is, and has been, in various differing social groups and periods of history, but what we wish to do in this chapter is to *experiment* with changes in the structure of the common language. In this

Le Holism de J. C. Smuts

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Le Holism de J. C. Smuts

Jean-Marie Robine

Tout au long de son uvre, Perls évoque fréquemment J.C. Smuts, auteur de "Holism and Evolution", publié en Afrique du Sud en 1926. Le concept de "Holisme" qui y est introduit fait fortune aujourd'hui, en particulier auprès de nombre de synchrétiques du New-Age qui l'ont rapidement assimilé à une idée de globalité qui ressemble plus à un "tout est dans tout, et réciproquement" qu'à la tentative de son auteur de poser des bases pour une épistémologie à venir. On entendra ainsi parler de : médecine holistique, de psychothérapie holistique, d'astrologie holistique, de travail social holistique, chacune de ces approches se définissant comme plus "globale" l'une que les autres, comme si chacune confondait démarche idéologique et démarche scientifique, son désir et sa réalité, et restait persuadée que sous la lentille de son microscope se montrait l'univers entier.

Smuts (1870-1950) n'a jamais été traduit en français mais pourtant il a eu, avec ce livre, son heure de gloire. Il est vrai que l'Histoire a surtout retenu sa fonction politique : ancien étudiant de Cambridge et auteur d'une thèse sur "Walt Whitman : étude de l'évolution de la Personnalité", entré très tôt en politique puisqu'il marque déjà une première pause dans sa carrière en 1910, Ministre de Botha à l'époque de la révolte des Boers et de la rupture des Afrikaners intransigeants. Premier ministre d'Afrique du Sud à partir de 1920 dans une situation politique, sociale et économique difficile, ses hésitations en matière de politique raciale lui valent l'opposition de chacune des parties concernées et il doit quitter le pouvoir en 1924, ce qui lui permet de se consacrer à son livre, qui parait en 1926. Sur le plan politique, Smuts sera leader de l'opposition jusqu'en 1934, date où les partis opposés fusionneront. Compte tenu de son soutien aux Alliés, Smuts reviendra au pouvoir avec la seconde guerre mondiale (1939) mais l'échec des négociations sur les questions raciales l'en écartera en 48.

Les biographes de Perls évoquent tantôt des fréquentations épisodiques entre les Perls et Smuts pendant le séjour Sud Africain de Perls, tantôt une relation supposée d'importance au point que M. Shephard, évoquant les raisons du départ de Perls d'Afrique du Sud en 1946, après douze ans de séjour, écrit : "Jan Smuts, le premier ministre pour lequel Perls éprouvait un grand respect, était mort" alors que Smuts n'est mort que 4 ou 5 ans après le départ de Perls ! Un certain mystère demeure ; l'éclaircir ne constitue toutefois pas une nécessité capitale.

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Smuts situe son uvre à la frontière entre la Science et la Philosophie : ce n'est, écrit-il dans la préface de la 1 édition, ni un livre de Science, ni un livre de Philosophie mais un livre qui aborde quelques points de contact entre les deux. Il y annonce le ré-examen de concepts fondamentaux à la lumière d'un facteur qu'il appellera "holisme" et qui sous-tend la tendance synthétique de l'Univers. L'évolution y sera abordée, ajoute-t-il, comme le "développement et la stratification graduels de séries progressives de totalités, qui s'étirent depuis les commencements inorganiques jusqu'aux niveaux les plus élevés de la création spirituelle".

Tout en reconnaissant qu'il se limitera à dresser les grandes lignes d'un projet qui mériterait plus d'affinement, tant au niveau philosophique que scientifique, il présente en quelques 353 pages l'introduction du concept de Holisme dont la bonne fortune n'est plus à démontrer compte tenu de son intégration dans la pensée du XX siècle. Pour vous le présenter, j'utiliserai le plus possible ses propres mots, ses propres expressions, pour tenter de rendre compte au plus près de sa démarche.

Il envisage d'abord de réformer certains concepts fondamentaux, en particulier les concepts de temps, d'espace et de matière, puis de revenir aux définitions de la cellule et de l'organisme. De là, il introduira le concept de holisme, en en montrant certaines catégories et fonctions, et, avant de conclure sur des thèses concernant un univers holistique, il s'attardera quelque temps sur des dimensions plus psychologiques : l'esprit comme organe de totalité, et la personnalité en tant que globalité.

La réforme des concepts fondamentaux

Matière, vie et esprit restent encore aujourd'hui des phénomènes considérés comme disparates, et c'est d'autant plus étrange que dans d'autres domaines de la connaissance, de grandes avancées ont pu être menées. L'idée d'évolution a été acceptée mais n'a pas entraîné les réajustements nécessaires qu'elle impliquait et les visions mécanicistes continuent à être d'usage.

Smuts s'élève comme le vieux principe de causalité qui a dominé la pensée du XIX siècle, considérant que le principe selon lequel l'effet résidait dans la cause a empêché tout progrès et toute créativité. Pour revenir à une approche fluide des faits de la nature, il lui semble indispensable d'utiliser le concept de champ (et ce sans aucune référence de sa part aux travaux de la Gestalt-théorie !) car l'élimination du champ de surgissement des choses et des concepts rend impossible la compréhension des connexions et des interactions. Il considère que nous avons eu affaire à une double erreur d'analyse : l'abstraction et la généralisation.

Réforme des concepts d'espace, de temps et de matière.

Le projet de Smuts se précise : il privilégie les concepts qui sont en harmonie avec ce qu'il appelle "le processus créatif fluide de la nature". C'est d'abord avec le système de la relativité d'Einstein qui vient se substituer aux vieux concepts de Newton et de Kant qu'il commence. Il poursuit avec une approche de la matière pour la décrire comme structure d'énergie liée à l'espace-temps. En fait, son idée semble consister à associer systématiquement structure et processus, se positionnant ainsi de façon très proche des thèses de la physique quantique. L'ancienne conception de la matière inerte et passive doit disparaître. La matière est comme la vie : active. Il ne peut être fait de différence entre mort et activité, mais entre deux types d'activité. Les champs de matière et d'activité se superposent et le caractère absolu de leur séparation disparaît. De plus, de par son caractère structural même, la matière est également créative, créative de formes, d'arrangements, de patterns.

La cellule et l'organisme

La cellule est la deuxième structure fondamentale de l'univers (la première étant l'atome). Smuts évoque les découvertes récentes au niveau de la connaissance de la cellule et fait, en quelque sorte, le pari d'un développement important à venir de la connaissance fondamentale à ce niveau. Il insiste en particulier sur le métabolisme et sur les systèmes de régulation. Il explore la différenciation des parties et organes et le système de coopération entre ces parties de la cellule, d'une part, et entre l'ensemble des cellules d'autre part, qui leur permet de fonctionner comme un tout. Il affirme que la régulation

organique, à ce niveau élémentaire, semble plus efficace que celle qui s'exercera à un stade plus avancé avec l'intervention de l'Esprit comme fonction de contrôle. Mais toutes ces fonctions semblent, pour lui, manifester l'existence d'un facteur qui permet cette régulation centrale et la coordination de toutes les parties. C'est ce qu'il se propose de mettre en évidence.

Généralités sur le concept de Holisme

Jusqu'à ce jour, deux conceptions de la genèse ou du développement ont prévalu :

- Dans la première, toute réalité est considérée comme donnée en forme et en substance dès l'origine, explicitement ou implicitement, et l'histoire n'est que déploiement, explication, évolution de ce contenu implicite. La création a eu lieu dans le passé et prédétermine tout le futur.

- Dans la seconde conception, le donné initial est minimal et c'est le processus d'évolution qui est créateur de la réalité. "L'évolution est réellement créatrice et pas simplement explicative de ce qui était préalablement donné".

On l'aura compris : c'est cette seconde conception qui recueille les faveurs de Smuts.

L'évolution créatrice implique à la fois des principes et des orientations générales -qui sont l'objet de la philosophie- et des formes ou structures spécifiques, qui sont l'objet de la science. Les deux approches sont nécessaires à l'approche de la réalité. Bergson est allé chercher dans la Durée le principe qui relie ces deux approches, mais Smuts considère qu'il eût été meilleur de partir d'une quelconque unité naturelle pour rester aussi concret que possible. Puisque matière et vie sont des structures unitaires qui produisent des totalités naturelles (corps, organismes), Smuts propose le terme de Holisme (du grec s -holos-, totalité) pour désigner ce facteur fondamental opérant la création de totalités dans l'univers.

Ce principe de totalité concerne tant le domaine biologique que l'inorganique ou l'esprit humain. Le tout est plus que la somme des parties : c'est ce qui donne une conformation et une structure particulière à chaque partie et qui organise également leur synthèse. Totalité et partie s'influencent et se déterminent réciproquement ; le tout est dans les parties et les parties sont dans le tout.

La synthèse holistique de la Nature est progressive et différents niveaux peuvent être mis en évidence : 5 niveaux conceptuales

a.) les mélanges purement physiques (la structure est presque négligeable, chaque partie préserve ses caractéristiques et fonctions)

b.) les composés chimiques (structure plus synthétique, activité et fonctions influencées par la nouvelle structure)

c.) les organismes (synthèse encore plus intense, systèmes de régulation et de coordination)

d.) les esprits, ou organes psychiques (avec contrôle central, conscience, liberté et puissance créatrice)

e.) la Personnalité (les structures les plus évoluées de l'univers)

Le holisme n'est pas seulement créateur, il est également auto-créateur car ses structures finales sont beaucoup plus holistiques que ses structures initiales. Les totalités naturelles sont toujours composées de parties et c'est la synthèse (et non l'addition) de ces parties qui constitue le tout.

Une totalité naturelle a un champ et le concept de champ sera aussi d'une importance capitale.

Quelques fonctions et catégories du Holisme

Une totalité n'est donc pas une tendance générale mais un type de structure, un schéma, une trame qui peuvent être remplis de détails concrets par l'expérience réelle. C'est une synthèse, une structure de parties. Cette synthèse affecte le caractère des fonctions ou des activités de manière telle qu'elle affecte le caractère de ces parties ou fonctions qui deviennent ainsi plus unifiées encore. La totalité n'est donc pas une sorte de tiers au dessus des parties qui la composent mais est les parties dans leur union, et les réactions nouvelles qui découlent de cette union..

La totalité constitue un pouvoir de régulation et de coordination de la structure et du fonctionnement des parties. (cf. l'organisme avec sa corrélation d'équilibre entre organes et fonctions).

Cette position amène à une transformation des concepts et des catégories. Dans des théories mécanicistes ou agrégatives, chaque partie agit séparément et l'activité qui en résulte est la somme des activités qui la composent ; cette perspective disparaît, dans la perspective holistique, au profit d'une synthèse et les composants ne sont plus reconnaissables dans le résultat unifié.

Le concept de causalité est alors radicalement transformé. On ne voit pas encore apparaître, chez Smuts, la notion de circularité qu'introduiront plus tard les cybernéticiens et systémiciens, mais on en voit quelques préalables. Lorsqu'une cause agit sur le tout, l'effet résultant ne permet pas de remonter tout simplement à la cause car elle a été transformée en processus. La totalité considérée semble absorber et métaboliser le stimulus extérieur et l'assimiler au sein de sa propre activité. La réponse n'est plus considérée comme un effet passif du stimulus mais comme l'activité de la totalité. C'est la totalité considérée qui apparaît comme cause réelle de la réponse et non le stimulus externe qui ne semble plus jouer qu'un rôle mineur d'excitant ou de condition favorable.

Une conséquence plus importante encore de cette idée de totalité, selon Smuts, c'est l'apparition du concept de créativité. La source de la créativité de la nature se trouve dans la synthèse impliquée dans le concept de totalité, dans la mesure où c'est ce qui amène à de nouvelles structures et à de nouvelles synthèses, à partir de matériaux anciens. Cette créativité débouche non seulement sur la création de nouvelles espèces mais aussi sur la création de valeurs qui sont créations de la totalité à un niveau spirituel.

Le concept de liberté s'enracine aussi dans celui de totalité, organique ou autre, car les causes externes sont absorbées et transformées dans le métabolisme de la totalité en quelque chose d'elle-même : l'autre devient soi : la pression de l'extérieur est transformée en action de soi-même. Au stade humain, cette Liberté prend le contrôle conscient du processus pour créer le monde de l'esprit.

Smuts ne néglige toutefois pas que le Holisme implique la stabilité. Si la nouveauté intervient sur la base de structures préexistantes, elle reste mineure au regard du conservatisme, la variation est infinitésimale par rapport à l'hérédité. Est-ce le concept d'homéostasie que l'on entrevoit ici (Rappelons que, prolongeant les recherches de Claude Bernard, ce concept a été introduit en 1925 par Cannon, c'est à dire en même temps que les travaux de Smuts.)

Smuts entreprend ensuite une analyse critique du mécanicisme et du Darwinisme sur laquelle je ne m'étendrai pas, pour en venir plus rapidement aux conséquences au niveau des Sciences de l'Homme de cette conception en termes de totalité.

L'esprit en tant qu'organe des totalités.

Après l'atome et la cellule, l'esprit (Mind) est la troisième grande structure fondamentale du Holisme. On ne peut pas dire que l'esprit soit une réelle totalité en tant que tel, mais une structure holistique, un organe holistique ; la personnalité, elle, est une réelle totalité.

La psychologie s'occupe de l'esprit et l'analyse dans ses différents modes d'activité : la conscience, l'attention, la sensation, la volonté, l'émotion etc. Dans une perspective holistique, l'esprit sera abordé différemment.

L'esprit s'établit à partir de deux racines : 		*(Husserl: Ideen II 3ª partie)*

- Il est la continuation du système de régulation et de coordination organiques qui caractérise le holisme chez les organismes. (En tant que descendant direct de ce système, il assure la même tâche). On le voit au travers de la rationalisation conceptuelle et de l'ensemble de l'activité de raisonnement, qui coordonne et régule toute expérience.

- L'esprit est un développement d'un aspect "individuel" du holisme et joue toujours un rôle de partie subordonnée dans un organisme. Cette dimension d'individualité représente une nouveauté, un révolution à partir du système antérieur de routines de régulation. L'esprit représente ainsi le principal moyen de développement de la personnalité humaine. Mais l'autorégulation est antérieure au développement de l'esprit, l'esprit ayant eu, en quelque sorte à attendre la mise en place et l'évolution de cette autorégulation pour commencer son propre développement.

Par exemple, la "tension" qui apparaît dans un corps en déséquilibre sera progressivement ressentie comme vague sensation d'inconfort, ce qui a une fonction de survie car au lieu de rester un état de passivité, cela entraîne une activité, une *ad-tension* ou attention, puis une conscience. L'esprit devient tentative, recherche, expérimentation, ce qui lui permet de se développer. Smuts insiste sur la dimension rebelle de l'esprit face aux routines du holisme puisqu'il apporte liberté, plasticité, créativité.

Mais ceci ne représente qu'une face de l'évolution car parallèlement, l'esprit développe rapidement aussi une capacité de conceptualisation et de rationalisation universalisantes qui devient partie prenante de l'ordre universel. Ces aspects individuels et universels s'enrichissent mutuellement en créant la personnalité humaine, c'est à dire la liberté spirituelle. L'individualisme pur n'est qu'abstraction puisque l'individu ne devient conscient de lui-même qu'en société et en connaissant les autres comme lui-même, et ceci s'opère principalement grâce au langage. Smuts montre la relation d'interdépendance (sans employer ce concept) entre l'esprit individuel et de l'ordre universel qui existe chez l'homme, ce qui le distingue de l'animal beaucoup plus emprisonné dans son héritage héréditaire.

Une autre caractéristique de l'esprit humain réside dans le fait qu'il dispose d'un domaine de conscience claire et d'un "champ subconscient" pour reprendre les termes de Smuts. Dans ce champ se trouvent l'expérience oubliée de l'individu et son héritage physiologique et racial.

La personnalité considérée comme totalité

C'est la dernière et suprême totalité qui arrive dans la série holistique de l'évolution, une structure bâtie sur les précédentes : matière, vie et esprit.

L'esprit en est le constituant principal mais il y a aussi le corps. De l'avis de Smuts, la dévalorisation du corps (de l'époque) au profit de l'esprit ou de l'âme est liée à des sentiments religieux morbides. Il aborde a sa façon le problème de la séparation corps-esprit pour dire, bien entendu qu'ils ne peuvent

être considérés isolément ni comme des entités indépendantes. Il s'élève aussi contre la description de leur relation comme "interaction" qui lui semble incorrecte puisque, par exemple, l'esprit n'agit pas *sur* le corps mais en lui ou au travers de lui. Il lui semblerait préférable de parler de "per-action" ou de "intro-action" pour désigner cette relation. Je fus entre parenthèses agréablement surpris de voir que Smuts m'avait amplement précédé dans la création de ce néologisme puisqu'il y a quelques années, j'évoquais dans un article que si on s'inscrivait dans une perspective de champ, il faudrait parler d'intro-action en plus de l'habituelle inter-action. Esprit et corps sont des éléments dans la personnalité en tant que totalité et cette totalité est une activité créative, re-créative et transformatrice qui tient compte de tout ce qui se passe dans la personnalité comme entre ses éléments constitutifs. C'est le holisme qui constitue le véritable agent créateur.

Dans la Psychologie et l'épistémologie, l'individu sujet est le centre qui oriente toute expérience et toute réalité : c'est le SUJET de l'expérience pour qui tout le reste est OBJET d'expérience. Ceci marque un départ fondamental dans l'évolution de l'univers, mais Smuts considère que ces disciplines, Psychologie et épistémologie, ne portent pas suffisamment d'attention à la nature de la personnalité, à d'autres niveaux. Elles ignorent trop volontiers le caractère unique de la personnalité pour privilégier la moyenne, l'individu généralisé, et de plus, d'un point de vue uniquement mental, ce qui n'est qu'un aspect de la personnalité. Le résultat en est que la Psychologie ne lui semble d'aucune aide pour étudier la personnalité. Il faudrait en fait une discipline spécifique. "Caractérologie" a été proposé, ce qui ne lui semble pas satisfaisant, "Personnologie" lui semble meilleur.

Cette discipline devrait faire l'étude de biographies de personnalités, les appréhendant comme des totalités et unités vivantes, au travers des phases successives de leur développement. Il lui faudrait donc, contrairement à la démarche de la psychologie (de l'époque), procéder de façon synthétique et non analytique. Ce travail permettrait d'accéder à une formulation des lois de l'évolution personnelle et poseraient les fondations d'une véritable science de la biographie, d'une théorie de la personnalité et donc de la Personnologie à constituer. Cette personnologie serait la science synthétique de l'Etre Humain, couronnerait l'ensemble des sciences, deviendrait la base d'une nouvelle Ethique, d'une nouvelle Métaphysique et d'une perspective spirituelle plus vraie.

De quelques fonctions et idéaux de la personnalité

Smuts poursuit sa critique de la Psychologie, discipline trop abstraite, et sa défense d'une "Personnologie" à créer.

La personnalité est fondamentalement organe d'auto-réalisation. Ceci veut dire, pour lui, que la volonté ou nature active et volontaire de la personnalité est ce qui prédomine, et que l'intelligence ou l'activité rationnelle lui est subordonnée et en est l'instrument. Cette volonté a à découvrir et à coordonner les moyens dans le but de la réalisation de soi. Sentir, c'est aussi une activité subordonnée dont la fonction consiste à donner impulsion et force à la volonté. La personnalité est donc une totalité ou structure plus ou moins équilibrée de différentes tendances et activités maintenues en harmonie et en évolution par l'unité holistique de la personnalité elle-même. Ce contrôle est pour partie conscient mais, pour sa majeure partie, subconscient. Plus ce contrôle holistique est fort, plus grande est la force d'esprit et de caractère, meilleure sera la coordination des pulsions et des tendances, moindres seront les frictions internes et la détérioration de l'âme, plus grande sera la paix de l'esprit, la pureté spirituelle et l'intégrité. La personnalité a la même capacité d'auto-guérison que celle qu'on peut observer chez un organisme mutilé Et au-delà de cela, elle est apte à absorber pour sa croissance une large variété d'expériences, de les transmuter et de les assimiler de façon nourrissante. Métabolisme et assimilation sont des fonctions fondamentales de toutes les totalités organiques : c'est

ce qui permet à la personnalité de prendre et d'intégrer les influences sociales environnantes et de les faire contribuer à l'auto-réalisation de façon holistique. Smuts aborde là de façon étonnamment prophétique ce qui sera ultérieurement approfondi par Perls dans "Ego, Hunger and Aggression", avec la même distinction, même si les mots diffèrent, entre "introjection" ("introject") et "assimilation". Les mots utilisés par Smuts sont ceux "d'impureté" pour désigner le corps étranger inassimilable, opposable à la "pureté" qui réfère à l'intégration harmonieuse dans la personnalité.

Ces mots lui permettent de retrouver les caractéristiques de la totalité par excellence qu'il avait définie plus haut : Créativité, Liberté, Globalité et Pureté, pour les attribuer à la personnalité

- La créativité renvoie aux valeurs, à l'idéal, au rationnel, à l'éthique, à l'artistique et au religieux, tout ce qui crée un environnement spirituel, guidance intérieure et illumination.

- L'essence de la personnalité est liberté créatrice, face à ses conditions d'expérience et de développement. La liberté s'exerce dans la sélection et la coordination des éléments dans les situations auxquelles elle est confrontée. cette liberté n'est pas négation de l'ordre physique de la causalité mais s'y intègre : elle intervient *entre* la cause et l'effet.

- La Pureté de la personnalité signifie l'élimination des éléments dysharmonieux. Sublimation du plus bas vers le plus élevé, enrichissement du plus élevé par le plus bas.

- La Globalité résume le holisme dans une auto-réalisation libre et harmonieuse.

L'Univers holistique

Pour conclure, Smuts aborde dans son dernier chapitre sa conception générale de la nature et sa *Weltanschauung*. Le concept de Holisme représente l'activité fondamentale sous-tendant et cordonnant toutes les autres.

Il réfute, par anticipation, les critiques de la science qui pourraient considérer le concept de Holisme comme extra-scientifique, donnant une explication métaphysique et non-scientifique des choses.

- D'abord, la conclusion à laquelle aboutit la science à savoir que l'univers entier est l'expression de l'évolution cosmique nécessite un arrière plan capable de formuler et d'expliquer ce vaste schéma scientifique des choses. Se préoccuper du détail des mécanismes ne suffit pas à donner un panorama de la science dans l'ensemble de ses préoccupations.

- Ensuite, la science a déjà eu à assumer de telle entités "ultra-scientifiques", comme celle d'éther de l'espace, et les a considérées comme nécessaires pour fournir une explication cohérente à certains phénomènes, même purement physiques. La corrélation du physique, de l'organique et du psychique en un vaste schéma d'évolution nécessite des facteurs capables d'opérer plus largement que ceux qui ont pu être reconnu jusqu'alors.

- Enfin, le Holisme n'est ni plus ni moins ultra-scientifique que "la vie" ou "l'esprit". Il permet de coordonner le phénomène "évolution" de la nature en un même facteur opératoire.

Smuts présente sa critique des différentes philosophies de l'époque : le Naturalisme, l'Idéalisme, le Monadisme, le Pluralisme Spiritualiste et le Panpsychisme, pour soutenir tant et plus le Holisme.

Il conclut son uvre par ces mots :

"La progression et l'auto-perfectionnement des totalités au sein du Tout, c'est un processus lent mais

infaillible, et le but de l'univers holistique." *(Qu'er el TODO? - uno simple apertura?)*

Conclusion

Comme l'a évoqué Petruska Clarkson, dans l'uvre de Smuts on peut trouver les germes de nombre d'idées de Perls. Non seulement de Perls, ajouterai-je, mais aussi de différents auteurs du XX siècle, y compris d'idées que l'on a l'habitude de n'imputer qu'à la Gestalt-théorie ou à la théorie du champ, par exemple :

1. L'idée que tout a un champ et que les choses et les organismes sont inintelligibles si on ne les considère pas dans leur champ,

2. L'accent mis sur le processus, affirmant que tout est en processus incessant de changement créatif et que c'est là qu'il faut chercher l'aptitude des organismes à former des totalités structurées,

3. L'importance de l'introjection/assimilation,

4. La nature holistique des personnes et de l'univers, l'interconnexion de toutes choses, vivantes et non-vivantes,

5. L'interdépendance de l'organisme et de l'environnement.

Il serait pertinent de retrouver, dans les travaux de différents théoriciens de ce siècle, les infiltrations du Holisme de Smuts, infiltrations directes et indirectes. Je pense aussi bien à Kurt Lewin et à son étude : "Analyse des concepts de totalité, de différenciation et d'Unité", à Von Bertallanfy et à sa "Théorie générale des Systèmes", à Edgar Morin et sa "Méthode" qui ne le citent ni les ni les autres ; à Arthur Koestler qui crée le concept de *Holon*, en totale référence à Smuts, par contre ; à Sheldrake et autres théoriciens des "Champs morphogénétiques" qui reconnaissent leur dette. Mais peut-être Smuts a-t-il eu le tort de naître -et de publier- en Afrique du Sud et a-t-il été victime d'un "apartheid" de la part de l'Occident intellectuel ?

Conférence à l'Institut Français de Gestalt-thérapie, Paris, Octobre 1993

Bibliographie :

SMUTS J.C. : Holism and Evolution, Macmillan & Co Ldt, London 1926

PERLS F.S. : Le moi, la faim et l'agressivité (1942), Tchou, Paris 1978

CLARKSON P. & MACKEWN J.: Fritz Perls, Sage Publications, London 1993

SHEPARD M. : Le Père de la Gestalt, Stanké, Montréal, 1980

LEWIN K. : Appendix de *Field theory in Social Science*, Tavistock Pub. , London 1952

ENC. UNIVERSALIS : *Afrique du Sud (République d')* (1968) I, 450-451

Pour plus d'informations sur la Gestalt-thérapie en France, les publications en langue française et les "Cahiers de Gestalt-thérapie", nous vous recommandons la visite du site de l'Institut Français de Gestalt-thérapie à : http://www.cyberstation.fr/~gestalt

Notes on Rorty's article, "Putnam and the Relativist Menace"

(which appeared in *Journal of Philosophy*, September, 1993)

The metaphilosophy of Rorty, specifically what has become known as his position of epistemological "antifoundationalism", relies upon the tacit notion that Western philosophy since Plato has been attempting to "discover" and explicate the "ground rules" of a "first-philosophy". This preoccupation on the part of philosophers with finding the "foundations" of genuine knowledge, which they had always assumed must exist, reached a distinctively modern turning point with Kant, who was at the time witnessing a Copernican Revolution in both the scope and content of "knowledge". As science began to rapidly move forward, making tremendous predictive leaps and bounds without any explicit need for formalized rules of its operation, philosophers became increasingly concerned with the ability to provide epistemological foundations for such rapidly advancing scientific knowledge. Because of what appeared to be an obvious progression in our predictive capabilities, in our ability to better understand the causal structures of the (empirical) world, there was never a question as to whether such an epistemology existed-- hence Putnam's idea that a correct epistemology, a correct concept of reason, although always bound to the interests, values, and the general language-game of each particular time and place in society, is nonetheless immanent, that is, because reason is presupposed in any deliberation over what can be known to be "true" (Putnam's argument that both reductionism and relativism are incoherent), reason is a normative ideal that is somehow beyond time and place. Exactly what the nature of such immanent reason is like is, however, impossible for us to express in words, as we're always captive to our particular language-game. In this respect, all modern believers in the "epistemological project" are followers of Kant, who pointed out the necessary existence of the noumenal dictates of reason, and this general belief in the normative quality of reason takes us to Peirce's Thirdness, Habermas' ideal speech community, Popper's philosophy of scientific progress, other realist philosophies of science, etc. If this so-called "immanent" domain of reason does exist but essentially cannot be talked about in any absolute/objective/definite way, then might it be that all we have here is a faith in this notion. It is, after all, not a concept that can in any way be empirically verified -- it can't be supported by physical evidence because it is a presupposed concept to our interpretation of empirical phenomena. Is the basis of "warranted assertability" then really no more than faith? (Of Putnam's position, Rorty writes, "At the last moment, it seems to me, he turns intuitionist" -- p.457) What then is the chain of logic behind Putnam's internal realism? How does it differ from Rorty's chain of logic and his consequent "conversational" picture of philosophy?

Putnam criticizes Rorty for the way Rorty frames the issue, the way he portrays the Problem-- that "the failure of our philosophical 'foundations' is a failure of the whole culture...that philosophy was not a reflection on the culture...but a basis, a sort of pedestal, on which the culture rested, and which has been abruptly yanked out" (Putnam, RHF, pp. 19-20). Under this interpretation of Rorty, in hoping to show the futility of all attempts at epistemological foundationalism, Rorty hopes to also show that the whole house of cards which rested on epistemological foundationalism (e.g., the priveleged role of science,etc.) has now fallen, and, consequently, the only course of justification for the norms of warranted assertibility is the course of "cultural politics"-- the purely emotive practice of social consensus based on choices. Under this interpretation of Rorty, there is no distinction between the emotive and the cognitive, for the very concept of "cognitive" goes the way of other outmoded paradox-mongering concepts such as "reason" and "truth".

Rorty, in turn, completely denies this charge: "I have written at tedious length against the idea that

philosophy has been a pedestal on which our culture rested" (Rorty, "Putnam and the Relativist Menace", p.444). If this is the case, then Rorty is simply showing us that traditional epistemology, in its characteristic attitude of self-importance, set itself unattainable goals. Rorty claims he is not in any way re-characterizing the "whole of culture"-- after all, philosophy is not (and cannot be), according to his interpretation, the foundation of human knowledge, especially not the foundation of that very complicated web of beliefs (and stimuli) we so often refer to as "science". Is Rorty therefore only telling us what sophisticated scientific realists have believed in for some time-- that our picture of science and of knowledge will always be incomplete?

The history and practice of "science" has led to a progressive improvement in our abilities to predict things, and this predictive success is due, in large part, not to science's "absolutism", but rather to its "context-objectivity" (or the "interest relativity" of which Rorty claims to agree upon with Putnam). Context-objectivity and interest-relativity, however, are not equal concepts; there is, in fact, a crucial difference between them. Context-objectivity implies a "world" that science, as a language-game, interacts with in a cognitive way [the physicalism of Quine's "naturalized epistemology"], a way that is beyond cultural politics. For even the most basic principles of rational argumentation/canons of warranted assertability to exist, there must be some normative concept of "truth". We say that such canons are always evolving, but for such canons to evolve, in some imaginable world, to the point where there are no normative conceptions of truth, is impossible. Language would then not be functioning in any way recognizable to us. Translation manuals would not be relative to each society's language-game (Quine), but indeterminacy of translation would be occuring between each and every individual. It is hard to see how such translations just between individuals could even occur, since the very notion of an objective "stimuli" (to which each translator, presumably, would ultimately be referring to) is itself being questioned.

But it seems to me the notion of "truth" is central to such theories (and to anything else we can, by definition, recognize as a "language") because the notion of truth acts as the normative guide to the concept of "causality". Yes, language works in many different ways (Wittgenstein), and yes we must look at its "use", but the "use" of the language of science is in predicting actions and events, and successful prediction of such actions and events comes from successful mappings of assumed causal structures of "the world". However interest-relative such mappings may be, they are nonetheless latched onto the objective stimuli of "the world". The version of realism advocated by the logical positivists [the radical reductionism of Carnap] was wrong in believing that absolute descriptions are possible in an ideal language, but, as realists in the most minimalist sense of the term, the positivists were not wrong in their more conservative implicit assertion that each language has a standard and norm of "correctness" which, although context-dependent, does stand in some kind of "objective" relationship to "the world". (Without a scheme/content dichotomy to work with, how can we be anything but solipsists?)

Does Rorty not accept for a minute the general premise that there "exists" a future that is unknown to us, a part of the universe that we can still talk about scientifically (ie, causally)? What qualifies as "science" has expanded greatly since the days of Kant, and now includes such fields as astrophysics/cosmology/theoretical physics. These are domains of "science" (with predictive success?) that utilize not only the concept of "truth", but also utilize concepts of truth about "the world" beyond our senses-- the realm of the Kantian noumena.

Does Rorty's scepticism about the objective status of "the world" depart in any significant way from Hume's extreme scepticism of the ontological status(?) of the very concept of causality itself (of which his scepticism of future events was a consequence of)? [Hume believed causality = a subjective

psychological association of ideas]

Hume has served as an extremely important polemic for philosophy, but his position, taken literally, in and of itself, leads to paradox and absurdities. Kant recognized this, and although the specifics of his attempt to answer the sceptic were too ambitious, the basic parameters/premises of his philosophy were/are justified/warranted. We are not born as blank slates/tabula rasea; intuitions without concepts are blind, and concepts without inuitions are empty. The languages of the sciences, in their remarkable ability to predict the future, obviously stand in some kind of unique relationship to not only the measurable empirical world, but also to other necessary parts of the great web of belief....and once we accept the concept of "truth" as being central to any language that attempts prediction of verbal behavior, other concepts are, by necessity, introduced. There is a family of terms that cannot be separated from each other if coherence is to be maintained; How can we have the normative concept of "truth" without, for example, normative concepts of causality that become manifest in our language as "more correct", "less correct", or "false"/just plain "wrong"? So much of the functioning of language revolves around these and other normative categories, all of which push and pull us toward consensus or disagreement. But for the grunts that come from out of our mouths to be more than just inconsequential grunts, for them to be defined as a language, this family of normative terms must be in operation-- first, they must be operating within each person's mind, where concepts loop amongst each other in combination with not only social conventions, but also the positive or negative feedback from the immediate environmental stimuli. Second, this family of terms must be, in some sense, isomorphic between the individuals that share a given language-game; the rules of the language must be shared by the speakers of the language for there to be successful communication at all. These rules, among which are the family of normative terms that revolve around "truth", are presupposed for language to function. Otherwise, we don't have communication at all and what, then, would "language" be?

If we deny ourselves the ability to objectively distinguish between these core, higher level concepts (truth, causality, determinate meaning, reference, etc.), which is what Rorty believes he can do, we are in effect saying nothing. What we have asserted cannot in principle be refuted or argued against. We have the circular logic of the sceptic, and of Nietzsche, or of someone who uses the concept of God to explain things. We have a tautologous argument, one empty of any significance in and of itself. As Putnam has mentioned, the paradox of Rorty, with his schematic characterization (and "pragmatic" appraisal) of 2000 years of philosophy, is that he seems to be, in effect, saying that from a God's Eye View there is no God's Eye View!

[side note: Van Fraassen portrays sc. realism as leading to an absurdity. This is only the case for the old-school realists of logical positivism, such as Reichenbach and Carnap(?), who are read as assuming attainable absolutism, rather than just context-relative objectivity. How can VF, who is influenced by Quine, advocate a coherence th. of truth, rather than a corresondence th. of truth, and still be an "antirealist"?...Although Quine himself is considered an antirealist -- a physicalist, but an antirealist one...see Putnam ch. 5 of RHF]

Surely Rorty does not take the sophistication of human language/communication/civilization to be some kind of "cosmic coincidence", whereupon each person's private subjective reasoning faculties are miraculously synchronized, through a chance but convenient medium of verbal noise, with the private subjective reasoning faculties of other persons (if we first have the corollary belief in others' minds to begin with)?

Rorty says that he lends his support to the basic Darwinian account of our cognitive development, but

narratividad?

only as a "useful vocabulary" or "story" with which we can make sense of ourselves. [Rorty, p.447-8. Explain briefly the core elements of the Darwinian picture] Rorty is not, of course, asking us to take Darwin's naturalist account of human language/cognitive faculties/knowledge(?) to be a "representational relation to an intrinsic nature of things"; rather, he is proposing that we adopt the Darwinian story" in the spirit of Deweyan experimentalism". Rorty writes:

> The first step in conducting this experiment should be to set aside the shards of the subject-object, scheme-content, and reality-appearance distinctions, and to think of our relation to the rest of the universe in purely causal [emphasis mine], as opposed to representationalist, terms (the same way in which we think of the anteater's and the bower-bird's relation to the rest of the universe). I think that my differences with Putnam come down, in the end, to his unhappiness with such a purely causal picture. [p.449]

What is unusual/peculiar about Rorty taking this line is his suggestion that we employ Darwin's language-- a physicalism that makes/uses causal connections between nature and human knowledge/cognitive faculties-- while we simultaneouly realize consciously that such a causal account of ourselves is no more than a convenient "story", simply the outcome of "cultural politics"....although Rorty would say that it is not peculiar...

Is Rorty trivializing the aforementioned normative concepts by not granting them central status in the operation of languages? He would of course say that he is not, but might his view lead to disastrous results if followed through to its ultimate logic? Rorty would perhaps say "only if we subscribed to the naive relativism that Putnam seems to want to wrongly ascribe to me". Plus, Rorty might say, such fears are unwarranted, as they are highly improbable...

I fail to see how Rorty can add anything new to the argument by proclaiming "the end of philosophy", for one can only "argue" within given rules of a language. To make any kind of judgemental statement about the whole of philosophy or the whole of language or the whole of science, as Rorty in effect does in his sole "original" contribution to epistemological debates, is to try to stand outside of philosophy, which no philosopher can do...

...But are we appealing to only a political dimension of language, Rorty's "culture of politics", or to a complicated combination of both the subjective/political/value-laden elements of language and the objective/cognitive elements of language?

...Why not a "fuzzy representionalism", a realism with a human face?... *intermedio?*

...Why not determinate meaning?....

medio represent. - medio - lógico - causal - (convencional)
da la "norma"   es funcional
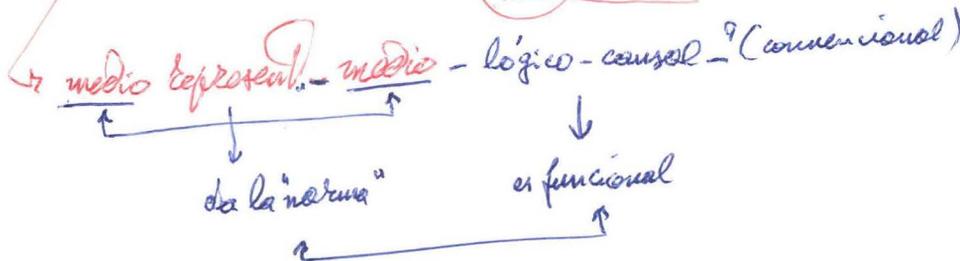
Gestalt Therapy and Gestalt Psychology

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GESTALT-ANTECEDENT INFLUENCE OR HISTORICAL ACCIDENT

Allen R. Barlow

Editor's Note: This article originally appeared in Volume IV, Number 2, (Fall, 1981) issue of The Gestalt Journal. *It remains the most definitive article on the relationship between Gestalt therapy and Gestalt psychology.*

Joe Wysong
Editor
The Gestalt Journal

There has been relatively little appraisal of the antecedent influence of Gestalt psychology on Gestalt therapy. This paper attempts to expand on the work of previous academic writers on the theoretical precursors of Gestalt therapy. Most of the relevant articles, monographs, or books which mention Gestalt psychology still refer to Wallen (1957), whilst Perls in his books referred to the influence of Gestalt psychology, but gave little indication of the extent of that influence. Yontef (1979, p.27) highlighted the need for this type of exploration:

> Neither Gestalt psychology nor the connection with Gestalt therapy is adequately understood, even by most Gestalt therapists, and has not been adequately discussed in the Gestalt therapy literature. Unfortunately this very important subject must be reserved for a more technical paper (see Perls, 1973).

The aim of this paper is to discuss the areas of commonality between Gestalt therapy and Gestalt psychology.

Two Gestalt Psychologists' Attitudes

Henle (1978) in an article titled "The relations between Gestalt psychology and Gestalt therapy" was critical of Perls' use of the word "Gestalt." She quotes a number of Perls' statements out of context, or slants meanings in favor of her particular argument. The final conclusion that she drew was that " . . . the two approaches have nothing in common" (Henle, 1978, p.23).

One Gestalt psychologist apart from Henle who has mentioned the relationship between the two approaches was Arnheim (1974). The one paragraph letter to *Contemporary Psychology* was not sufficient to allow analysis of his position other than the consideration of Arnheim's own interpretation of what Wertheimer would have done -- that is, ". . . fly into one of his magnificent rages at the use of the name 'Gestalt' in Gestalt therapy"

(Arnheim, 1974, p.22). This letter did, however, prompt Henle's article (1978).

Only by critical analysis of certain quotations and extracts from early writings in the Gestalt literature can a meaningful conclusion be drawn as to the degree to which Perls adopted, developed and integrated certain notions and concepts from Gestalt psychology.

Perls' Use of Gestalt

The very fact that Perls called his method of therapy "Gestalt therapy" indicated that he saw significant links and connections between that therapy and the tradition of Gestalt psychology. Perls regarded Gestalt therapy with its "dependence on the laws of Gestalt dynamics" as "the next step after Freud in the history of psychiatry"(Perls, 1969b, p. 34). Simkin reported Perls as saying of Gestalt psychology:

> . . . the thing that fascinated me was the Gestalt approach. For the first time, the breaking away from the piecemeal consideration and getting perspective. (Quoted in Ruitenbeck, 1972, p. 117)

Gestalt therapists themselves appear not to be in agreement as to the theoretical precursors of Gestalt therapy, and particularly to Gestalt psychology. For instance, Enright (1975a) argued that Gestalt psychology was probably the least important theoretical influence on Perls, but was possibly used to name the new therapy because it was the most recent influence, and " . . . was uppermost in his (Perls') mind" (Enright, 1975b, p. 127). Yontef (1979, p.27) is more positive when enunciating the influence of Gestalt psychology:

> . . . the underlying holistic and phenomenological structure of Gestalt therapy is a clinical derivative of Gestalt psychology.

Perls (1969b, 1973) noted that although he was an assistant to Professor Kurt Goldstein and aware of the Gestalt psychologists' work in the 1920's, he was primarily psychoanalytically oriented, both as a therapist/analyst and as a patient. It is significant that Perls did not use the word "Gestalt" in any title nor in any significant manner when he wrote *Ego, Hunger and Aggression* (1947), his first major attempt to outline his theory. Rosenfeld (1978, p.13) commented on this point:

> There's not a lot in *Ego, Hunger and Aggression* that points to the really extensive development that he made of the whole metaphor of Gestalt.

Perls chose the title "Gestalt therapy" (in the title of *Gestalt Therapy: Excitement and Growth in the Human Personality*) over strong objections from his wife Laura, and his coauthors Paul Goodman and Ralph Hefferline (1951). Laura Perls considered that the approach as outlined in the book had little relation to the academic Gestalt psychology she had studied, and wanted to use the name "Existential Therapy." Goodman thought the title too esoteric, while Hefferline wanted their work presented as "Integrative Therapy" (Shepard, 1976). It is perhaps not surprising that Enright (1975b) suggested that the name Gestalt therapy was an historical accident, and that it is misleading to attach too much weight to it in understanding Perls' works.

This "historical accident" theory is not upheld, however, by Perls' own work. In his autobiography (1969b), Perls described his relation to Gestalt psychologists as a peculiar one, but in no way denied that such a relationship existed. He acknowledged his adoption of the fundamental idea of the unfinished situation, or incomplete gestalt, to Gestalt therapy. He also stated his admiration for their work, although disagreeing with their logical positivism.

Perls' feelings about his status as a "Gestaltist" are revealed in this quotation:

The academic Gestaltists of course, never accepted me. I certainly was not a pure
Gestaltist.
(Perls, 1969b, p.62)

Perls' gratitude for the contributions made by classical Gestalt psychology to Gestalt therapy was
reflected both in his dedication of his first book to the memory of Max Wertheimer, and in this poem
which appeared in his autobiography:

Reality is nothing but
The sum of all the awareness
As you experience here and now
The ultimate of science thus appears
As Husserl's unit of phenomenon
And Ehrenfeld's discovery:
The irreducible phenomenon of all
Awareness, the one he named
And we still call
GESTALT.
(Perls, 1969b, p.30)

Holism, Smuts and Gestalt Psychology

The basic premise on which Gestalt therapy rests is that of holism (Perls, 1973). The greatest value in
the Gestalt approach, according to Perls, Hefferline and Goodman (1951, p.19):

. . . lies in the insight that the whole determines the parts, which contrasts with the
previous assumption that the whole is merely the total sum of its elements.

Latner stated: "The foundation of the first principle of Gestalt therapy is holism" (1973, p.6). This
basic premise was not only adopted by Gestalt psychology, but also by Gestalt therapy, and in fact all
of the humanistic and existential psychologies (Back, 1973). Perls had largely credited the Gestalt
psychologists with the formulation of the concept of holism and applied to his model of personality
wrote that it was:

. . developed by a group of German psychologists working in the field of perception,
who showed that man does not perceive things as unrelated isolates but organizes them
in the perceptual process into meaningful wholes.
(Perls, 1973, p.2)

It would appear that the term holism was most recently coined by Smuts in 1906 and alluded to by
him as early as 1892-3, although this notion can he traced to Eastern philosophy and religions many
centuries earlier.

Smuts formulated a number of basic concepts, the most important of which to Perls were the unity of
the individual and integration. Smuts wrote:

. . every individual form of life is a unity . . . it is this ultimate and internal unity that
shapes the innumerable products of life into an orderly and harmonious whole . . . This
distinct, single, indivisible unity of life in each individual I call the personality of that
individual . .

(Smuts, 1895, p.61)

This understanding of man regarded the physical, the emotional, thoughts, all mental events, and so on, as expressions of a unified being; of each individual. Holistically we cannot attain an adequate concept of self by merely summing up the individual component parts of self -- the whole is greater than the sum of its parts. Gestalt therapy is a philosophy of life based on the holistic epistemology outlined above. It is descriptive, integrative, and structural, emphasizing phenomenology, the here and now as well as a positive wholeness which emphasizes our creating our lives and discovering our strengths.

The Organism-Environment Interaction

Basically, Gestalt therapy is concerned with the interaction between the organism and its environment (Baumgardner, 1975). In the healthy organism, many needs are present at any one time. These organize themselves into a hierarchy of importance, as a natural process. The most dominant need forms, or becomes figure. In order to satisfy this need, the organism searches its environment for the desired object (sensory activity); when the object is found, the organism acts to assimilate it (motor activity). The concept of the connection between the sensoric and motor activities has been extensively discussed by the Gestalt psychologists for many years (for example, Koffka, 1935; Hartrnann, 1935). When the needed object has been assimilated, the Gestalt is closed, and a state of equilibrium is reached. The formerly dominant need recedes from awareness (becomes ground), and the energy thus freed is directed towards the next most dominant need. Organisms are thus self-regulatory or homeostatic. (Smuts, 1926; Lewin, 1935; Goldstein, 1939; Latner, 1973; Perls, 1973). In this way, the organism is regarded as being "born with the capacity to cope with life" (Simkin, 1976, p.17).

Figure-Ground Differentiation/Pragnanz/Closure

Perls (1969) had been influenced by Wertheimer, Koffka and Kohler through their writings (although his wife Laura graduated in Gestalt psychology in 1926 from Frankfurt University). He had direct contact with Lewin and with Goldstein, working with the latter at the Goldstein Institute for Brain Damaged Soldiers in 1926. Goldstein expanded Gestalt psychology as a study of perception to Gestalt psychology as a study of the whole person (based largely on Koffka's work (1935)). His views appeared in *The Organism* (Goldstein, 1939), and came to be known as "organismic theory."

Goldstein argued that the primary organization of organismic functioning is the figure-ground. He proposed three dynamic concepts -- i) the equalization processes or tension) reduction systems that keep the organism centered or balanced; ii) the processes of "getting what one wants in the world" (a concept adapted by Perls extensively in psychotherapy); and iii) "the notion of self-actualization. In this theory, self-actualization is the "master motive." The satisfaction of any specific need becomes figure when it is the dominant need at that time for the whole organism. This notion was also incorporated almost verbatim from Goldstein (e.g., " Perls, 1969a). Perls (1969b) wrote that whilst working for Goldstein, he had not understood the term self-actualization, although twenty five years later, coming from Maslow it acquired more meaning. It was not until much later that the concept was fully understood and acquired.

Perls (1973, p. 3) stated that the first basic premise of Gestalt therapy is that

> " . it is the "organization" of facts or perceptions and not the individual items of which
> they are composed, that defines them and gives them their specific and particular

meaning.

Wheeler (1932) had recorded this notion as the first of his eight "organismic" laws, which hold that any item of reality is in its own right an integrated whole that is more than the sum of its parts. Fantz (1975) argued that academic Gestalt psychologists did not fully apply the principles of Gestalt formation (similarity, symmetry, pragnanz) to organic perceptions--e.g., feelings, emotions or body awareness, " . . . nor did they integrate the problems of motivation with those of perception" (Fantz, 1975, p. 81). Fantz claimed that this integration was successfully introduced by Perls. It may be, however, that Fantz had overlooked the work of Goldstein and other Gestalt psychologists, which shows how the figure-ground and other principles can be applied to the total motivation and action processes of individuals, and how physical and mental pathologies may he viewed in terms of these principles. It is significant that Goldstein subtitled his book *A Holistic Approach to Biology: Derived From Pathological Data in Man*. In fact, Perls appears to be simply the first to apply such principles, and especially that of the figure-ground, to psychotherapy.

This figure-ground concept was quickly assimilated into the main body of Gestalt therapy and today it is almost synonymous with Gestalt. The figure-ground principle stated that every perception is organized into a figure which stands out from a background. However, these are not necessarily properties of the stimulus object, but rather of the psychological field. Koffka (1935) devoted five chapters to the environmental field, and to figure-ground differentiation. Although Koffka did attempt to incorporate memory, will, and action, and referred to the "silent organization" of human experience, figure remained limited essentially to inside-the-form visual phenomena, and ground to outside-the-form phenomena.

Perls et al. (1951), introduced the concept of needs into the "psycho-therapeutic" figure-ground concept (i.e., needs arise and the Gestalt recedes when the need is satisfied). Koffka, however, referred to a super sensory ground, from which all sensory figures arise, and to which all figures return once needs have been satisfied. It can be argued that in Gestalt psychology as in Gestalt therapy, Gestalt formation is considered a primary characteristic of organismic functioning.

Perls (1973, p. 9) discussed the connection between needs and figure-ground differentiation:

> Formulating this principle in terms of Gestalt psychology, we can say that the dominant need . . . becomes the foreground, and the other needs recede. . . into the background.

A field that is poorly organized is still organized to the individual. The Gestalt psychologists' principle of pragnanz suggests that any psychological field is as well organized as conditions permit at that time. Thus it is possible, as was recognized by Koffka and Kohler years ago, that certain circumstances can interfere with the Gestalt formation process (e.g., stress, motivation). This concept was adopted by Perls, who went on to argue that in neurotic self-regulation, certain forces are prevented from having their full effect on the individual. Thus, the meeting or contact between the self and the environment may be less than optimal, resulting in a distorted perception of the contact process. Kohler (1947, p. 169) stated: "To a degree, the organization of the field may yield to stress . . .," where stress referred to the particular valence associated with the parts of the field. This position was endorsed by Perls (1947).

The impression that the Gestalt principle of figure-ground is merely the equivalent of "attention" in other systems is not implied here. The Gestalt psychologists emphasized figure-ground as a spontaneous and natural organization which does not depend on learning, but is an inevitable consequence of man's perceptual apparatus.

Perls et al. (1951), criticized the Gestalt psychologists for not having sufficient interest in the meaning of "ground." To Perls, ground is everything that is progressively eliminated from attention in the experienced situation. This criticism may be seen as an overstatement, for it is contrary to the principle of "what is, is" (implying acceptance of the self), (Perls, 1973); it is also contrary to the anti-analytic position generally espoused by Gestalt therapists and Gestalt psychologists. The later introduction of the concept of grooving shows how Perls' attitude to this concept changed (Baumgardner, 1975). Both the Gestalt psychologists and Perls adopt the position that the figure is more impressive, it dominates consciousness and is usually mentioned before the ground.

One of the important laws in Gestalt psychology was that of closure Koffka, 1935). Once characteristic of perceptions is the individual's movement towards closure. Closure for Perls was achieved by concentrating on the now, by rejecting intellectualization and flights into the past or future, and by accepting responsibility for ourselves (Ronan, 1977). Polster and Polster (1974) suggested that closure was more than a perceptual reflex. Rather, it is a personal reflex which is frequently thwarted by societal restraints and thus interrupts some processes which are forced into the background where they remain as "unfinished business." Perls stated the place of "closure" in Gestalt therapy:

> . . . one of the basic laws of Gestalt formation -- the tension arising out of the need for closure is called frustration, the closure is called satisfaction . . . With satisfaction, the imbalance is annihilated, it disappears. The incident is closed.

> Just as balance and discovery are met on all levels of existence, so are frustration, satisfaction and closure.
> (Perls, 1969b, pp.86-87)

Once closure has allowed the dominant need to recede from awareness, the individual returns to a state of equilibrium.

The Concept of Equilibrium

Many of the broad philosophical features of the Gestalt psychologists' work, such as the laws of pragnanz and closure, are related to a fundamental concept which runs through the whole of Gestalt therapy and Gestalt psychology -- that of equilibrium. The perceptual field and its underlying isomorphic cortical field are said to be dynamic wholes, which, like a magnetic field of force in physics, tends towards equilibrium. When the psychological field is disturbed by the introduction of new forces, the whole undergoes a new alignment of forces until equilibrium is once more established. In short, it is a fundamental property of percepts to tend towards stability, and to remain as stable as conditions permit. Perls stated:

> Man seems to be born with a sense of social and psychological balance as acute as the sense of physical balance . . . difficulties spring not from the desire to reject such equilibrium, but from misguided movements aimed towards finding and maintaining it.
> (Perls, 1973, p.27)

The Role of Attention, Awareness and Experience

Attention is important in Gestalt therapy because the therapist usually endeavors to facilitate the individual towards attending to cortical processes or phenomena. Ternus (1926, p.156) stated that attention

> . . . embraces the entire figure unless instructions to the contrary are given . . . and the center of attention typically coincides with the figural center of the presented object.

Attention for Perls is a deliberate way of listening or attending to the foreground, (1969a). Fantz (1975) regarded perception as a function of the figure-ground relationship and a direct result of the focus of attention and activity is called the figure or Gestalt, and what does not become part of the focus remains background (Latner, 1973). Perls would probably have concurred with Henle (1961, p.163) when she stated that " . . .attention intensifies the process which underlies the perception of an object."

The role of awareness in Gestalt therapy is somewhat obscure, although it is of fundamental importance. Polster and Polster (1974) described awareness or experience as one of the three touchstones of all Gestalt therapy, the other two being contact and experiment. Enright described awareness in the following manner:

> . . . awareness is a state of consciousness that develops spontaneously when organismic attention becomes focused on some particular region of the organism-environment contact boundary at which an especially important and complex transaction is occurring. Enright, 1970, p. 108)

A technique of Gestalt therapy is the development of the continuum of awareness -- the therapist facilitating a person increasing awareness in himself/herself. Most people interrupt or block awareness if it is unpleasant, and avoid it, developing defense mechanisms such as intellectualization or flights into the past or future, anxiety, denial, deflection or other "coping" strategies. Kreuger (1928) had foreshadowed such techniques when reflecting that an emotional state tended to be dissipated by attention to it as such. When attention and awareness come together -- the "fuzzy twin" -- there is an experience of the "now" (Baumgardner, 1975).

The greater the experience of the now, the more choices become available to the person. And, although it is not apparently mentioned elsewhere, Baumgardner (1975) credited Perls with saying that the greater the awareness, the greater the chance of tracing -- otherwise called a "grooving" process. This means that there is an after-image that links up the past and the acquisition of experience.

This concept is firmly rooted in Gestalt psychology. Gottschaldt (1926) wrote that past experience is an explanatory concept in that such experience constitutes an independent force, capable of modifying subsequent perception in a specific manner. Baumgardner (1975) concurred to a large degree -- the grooving always provides one part of the Gestalt -- the background.

The Here and Now

Perls (1966, p. 14) set out an equation of "now = experience = awareness = reality." The only awareness is here and now, whether it be the past (memories) or the future (anticipation) -- past and future events are in the present, as they occupy present processes. Naranjo (1970, p.66) contended that Gestalt therapy " . . . aims at the sub-ordination of these thought forms to life."

Perls insisted that to stray from the present distracts from the living quality of reality (Perls, 1969a). This emphasis on the "now" is consistent with the Gestalt psychologists' definition of psychology as the study of the immediate experience of the whole organism, the "now" as it is perceived (Marx and Hillix, 1973). Asch (1970, p. 170) in writing a brief outline of Gestalt psychology suggested that it " .

. . assigns a place of crucial importance in psychological enquiry to the data of immediate experience."

Murphy and Jensen set out the Gestalt psychologists' position with regard to personality and present immediate experience, a position endorsed by Perls:

> Just as the parts fail to explain the whole, so the past fails to explain the present or the present the future . . . at the present instant the future seems simply non-existent . . .
> (Murphy and Jensen, 1932, p.24)

The Concept of Boundaries and Neuroses

Hartmann (1935) referred to the work of Rubin who discussed the role of contours and boundaries Koffka, 1935) between figure and ground. Koffka went further and distinguished between the self and others. Kohler (1922, 1947) referred to the process whereby the environment meets the self (or the individual). Every part of the organism is said to be constantly influenced both by the outside world and by other parts within. Kubler's concept of boundaries suggested:

> . . . the inner states of any finite system develop relative to more or less fixed conditions along its boundaries and its interior.
> Kohler, 1922, p.61)

These then are boundary problems, the state of any region of the system at any particular time is also influenced -- even determined by the state of every other region. This principle constitutes the fundamental thought underlying the theory of Gestalten. Gestalt therapy practically reiterates this principle when it states that neuroses occur at the boundary.

Perls has incorporated this concept and amplified it in most of his books (Perls et al., 1951; Perls, 1969b, 1973):

> The study of the way in which a person functions in his environment is the study of what goes on at the contact boundary between the individual and his environment. It is at this contact boundary that the psychological events take place. Our thoughts, our actions, our behavior, and our emotions are our way of experiencing and meeting those boundary events.
> (Perls, 1973, p.17)

In fact, Perls did not make a clear distinction between the contact boundary and the ego boundary, which is the differentiation between the self and otherness. However, this concept of Koffka's has been largely incorporated, as shown by Perls' description of the identification and alienation functions of the ego-boundary. Inside the ego boundary there is a cohesion, love and cooperation, whilst outside the ego boundary is suspicion and strangeness (Perls, 1969b).

Gestalt therapy regarded neuroses as disturbances of the contact boundary:

> All neurotic disturbances arise from the individual's inability to find and maintain a proper balance between himself and the rest of the world . . .
> (Perls, 1973, p.31)

In the healthy individual, the process of Gestalt formation and recession flows smoothly. If Gestalten are not adequately fulfilled, blocked energy thus results in anxiety. Perls (1973) interpreted Goldstein's view of anxiety as implying that anxiety is the result of "catastrophic expectations." This

can lead to detachment and isolation of organismic parts, or in other words, a "splitting" of the personality. Baumgardner (1975) suggested that anxiety indicates that the individual has left the present for an imaginary journey into fantasy or the future. Anxiety is regarded as a substitute emotion which blocks awareness of what is really going on inside the individual. This is the view of Baumgardner (1975) and other ,Gestalt therapists who have reiterated Goldstein's (1939) description of the manner in which neurosis can result from anxiety.

The Mind-Body Position

Perls adopted the "holistic doctrine," which stated that man is a unified organism -- a fact Perls suggested was ignored by psychiatry and psychotherapy, which ". . . are still operating in terms of the old mind-body split" (Perls, 1973, p.9). However, we only need to refer back to Wertheimer, who, discussing the mind-body split stated: "The principle here, is that something mental is meaningfully coupled with something physical" (Wertheimer, 1925, p.8). Thus, to observe the physical is to infer the mental. It was further expanded by Wertheimer, who carefully explained how often it is that various physical processes are "Gestalt identical" with the mental processes.

Gestalt psychologists formulated the law of "psychophysical isomorphism" which began from the prima facie dualism of mind and body. This notion further expands:

> . . that molar events in experience are structurally identical to the corresponding molar physiological events in the brain.
> (Henle, 1978, p.25)

This is, in fact, a dualist position. Perls' position on the body-mind debate is not entirely clear. A monist position is espoused in some places when he maintained that we do not have a body but rather: "We are a body, we are somebody" (Perls, 1969a, p.6). *In Ego, Hunger and Aggression*, he suggested that " . . . body and soul are identical *'in re'* though not *'in verbo,'* the words 'body' and 'soul" denoted two aspects of the same thing" (Perls, 1947, p.33). Further elaborations of Perls (1947) suggest that dualistic and parallelistic theories are based on an artificial split which has no existence in reality. Although Perls considered himself a monist, a number of extracts from his writings suggest that he was not entirely a monist, but rather an uncertain dualist because he referred (1947, p.110) to " . . . purely mental experiences which comprise " . . . wishes, phantasies and daydreams . . ."; hardly the words of a pure monist. On the whole, it would appear as though he adopted a double aspect theory.

The position as espoused by Pens was not dissimilar to that of Wertheimer (1925) who stated that when a man is timid, afraid or energetic, happy or sad, it can be shown often that the course of his physical process is "Gestalt identical" with the course pursued by the mental process. Perhaps such statements influenced Perls when he introduced ". . . the concept of the unified field" which stated that in psychotherapy, what a person does gives the therapist clues as to what (s)he thinks (Perls, 1973, p. 12). Gobar (1968) in referring to psychotherapy, stated that . . the concept of "'psychological equilibrium' is analogous to the concepts of 'physical equilibrium' and 'physiological equilibrium.'" If Gobar is adopting the word "analogous" in the same way that the *Shorter Oxford Dictionary* (1973) explains its meaning, that is, "equality of ratios" or equivalency" then the respective positions of Gestalt psychologists' usage and that of Perls may be seen as somewhat confused.

Henle stated in her book *Documents of Gestalt Psychology* (1961) that Gestalt psychologists hold that expressive behavior reveals its meaning directly in personality. The approach according to Henle, and one adopted by Perls, (1947, 1969a) was based on the "principle of isomorphism" (Henle, 1961,

p. 308), whereby processes in one medium are similar in their structural identity to those in a different medium. Applied to body and mind, this meant that:

> . . . if the forces which determine bodily behavior are structurally similar to those which characterize the corresponding mental states, it may become understandable why physical meaning can be read off directly from a person's appearance and conduct.
> (Henle, 1961, p.308)

Another direct quote from Henle is compatible with the views expressed by Perls in most of his works:

> The way a person dresses, keeps his room, handles the language . . . can be called expressive in that they permit conclusions about the personality or the temporary state of mind of the individual.
> (Henle, 1961, p.302)

Kohler insisted strenuously on a "special type of parallelism" when he wrote:

> When someone experiences that flash by which a new idea or the solution of a problem comes to him, he will suddenly interrupt his walking or abruptly strike his head. Here both his inner experience and his outer aspect will exhibit the same interruption of continuity.
> (Kohler, 1929, p. 249, quoted by Hartmann, 1935, p. 48)

Henle's criticisms are somewhat diluted when considering one section of Hartmann's book *Gestalt Psychology*, published in 1935. Hartmann stated that: " . . . the monism of Gestalt is implied" when it is asserted that the psychological and the physical are " . . . one and the same reality (and) are expressed in two different conceptual systems" (Hartmann, 1935, p.71). (It is a Zen notion that mind and body are not one, not two, but between one and two). Further, Gestalt psychology equated bodily with mental events since the same configuration is found in both. It is this concept which appears to be one of the most important in Gestalt therapy. The therapist can only ever be in touch with a client from various extrapolations and "interpretation" of physical processes from mental material. The total organism is not to be analyzed into parts. Perls stated that:

> We believe further that the "mental-physical" or "mind-body" split is a totally artificial one, and that to concentrate one either term in the dichotomy is to preserve neurosis, not to cure it. . .
> (Perls, 1973, p.53)

This line of thought represents another direct influence of Goldstein on Perls. Goldstein suggested that loss of categorical thinking (inability to abstract and classify) results in a limitation of orientation and of action. In all his writings, Perls emphasized the importance of using words which express the precise meaning of what he wanted to convey. Pathology, he stated (Perls, 1947) produces both distortion of word meaning (incorrect vocabulary) and wrong application of grammar (incorrect syntax). He (Perls) encouraged one to learn the value of each word, and to appreciate the power hidden in the "logos." Avoidance of ego language (use of "I" when speaking of oneself) and the avoidance of personal responsibility are closely related.

Psychotherapy and Integration

Gobar (1968) is one of the few authors to have discussed the role and purpose of psychotherapy in

Gestalt psychology. He suggests that in Gestalt theory, all psychological disorders involve, in some form or other, the destruction of a basic psychological structure and a concomitant generation of a "bad configuration." This results in a pervasive disturbance of the equilibrium of the psychological makeup as a whole.

It is important to examine the rationale for therapist assistance/intervention with clients. Perls (1973) suggested that successful therapy " . . . frees the patient's ability to abstract and integrate . . . his/her abstractions" (p. 103). The long term goal of therapy:

> . must be to give him the means with which he can solve his present problems and any
> that may arise tomorrow or next year.
> (Perls, 1973, p.63)

If successful therapy integrates the personality (Perls, 1973), then the approach described by Gobar (1968) has much in common with that of Perls. According to Gobar, the concept of "cure" in psychotherapy (cure comes from the Latin *cura* meaning care) can be seen as:

> . . . the process of the reconstruction of the psychological system and the resultant
> restoration of equilibrium."
> (Gobar, 1968, p.128)

For Gobar, the principle of equilibrium holds for all psychological processes including the perceptual and cognitive at all genetic levels. In addition, it also " . . . constitutes the explanatory principle for the fundamental process of adaptation of the organism-environment" (Gobar, 1968, p.147).

Goldstein is quoted as describing the process of integration in this way:

> All of a person's capacities are always in action in each of his activities. The capacity that
> is particularly important for the task is in the foreground; the others are in the
> background. All of these capacities are organized in a way which facilitates the
> self-realization of the total organism in the particular situation. For each performance
> there is a definite figure-ground organization of capacities . . .
> (In Polster and Polster, 1974, p.66)

One of the therapeutic tools that Perls (1969a, 1973) adopts when a person cannot remember a dream is to request the person to fantasize what the dream would be if (s)he could remember it -- a method which some regard as free association (Perls et al., 1951). Hartmann (1935, p.65) stated that: "Wertheimer actually won some repute as an authority on the diagnostic or detective use of the free association method." Once again, the influence of Gestalt psychology appears to have been present.

Perls adopts a position on awareness similar to that espoused by various writers on Gestalt psychology such as Hartmann (1935). One of Perls' statements which has been popular in the literature gives us a clear insight into the nature of cure in psychotherapy: " . . . awareness per se -- of and by itself -- can be curative (cited in Baumgardner, 1975, p.25). Hartmann writes that " . . . an emotional state tends to be dissipated by attention to it as such" (Hartmann, 1935, p.83). Kreuger also added to this concept of cure when stating:

> An emotional complex loses in its Intensity and plasticity of its emotional character to
> the degree that it becomes analyzed, so that its parts become relatively separated, or that
> the partial moments in it come out clearly as such.
> (Kreuger, 1928, p.62)

Once again, the writings of early Gestalt psychologists appear similar to those of Perls.

Conclusions

This paper has indicated a number of areas where the depth and extent of the influence of Gestalt psychology on Gestalt therapy appears evident. Gestalt psychology has influenced not only the theoretical foundations of Gestalt therapy, but also the realm of philosophical and practical applications of Gestalt therapy.

Gestalt therapy depended a great deal on Gestalt psychology. The arguments of Arnheim, and more recently Henle, that there is no relationship between Gestalt psychology and Gestalt therapy are thus misleading.

I conclude that although Perls was remiss in acknowledging theoretical precursors, his work was certainly influenced by a number of sources, but particularly by Gestalt psychology.

References

Arnheim, R. The Gestalt theory of expression (1949). In Henle, M. Ed.) *Documents of Gestalt Psychology.* Berkeley, California: University of California Press, 1961.

Asch, S. Gestalt theory (1968). In Sills, D.L. Ed.) *International Encyclopedia of the Social Sciences,* Vol. 16. U.S.A.: Macmillan, 1968.

Back, K.W. *Beyond Words.* Baltimore, Maryland: Pelican Books, 1973.

Baumgardner, P. *Legacy from Fritz and Gifts from lake Cowichan.* Palo Alto, California: Science and Behavior Books, 1975.

Enright, J.B. An introduction to Gestalt techniques (1970). In Fagan, J., and Shepherd, I.L. Eds.) *Gestalt Therapy Now.* Palo Alto, California: Science and Behavior Books, 1970; New York: Harper Colophon, 1971.

Enright, J.B. An introduction to Gestalt Therapy (1975a). In Stephenson, F.D. Ed.) *Gestalt Therapy Primer.* Springfield, Illinois: Thomas, 1975

Enright, J.B. Gestalt Therapy in interactive groups (1975b). In Stephenson, F.D. Ed.) *Gestalt Therapy Primer.* Springfield, Illinois: Thomas, 1975.

Fantz, R. Fragments of Gestalt theory (1975). In Stephenson, F.D. Ed.) *Gestalt Therapy Primer.* Springfield, Illinois: Thomas, 1975.

Gobar, A. *Philosophic Foundations of Genetic Psychology and Gestalt Psychology.* The Hague: Martinus Nilboff, 1968.

Goldstein, K. *The Organism.* New York: American Book Co., 1939.

Gottsehaldt, K. Gestalt factors and repetition (1926). In Ellis, W.D. (Ed.)*A Source Book of Gestalt Psychology.* London: Routledge and Kegan Paul Ltd., 1938.

Hartmann, G.W. *Gestalt Psychology.* New York: The Ronald Press Company, 1935.

Henle, M. *Documents of Gestalt Psychology*. Berkeley: University of California Press, 1961 -

Henle, M. Gestalt psychology and Gestalt Therapy. *Journal of the History of the Behavioral Sciences*, 1978, 14, pp.23-32.

Koffka, K . *Principles of Gestalt Psychology*. London: Kegan Paul, Trench, 1935.

Kohler, W. Some Gestalt problems (1922). In Ellis, W.D. (Ed.) *A Source Book of Gestalt Psychology*. London: Routledge and Kegan Paul Ltd., 1938

Kohler, W. *Gestalt Psychology*. New York: Liveright, 1947; New York: Liveright Paperbound Edition, 1970.

Kreuger, F. *Witlenberg Symposium on the Feelings and Emotions*. Clark University Press, 1928.

Latner, J. *The Gestalt Therapy Book*. New York: The Julian Press, Inc. 1973; U.S.A.: Bantam, 1976.

Lewin, K. *A Dynamic Theory of Personality*. New York: McGraw-Hill Book Company, Inc., 1935.

Marx, M.H., & Hillix, W.A. *Systems and Theories in Psychology*, (2nd edition). New York: McGraw-Hill Book Company, 1973.

Murphy, G. & Jensen, F. *Approaches to Personality*. New York: Coward-McCann, Inc., 1932.

Naranjo, C. Present-centredness: Technique, prescription and ideal (1970) In Fagan, J., and Shepherd, I.L. (Eds.) *Gestalt Theory Now*. Palo Alto, California: Science and Behaviour Books, 1970: New York: Harper Colophon, 1971.

Perls, F.S. *Ego, Hunger and Aggression*. Woking, England: Unwin Bros., 1947; New York: Vintage Books, 1969.

Perls, F.S. Four lectures (1966). In Fagan, J., and Shepherd, I.L. (Eds.) *Gestalt Therapy Now*. Palo Alto, California: Science and Behavior Books, 1970; New York: Harper Colophon, 1971.

Perls, F.S. *Gestalt Therapy Verbatim*. Lafayette, California: Real People Press, 1969a; New York: Bantam Books, 1974.

Perls, F.S. *In and Out the Garbage Pail*. Lafayette, California: Real People Press, 1969b; New York: Bantam Books, 1972.

Perls, F.S. *The Gestalt Approach and Eyewitness to Therapy*. Palo Alto, California Science and Behavior Books, 1973; New York: Bantam Books, 1976.

Perls, F.S., Hefferline, R.F., & Goodman, P. *Gestalt Therapy: Excitement and Growth in the Human Personality*. New York: Julian Press, 1951; Harmondsworth, Middx.: Penguin, 1976.

Polster, E., & Polster, M. *Gestalt Therapy Integrated: Contours of Theory and Practice*. New York: Vintage Books, 1974.

Ronan, N.J. The Contact Boundary in Gestalt Therapy: Some Insights and Recommendations. Unpublished Honors Thesis University of Wollongong, 1977

Rosenfeld, E. An oral history of Gestalt Therapy part two: A conversation with Isadore From. *The*

Gestalt Journal, Fall, 1978, 1, 2, pp.7-27.

Ruitenbeck, H.M. *The New Group Therapies*. New York: Avon, 1972.

Shepard, M. *Fritz*. New York: Bantam Books, 1976.

Simkin, J.S. *Gestalt Therapy Mini-lectures*. Milbrae, California: Celestial Arts, 1976.

Smuts. J.C. Draft letter to the editor of the Nineteenth Century (italics) (1895). In Hancock, W.I.L., and Van Der Poel, J. (Eds.) *Selections from the Smuts Papers*. Volume 1, June, 1886 - May, 1902. Cambridge: The University Press, 1966.

Smuts, J.C. *Holism and Evolution*. London: Macmillan and Co., Limited, 1926.

The Shorter Oxford English Dictionary (3rd edition). Oxford: Clarendon Press, 1973.

Ternus, J. The problem of phenomenal identity (1926). In Ellis, E.W. *A Source Book of Gestalt Psychology*. London: Routledge and Kegan Paul Ltd., 1938.

Wallen, R. Gestalt Therapy and Gestalt psychology (1957). In Fagan, J., and Shepherd, I.L. Eds.) *Gestalt Therapy Now*. Palo Alto, California: Science and Behavior Books. 1970: New York: Harper Colophon, 1971

Wertheimer, M. Gestalt theory (1925). In Ellis, W.D. (Ed.) *A Source Book of Gestalt Psychology*. London: Routledge and Kegan Paul Ltd., 1938.

Wheeler, R.W., & Perkins, F.T. *Principles of Mental Development*. New York Thomas Y. Crowell Company, 1932.

Yontef, G. Gestalt Therapy: Clinical phenomenology. *The Gestalt Journal*, Spring, 1979, 11, 1, pp.27-45.

If reality is a seamless whole, then all disciplines investigating that reality are intimately connected. No one branch of knowledge can develop separately from all others and do full justice to itself.

Introduction   Synthesis   Holistics   Spiritual Responsibility 4

3 Forums **to develop the synthesis of:**

Economics	Faiths	Education	Politics	Psychology	Arts
Esoterics	Symbiosophy	Biosophy	Philosophy	Science	Health

The study/research/discussion events centering on these subjects are intended to promote efforts to train the mind to see fields of knowledge as integral parts of one interrelated whole.

Experts are welcomed but everyone is encouraged to develop and hold informed and considered views on others' expertise.

The idea behind these forums is to evolve a new kind of learning institution in the form of future-evolution-oriented places of learning with faculties sharing a 'Round Table'.

The notion of a round table is meant to convey a collaborative and friendly approach to learning for the love of a subject, not necessarily for academic benefit or career gains.

Goto TOP. Return to Manifesto:

Forums to develop holistic understanding are held depending on demand.

Introduction (1)

According to a holistic view of knowledge any subject is a composite of all other subjects.

A holistic philosophy requires a holistic theory of knowledge--a new epistemology.
Epistemology: Theory of the method or grounds of knowledge. Return

A theorem of holistic knowledge: Any subject is a composite of all other subjects.

The symbol below illustrates this.

...A circle with twelve lines radiating from the centre (but do not join at the centre) and extending beyond the circle creating twelve equal sectors...

Every element indicates an important idea. The sectors extend into infinity both outwards and inwards. The circle and the lines show that the mind must have boundaries when it is dealing with subjects. The centre is empty because the subjects converge and fuse into a composite whole.

Applying holistic thought (2)

Philosophers and scientists have recognised the need for this approach. The study of whole systems has been developing during the second half of the century under such headings as general systems theory and systems sciences. Interdisciplinary research, cybernetics, operations research, systems

analysis, are all disciplines engaged in understanding problems in a holistic way. Not an easy task: *...everything in the universe is connected to everything else... and if each relation helps to determine the nature of the thing that is related, then everything is what it is because everything else is what it is. This is perhaps rather confusing, and sounds metaphysical. But the resulting thought is important: the totality of what exists is an integrated system, and anything split off from the totality and considered separately is incomplete. In practice, we have to split things off and consider them separately, but we shall have to be extremely careful how we do it.*

We cannot bring everything into consideration and somehow must determine the boundaries of the problem in hand. Again, in practice, the scientist needs to enlarge the scope of her study in every dimension until the factors she is bringing in seem to make no tangible difference to the answers she is getting. At the very least, this process is going to take her outside the apparent problem area by one step in every direction. (Stafford Beer, Decision and Control, 1996)Goto TOP

3. What is holistic thought?

Dealing with wholes requires specific methodologies. The kinds of methods required emerge from the qualities natural to whole systems. General Systems Theory and the Systems Sciences mark mans developing ability to study phenomena in a holistic way.

One of the components within the holistic theory of knowledge is the holistic knowledge base. Its representation is the mandala described earlier. A better model can be a solid with twelve 'corners' and 20 triangular sides -- an icosahedron. The thirty 'edges' then naturally integrate the subjects into a holistic object.

The subjects are not separate entities but made up of facets of an intuited whole. The twelve-ness, though arbitrary, is the result of a useful convention.

Twelve subject facets give an enumeration where the classes are not meaninglessly general and not too numerous to clutter the representation with unnecessary detail. Resolution of finer details can be easily achieved by subdividing the facets and/or combining separate facets or their sub-divisions.

The mandala also represents 'faculties' of a new type of learning circle. The vision is to attract for every facet *a group of enthusiast-specialists*--ideally twelve for each facet--in love with chosen fields of study and life application. Goto TOP Return to Forums Return to Manifesto

Avatar of Synthesis

According to Alice A Bailey (The Externalisation of the Hierarchy), one of the Beings associated with human development in the near future is the *Avatar of Synthesis* so named because of the quality and objective of the force It wields. As the Being Itself does not take physical form, a lesser Avatar who can descend into the physical plane is waiting a call from humanity and thus transmit the stimulus and

quality of the force of the greater Avatar. Return

Knowledge without action is sterile; action without knowledge is blind.

Knowledge of spiritual matters is also sterile unless it is expressed through action *in* the world. Love is not enough. It is *love in action* that has the power to transform the world. As a saving force, spirituality is to be practised *through* physical world reality not in parallel with it.

The challenge to people of goodwill is to perceive the opportunities in the crisis facing humankind. A prerequisite for meeting this challenge is the transforming, consciously, of goodwill into will-to-good. The world does face a megacrisis of resource shortage, overpopulation, pollution, alienation and crime, confusion, fear of the future, disconnection with the past. All these problems may herald a catastrophe or, through the effort needed to eliminate them, can lead to a glorious new future.

Human evolution is the unfoldment of spirituality through the plane of manifestation. This unfoldment is at a cross-roads as evolution itself had often been at cross-roads in the past; and we are responsible for the outcome through conscious evolution. It is true that we have not done very well so far; but we can do a lot better as implied by our capacity to learn from mistakes, if we choose, and by the obvious power to change our environment for better or worse.

As appropriate ways of knowing are essential to guide appropriate action, it is proposed to *somehow* develop an Institute of Holistic Knowledge or Institute of Holistics. Some basic ideas towards this [...] If interested, please help us to refine and develop them. The weekly forums are intended to be part of this effort and the subjects are treated as interdependent aspects of the whole which is "more than the sum of the parts". Goto TOP

Holism as a philosophy is expounded fully in a remarkable book, Holism and Evolution by General Jan C Smuts written in 1926.

A recent book The Fifth Discipline- Art and Practice of the Learning Organization by Peter M Senge on systems thinking in a managerial context, is a good source of ideas about knowledge as a holistic enterprise.

Holism suffers the disregard of the academic world. The term is impishly mis-pronounced as 'woolism'. The real problem is that while the methodology is sound, it is more difficult to make it rigorous to meet the standards which analytic and compartmentalized thought can achieve. (See the attempt by Stafford Beer quoted earlier.)

Social Change Forums--Discussion Events (also known as Neighbourhood Forums for Social Change) 1997/98

Conscious Evolution for the 21st Century (4º)

With Humankind a species has appeared in evolution which can direct its own future. This is conscious evolution.

> Man is in the making; but henceforth he must make himself. To that point Nature has led him, out of the primeval slime... Let him look no more to her for aid; for it is her will to create one who has the power to create himself. If he fails, she fails; back goes the metal to the pot; and the great process begins anew. If he succeeds, he succeeds alone. His fate is in his own hands... *G. Lowes Dickinson,* quoted by Kenneth Walker in *Life's Long*

Journey

The biggest danger to a civilization is the corruption of its philosophy and the devaluation of the role of ideas in the public mind. Return

Culture, civilisation, the quality of private and social life, the values we embrace; all this is expressed in practical ways through the institutions we build in society. And the human aspirations that give purpose to these institutions are, in the final analysis, the result of the dominant philosophy in society. Return

Psychology : A Holistic Approach

If the understanding of man's behavior represents one of the developmental barriers and possibly a key to the solution of global problems, then sucesses reached by psychology are clearly inadequite.

I belong among those, who are dissatisfied with the state of contemporary theoretical psychology and seek for ways to make it more adequite in regard to tasks we all face.

I found myself to share the opinion, that theoretical psychology does not cope with some of the discoveries which theoretical physics made already at the beginning of this century, it did not transform their underlaying ideas into the conceptual framework of psychology.

As a result, we have countless number of particular theoretical approaches to a vaste number of problems of differing levels of generality in theory and practise, a real Babylonian mess of professional terminology. Unbearable width of approaches, ranging from narrowly focused empirical research in a positivistic "hard science" tradition, to very subjective speculations on the boarder with "occult sciences" - with an effort to establish an individuality of "soft sciences" somewhere in the middle.

I respect the standpoint of a number of dissatisfied psychologists, that some traditionally psychological concepts may not be scientifically approached (Koch S.,1981). The use of such criteria of scientific status for a theory as are the degree of formalization and quantification, high degree of explanatory power and the legitimacy of generalizations, even predictive power, will reveal that very few concepts, models and procedures in psychology qualify.

Within the context of our country and also of my generation, there is an exceptional opportunity to seek for a new paradigm in psychological theory building. The ties of one-sided and universal marxistic philosophy disapeared. Also, the positivistic approach to the scientific endeavour seems to undergo a major tranformation. The dramatical threat of a growing number of global problems forces us to seek for new answers and solutions. Even though the development of knowledge in natural sciences tought us that there are no definite answers to global questions, new rearangement of known concepts results into usefull discoveries.

If nuclear physicists reached a conclussion voiced by Niels Bohr, that "I am convinced today, that theoretical physics is basically a philosophy", then for the search of a new quality in theoretical psychology it is valid twice as much.

Who, among us, may declare explicitly the philosophical foundations of his (her) scientific endeavour in psychology ? Who, among us, is prepared to transform recent changes in philosophy of scientific work into psychological theorizing - either in respect to the subject matter of his (her) work - or in respect to the methodological approaches used ?

If nuclear physicists reached rather sceptical conclussions, that

- there is no absolute space and time, both may be curved,
- sequences of causes and their consequences are subjectice views,
- knowledge and understanding are relative and of probabilistic nature,
- objects (ment particles) are rather events and processes,than static entities, they change during their interaction with the environment and observers stanpoint, - in order to understand the internal

structure of
objects,it is necessary to understand the environment: either we understand things as whole - or nothing,
how are we going to absorb it ? How would outlines of "quantum psychology" look like? To which areas of psychological theorizing would it apply ? How come that - up to my knowledge - there are so very few psychologists who would take a chance and play this intellectual game ? The body of foreing literature available to us is growing fast and much of it inspires us to do so. As Bronowsky says "knowledge is something very personal, responsible and it is an endless adventure on borders of uncertainity" (Bronowsky,1985). Where are the men of courage (willing to play) in our psychology ?

As far as my philosophical base for next psychological theorizing is concerned - I go for holism of John Smuts and his descendants.
I am convinced that this standpoint may be right for me to rethink the working field of psychology again. From earlier times I know, that without an explicit psychological theory of environment, we may not generalize conclusions over individual subjects justly. I am certain, that just due to the absence of psychological theory devoted to the environment, the psychology of personality models are logical traps - with their explanatory and perhaps even predictive powers severly limited.Also, social psychology,though better off,does not have an adequite theory of environment at its disposal. What we really need is a "typology of situations" as a hard core of environmental psychology theory.Contemporary approaches toward the psychology of environment, focused upon the influence of physical stimulae upon man,studies in proxemics and place relevant behavior are really not what I mean. Cultural psychology might be much closer.Nevertheless, an adequite theory of environment, a taxonomy of psychological space dimensions, is lacking. What seems to be clear is, that there is a basic uncertainity even in respect how to approach a problem stated this way. It may very well be, that shortcomings of personality models theorizing and problems in defining "psychological space" will be solved by the developments by a new :science of consciousness - much of what C.G.Jung would like to hear.Wholeness, high degree of contradictory change, uncertainity, multidimensionality - those are just some parts of the puzzle.

If I will speculate on some basic postulates of psychological space of man (as did some well known psychologists before - E.Brunswik,E.C.Tolman,K.Lewin- just to name older classics),then I realize that :

1 - the reality is of many layers and there may be more paradigms in existence simultaneously - under condition, that they are mutualy compatible, homogeneous or complopementary,

2 - only some parts of psychological space are accessible to scientific treatment, some defy it - which is what remains to be discussed,

3 - objectivity and subjectivity in mutually permeable. The interpretation of meaning in respect to external objects is given by values shared by the subject. The value orientation is,however, endless in variability and context - even though they are some typical for a given time and culture,

4 - if we want to study dynamical changes of the psychological space, we have to take them out of context. If we want to study events°context, we have to break changes into particular steps.Either way we loose the second part of relevant circumstances.

The theory of psychological anvironment will have to be concerned with an image of three, relatively autonomous areas:

1
-'personality of an individual (internal "me", still broken up into consciousness and subconsciousness),

2
- surrounding psychological space of an individual,

3
- macro-space of social psychology and culture.

These three worlds are,however, one - as relativistic physicists say. Their distincion results from differing points of viw and is otherwise meaningless.

Anyway, the image of external psychological space will have to have define and structure the following characteristics :

- the extent of the space,
- the content of the space filled up by conscious objects, focuses and shaded areas of subcounsciousness, imaginary and real objects with their attributed meanings - goals, barriers, indifferent ones.The structure of mutual relations among objects,
- internal and external boundaries - with a difficult distinction of what is inside or outside,
- a statement regarding dynamics of the field as a whole and its distinguishable objects,
- the time orientation and parameters (linearity, nonlinearity of time, direction of time) of the whole and its parts.

Subjective interests may well serve as a gravitation in the space with "black holes" being terms beyond norms of usual. All this is subjected to individual differences, changes over time during onthogenesis, cross-cultural differences.

An important concept will be - of course - situations, something like objects in a focus of consciousness, a cross-road of possible developmental trajectories within that part of psychological space, over which one has certain control. Our cognition, decision-making and behavior then reflects our dual determination - individual and social, subjective meaning attributed to external objects. Our behavior resembles light in many ways - we behave like both: particles and waves.

I believe, that a satisfactory psychological theory of environment was not postulated yet due to these reasons :

- theoretical psychologists are too much submerged into solving the puzzle of subjectivity itself, integrating a personality theory model and luck the necessary distance to sustain a complete, holistic, integrative view,

- psychological environment image has to be n-dimensional.We are thus determined by the limits of our own imagination - we may imagine just three dimensional spaces with time being the fourth dimension. Even mathematicians, working with n-dimensional spaces are not of much use : they do not know how to handle quite vague, uncertain and unspecified concepts

- sufficiently integrative and holistic approach is not available for the contemporary science based upon conceptual thinking.What we also need, is to include phenomenae which defy conceptual thinking and communication (intuition based decision-making may serve as an example).

To discuss these basic theoretical and philosophical problems with more productice outcomes, it is necessary to invite specialists from more disciplines together :

- psychologists, philosophers of science and methodologists who know what they want to express and

also are able to say which existing parts of the puzzle are compatible,

- mathematicians, specialists on dynamical modelling of determinsitic and stochastic processes,

- specialists on vizualization means (artists, computer and holograhpy specialists).

We have to set a basic and broad network of relevant concepts, leave unspecified - but important spaces unstructured, have them vizualized - to obtain some working image.

An adequite image of non-material world of man is all the more important to understand the real world we live in.

A qualitative increase of understanding which we have to obtain is simmilar to that one reached by weather-forecasters. The difference is, that our backwardness will result into more fatefull consequences that just to get sprinkled by rain.

Notes :

Bronowski Jacob: The Raise of man,Odeon,Praha,1985
Koch Sigmund:The Nature and Limits of Psychological
Knowledge,American Psychologist,36,3,275-269,1981

PhDr.Lubomír Kostron,CSc.

20.9.1992

[handwritten:] Holisma aplicado al conocim. del ser - natural.

A unifying overview towards a Natural Philosophy of Wholeness?

by

Heiner Benking

There is much argument over whether one particular "map" or view of the world is correct over all the others. It would appear that it is this argument which is *wrong*, as there are many ways to see things, from different angles and from different perspectives. The point is to have a simple coherent and practical model, which truly makes sense and can be utilized adaptively. The main issue is to go beyond -- and connectively *among* -- the isolated models and coordinate them together, see the whole construction, and learn from being part of it all ... individual while yet linked everywhere.

L4battle.jpg (29552 bytes)

Fig 1. Beyond the Battle of Perspectives

A remedy for the problem given above may be to provide orientation within a Panorama of Understanding . Designed in the following three modules it allows integral thinking and coalescence of different aspects, facets, and views:

1. The definition and concept of Ecology to visually and conceptually integrate and interact along and across hierarchical scales (like the subjects axis, and magnitude and time scales), to present proportions and consequences and allow indication and communication about the interconnectedness of Nature. This building block is called: ***Blackbox Nature or Rubik s Cube of Ecology*** and was developed 1990 for the German Chancellery to exhibit GLOBAL CHANGE - Challenges to Science and Politics (presently up-dated). The Cube combines high resolution art work and scientific visualizations to show selected windows or frames into the precious scale-transcending germ we call Nature. With many windows left blank or black we are to realize our limited understanding, our only intuitive approach to beauty and harmony we find in

Nature, and why decency and cautioning any action is recommended.

As black-box is a term which typically used in engineering to approach a subject as a whole, taking as a first preliminary step the details not into question, we feel it is indicated to not only say that the box could also be called a 'white open space'. But as the box is physically a black box exponent and does not allow to look inside, with the intention to make us curious, widen our attention and make us humble the more we gaze and as the term blackbox was used in the intended sense of an INNOVATIVE SOCIETAL LEARNING tool and concept in an early Club of Rome report as follows:

"Innovative societal learning seeks to restore active learning to those in society conventionally confined to a passive role of assimilation. Key to this goal is participation that goes beyond mere invitations to accept given products. To encourage innovative societal learning, true participation must enable people to open and inspect the "black-boxes" of knowledge, to question their relevance and meaning, and to re-design, re-combine, and re-order them where necessary. Effective participation therefore does not mean paying lip service to those who in the past have been deemed to count less than others, but rather ensuring a real contribution of the entire society". ("A Report to the Club of Rome") No Limits to Learning; bridging the human gap, James W Botkin, Mahdi Elmandjra, Mircea Malitza, (pp 80-81) Oxford, Pergamon Press, 1979

blackbox.jpg (55005 bytes)
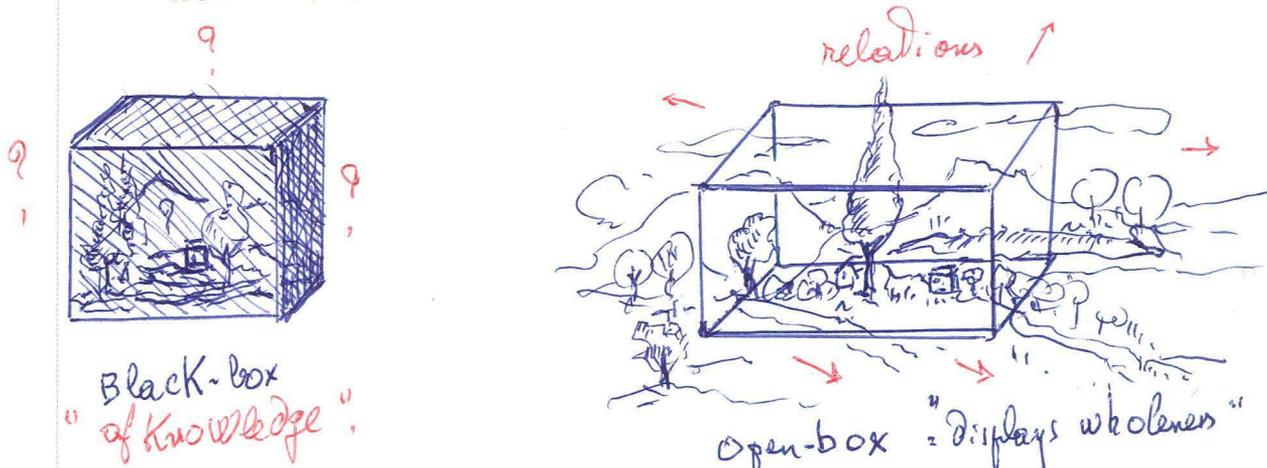
Fig. 2: **The Blackbox Nature or Rubik's Cube of Ecology**. Bridging and composing subjects, magnitudes, and time frames is the challenge of ecology and will ease understanding and caution us by making us aware about how little we know. The open box, bridging beyond boxes and domains, presents an implicate higher order which allows us to map patterns, processes and dynamics by providing a pointer or global index by a top-down approach. The Box and Panorama display wholeness and interconnectedness and allow us to point at and store relations, scales, proportions and consequences in a repeatable format. Bridging disciplines and other hierarchical scales and interacting along and across scales is required for people studying the multi-disciplinary field of ecology. This is necessary as day-to-day, scientific and political discourses are mixed up. This general concept not only applies to ecology, but also to the exchange of information between different disciplines.

2. Integrate what we know and focus on what we do not know in one framework or picture. As this framework needs to be deeply structured within a higher order, (similar to implicate orders), we propose the following set of three connected nested

scaffoldings, which form one conceptual superstructure and leave time as a dimension ruling all master reference schemes.

2.1 The land-scape as the native and basic space for human experience and understanding, for panning and zooming, using telescopic approaches to scapes (deep structured spaces). As optics and ethics are etymologically grounded we see approaches from varying distance in any environment as a way to clarify and enlighten structures and patterns. (The resulting understanding and transparence through means like lenses, the "characteristica universalis" by Leibnitz, or computing in modern times was always exciting and considered mystic as long as people could not see and follow what was going on). - *Scape* is a term we use to indicate deep structured spaces.
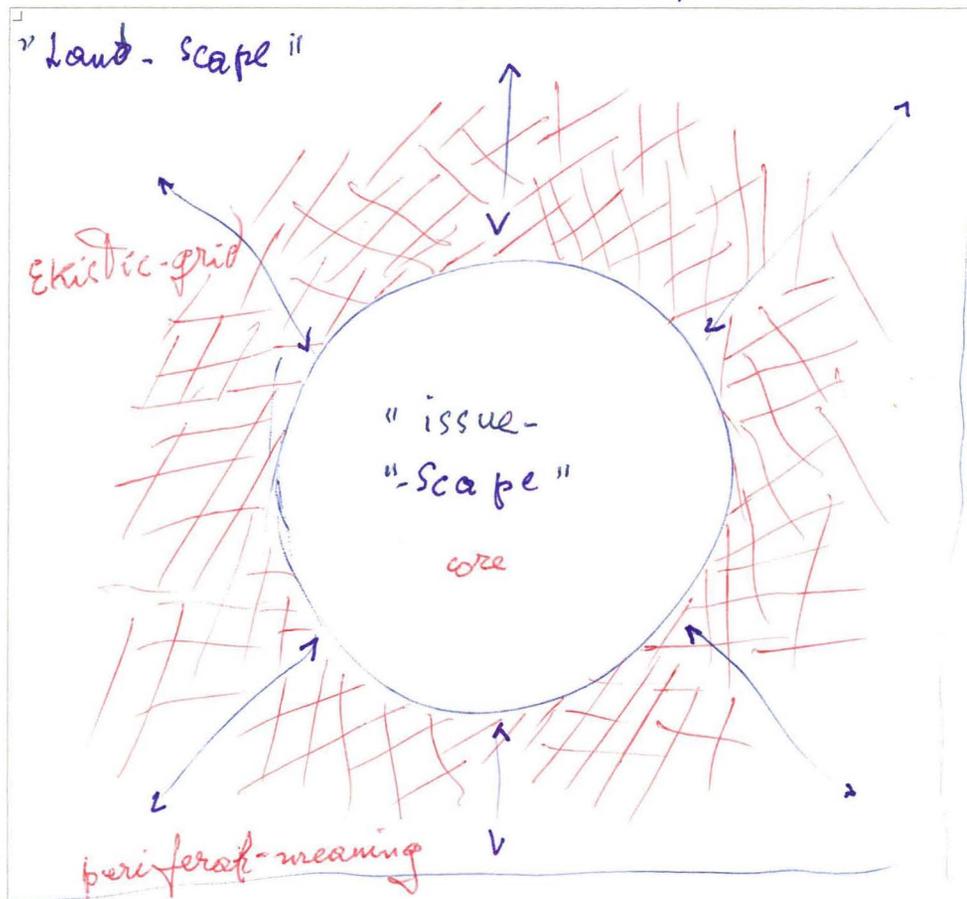
Fig 3: **The different forms of imaginary Black boxes show conceptual theme-scape or issue-scape**. The original subject axis of the Cube was based on the Ekistic grid, as conceived by Doxiadis in the field of planning sciences. Ekistics is also derived from term oikos (Greek base for ecology). We can search not only for words, but for areas or bodies of data and knowledge if we consider word as fields as Jan Smuts, the founder of the concepts of Holism, proposed. So if we embody concepts, we can the an overlying of of concepts, meanings located in different domains and as spheres broader and narrower reach of word in certain disciplines. There is a highly debated concept in the filed of linguistics which proposes to put words into space. In such a way we can imagine space between words, as Aldous Huxley wrote... After agreement on location and content of words, like core or peripheral meaning, genuine capabilities of man can come into play which allow fast visual access and assimilation of very large volumes of data.

It should be noted that children accept the concept easily and are ready for new

conceptual or abstract understanding at about ten years of age. They then can focus conceptually beyond the immediate environment into abstract or virtual contexts. Before the age of ten, their thing is to experience space, motion and time physically and conceptually. After ten years of age they can float in abstract realms (fantasia) and sometimes have good command of imagination (eidetic). Children liked the framework as a way to explain teachers and parents what is going on and that the 'View-of-Life' they learn at schools is 'too flat'. Children have reported and written that at a Children Communication Camp, where they were introduce to the concept of the blackbox model after interviewing all futurists of the world about what the elder have in store for the futures of the younger generations. As the concept of models is very central in this article, a citation from a scholarly book on models will follow to support the experience with children and some conclusions the author has drawn in his work over the last years. Excerpt from: Models in Science Education, George Marx and Esther Tóth, In: Models of Reality - Shaping Thoughts and Action, Lomond Books in cooperation with UNESCO 1984 (eds: Jacques Richardson) After the first chapter Man and his Models starting with Man is a model making animal. .. His outstanding predictive power gives him selective advantages over his physically stronger rivals... starts the second chapter: Models in Schools with: According to Piaget, the school-aged children think in a concrete operational way. If the teacher refutes one of two alternatives, his pupils will not accept the other until they can visualize it much as a motion picture. What they imagine, they would also like to catch , to build and to take apart. Abstract logic matures in them only at the end of the secondary school.
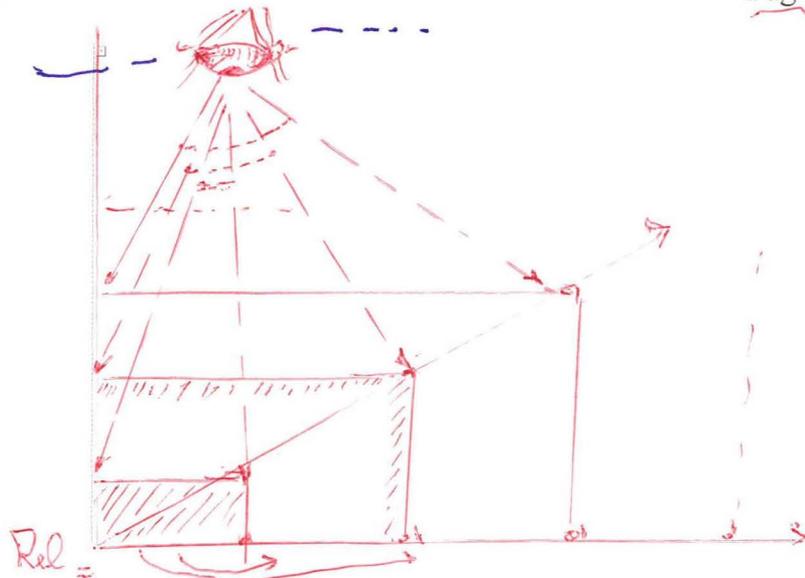
Fig. 4: **The scale-platforms to harmonize environmental information** and find logical 'meeting places' between scales were produced by the author for UNEP, the United Nations Environmental Programme HEM - Harmonisation of Environmental Measurement office. The 'flying' magnifying glass - Environmental Protection with the Eagles Eye in the German 'Scientific American' magazine: (Bild der Wissenschaft - Fliegende Lupe - Umweltschutz mit Adlerblick are further exhibition pieces of the GLOBAL CHANGE exhibition and were developed by the author to show epochal change and how we can map ecological dynamics. As the human apparatus has no 'ecological feeling for time scales (Gregory Bateson) (high-dimension of the cube) and no 'antenna' for scale-platforms (depth dimension of the cube) and how these scales interaction, it was indicated to embody this dimensions in an artificial situation or issue space, a space-scape with a nested higher order. The key benefit is the possibility to move around the 'box' and share views and relations and even point at such abstract and complex situations which can typically not be outlined and combined. The background of the approach for selective exploration with high resolution cameras and sensors (flying magnifying glass) was called by the author TOPOGRAMM, a chain of methods to combine data acquisition and management. The picture is taken from an article in GEO-ÖKÖ-DYNAMIC X,2/3- 1989, an article presented at the first International Geo-ecological/Geo-morphologic Congress with the title: Large Scale Biomonitoring for Renaturation. More details and publications are available on request.

Fig (5) Any subject can be explored in a **holistic design with varying depth and flexible theme compositions**. The flexible and nested crystal cell framework for understanding and orientation presents locations and relations and can display life-cycles and enfolded episodic and epochal change. In this new realm we can jointly discuss proportions and consequences with 'new eyes' and more importantly have a combination of three holarchies, or three hierarchical scales in one picture, as SPACE three dimension which help us to overcome heretical (one-dimensional) tree structures or for the human mind hard to follow and understand complex network structures.

2.2 The word-scape or term-/theme-scape (semantic space) based on samples used in universal library organization systems. One such scheme or global index is based on the square lambda, which is more suitable than spherical representations for this purpose, and is called the Information Coding and Classification (ICCa) by Ingetraut Dahlberg from the International Society for Knowledge Organization (ISKO). The matrix of global subjects and general form concepts, and a depth dimension (specific facets or categories) is a semantic exploratory navigation space, based on harmonic principles, enabling storage without redundancies as well as access and permutations within underlying structures and patterns.

3. Navigation and Orientation in the three realms or conceptual spaces, including cut and paste operations allow overarching retrieval, correlations and configurations beyond narrow category definitions, semantic hurdles, and cultural stipulations.

Links

- U.S. Net - Benking HomePage -
    Intra-Site Links

- Photo & Links *(European*
  Net-Homesite)

| Integrity / Ceptual Institute Homepage |

Los conexio nirdae "treen" que la "red neural" es un buen modelo para explicar la mente humana!

Stanford Encyclopedia of Philosophy

"Connectionism" *¿va con el "holismo"? R/=solo en la materialidad de las células cerebrales.*

Connectionism is a movement in cognitive science which hopes to explain human intellectual abilities using artificial neural networks (also known as `neural networks' or `neural nets'). Neural networks are simplified models of the brain composed of large numbers of units (the analogs of neurons) together with weights that measure the strength of connections between the units. These weights model the effects of the synapses that link one neuron to another. Experiments on models of this kind have demonstrated an ability to learn such skills as face recognition, reading, and the detection of simple grammatical structure.

Philosophers have become interested in connectionism because it promises to provide an alternative to the classical theory of the mind: the widely held view that the mind is something akin to a digital computer processing a symbolic language. Exactly how and to what extent the connectionist paradigm constitutes a challenge to classicism has been a matter of hot debate in recent years.

Es un mecanicismo un poco más sofisticado!

1. A Description of Neural Networks

A neural network consists of large number of units joined together in a pattern of connections. Units in a net are usually segregated into three classes: input units, which receive information to be processed, output units where the results of the processing are found, and units in between called hidden units. If a neural net were to model the whole human nervous system, the input units would be analogous to the sensory neurons, the output units to the motor neurons, and the hidden units to all other neurons.

Here is a simple illustration of a neural net:

Each input unit has an activation value that represents some feature external to the net. An input unit sends its activation value to each of the hidden units to which it is connected. Each of these hidden units calculates its own activation value depending on the activation values it receives from the input

units. This signal is then passed on to output units (or) to another layer of hidden units. Those hidden units compute their activation values in the same way, and send them along to their neighbors. Eventually the signal at the input units propagates all the way through the net to determine the activation values at all the output units.

The pattern of activation set up by a net is determined by the weights, or strength of connections between the units. Weights may be both positive or negative. A negative weight represents the inhibition of the receiving unit by the activity of a sending unit. The activation value for each receiving unit is calculated according a simple activation function. Activation functions vary in detail, but they all conform to the same basic plan. The function sums together the contributions of all sending units, where the contribution of a unit is defined as the weight of the connection between the sending and receiving units times the sending unit's activation value. This sum is usually modified further, for example, by adjusting the activation sum to a value between 0 and 1 and/or by setting the activation to zero unless a threshold level for the sum is reached. Connectionists presume that cognitive functioning can be explained by collections of units that operate in this way. Since it is assumed that all the units calculate pretty much the same simple activation function, human intellectual accomplishments must depend primarily on the settings of the weights between the units.

$$\begin{cases} 1 = + \\ 0 = - \end{cases}$$

Neural Network Learning and Backpropagation

Finding the right set of weights to accomplish a given task is the central goal in connectionist research. Luckily, learning algorithms have been devised that can calculate the right weights for carrying out many tasks. (See Hinton (1992) for an accessible review.) One of the most widely used of these training methods is called backpropagation. To use this method one needs a "training set" consisting of many examples of inputs and their desired outputs for a given task. If, for example, the task is to distinguish male from female faces, the training set might contain pictures of faces together with an indication of the sex of the person depicted in each one. A net that can learn this task might have two output units (indicating "male" and "female") and many input units, one devoted to the brightness of each pixel (tiny area) in the picture. The weights of the net to be trained are initially set to random values, and then members of the training set are repeatedly exposed to the net. The values for the input of a member are placed on the input units and the output of the net is compared with the desired output for this member. Then all the weights in the net are adjusted slightly in the direction that would bring the net's output values closer to the values for the desired output. For example, when male's face is presented to the input units the weights are adjusted so that the value of the "male" output unit is increased and the value of the "female" output unit is decreased. After many repetitions of this process the net may learn to produce the desired output for each input in the training set. If the training goes well, the net many also have learned to generalize to the desired behavior for inputs and outputs that were not in the training set. For example, it may do a good job of distinguishing males from females in pictures that were never presented to it before.

Training nets to model aspects of human intelligence is a fine art. Success with backpropagation and other connectionist learning methods may depend on quite subtle adjustment of the algorithm and the training set. Training typically involves hundreds of thousands of rounds of weight adjustment. Given the limitations of computers presently available to connectionist researchers, training a net to perform an interesting task may take days or even weeks. Some of the difficulty may be resolved when parallel circuits specifically designed to run neural network models are widely available. But even here, some limitations to connectionist theories of learning will remain to be faced. Humans (and many less intelligent animals) display an ability to learn from single events; for example an animal that eats a

food that later causes gastric distress will never try that food again. Connectionist learning techniques such as backpropagation are far from explaining this kind of "one shot" learning.

Samples of What Neural Networks Can Do

Connectionists have made significant progress in demonstrating the power of neural networks to master cognitive tasks. Here are three well-known experiments that have encouraged connectionists to believe that neural networks are good models of human intelligence. One of the most attractive of these efforts is Sejnowski and Rosenberg's (1987) work on a net that can read English text called NETtalk. The training set for NETtalk was a large data base consisting of English text coupled with its corresponding phonetic output, written in a code suitable for use with a speech synthesizer. Tapes of NETtalk's performance at different stages of its training are very interesting listening. At first the output is random noise. Later, the net sounds like it is babbling, and later still as though it is speaking English double-talk (speech that is formed of sounds that resemble English words). At the end of training, NETtalk does a fairly good job of pronouncing the text given to it. Furthermore, this ability generalizes fairly well to text that was not presented in the training set.

Another influential early connectionist model was a net trained by Rumelhart and McClelland (1986) to predict the past tense of English verbs. The task is interesting because although most of the verbs in English (the regular verbs) form the past tense by adding the suffix `ed', many of the most frequently verbs are irregular (is / was, come / came, go / went). The net was first trained on a set containing a large number of irregular verbs, and later on a set of 460 verbs containing mostly regulars. The net learned the past tenses of the 460 verbs in about 200 rounds of training, and it generalized fairly well to verbs not in the training set. It even showed a good appreciation of "regularities" to be found among the irregular verbs (send / sent, build / built; blow / blew, fly / flew). During learning, as the system was exposed to the training set containing more regular verbs, it had a tendency to overregularize, i.e. to combine both irregular and regular forms: (break / broked, instead of break / broke). This was corrected with more training. It is interesting to note that children are known to exhibit the same tendency to overregularize during language learning. However, there is hot debate over whether Rumelhart and McClelland's is a good model of how humans actually learn and process verb endings. For example, (Pinker & Prince 1988) point out that the model does a poor job of generalizing to some novel regular verbs. They believe that this is a sign of a basic failing in connectionist models. Nets may be good at making associations and matching patterns, but they have fundamental limitations in mastering general rules such as the formation of the regular past tense. These complaints raise an important issue for connectionist modelers, namely whether nets can generalize properly to master cognitive tasks involving rules. Despite Pinker and Prince's objections, many connectionists believe that generalization of the right kind is still possible (Niklasson and van Gelder, 1994).

Elman's (1991) work on nets that can appreciate grammatical structure has important implications for the debate about whether neural networks can learn to master rules. Elman trained a neural network to predict the next word in a large corpus of English sentences. The sentences were formed from a simple vocabulary of 23 words using a subset of English grammar. The grammar, though simple, posed a hard test for linguistic awareness. It allowed unlimited formation of relative clauses while demanding agreement between the head noun and the verb. So for example, in the sentence

Any **man** that chases dogs that chase cats .. runs.

the singular `**man**' must agree with the verb `runs' despite the intervening plural nouns ('dogs', `cats')

which might cause the selection of `run'. One of the important features of Elman's model is the use of recurrent connections. The values at the hidden units are saved in a set of so called context units, to be sent back to the input level for the next round of processing. This looping back from hidden to input layers provides the net with a rudimentary form of memory of the sequence of words in the input sentence. Elman's nets displayed an appreciation of the grammatical structure of sentences that were not in the training set. The net's command of syntax was measured in the following way. Predicting the next word in an English sentence is, of course, and impossible task. However, these nets succeeded, at least by the following measure. At a given point in an input sentence, the output units for words that are grammatical continuations of the sentence at that point should be active and output units for all other words should be inactive. After intensive training, Elman was able to produce nets that displayed perfect performance on this measure including sentences not in the training set. Although this performance is impressive, there is still a long way to go in training nets that can process language. Furthermore, doubts have been raised about the significance of Elman's results. For example, Marcus (to appear) argues that Elman's nets are not able to generalize this performance to sentences formed from a novel vocabulary. This, he claims, is a sign that connectionist models merely associate instances, and are unable to truly master abstract rules.

Strengths and Weaknesses of Neural Network Models

Philosophers are interested in neural networks because they may provide a new framework for understanding the nature of the mind and its relation to the brain (Rumelhart and McClelland, 1986, Chapter 1). Connectionist models seem particularly well matched to what we know about neurology. The brain is indeed a neural net, formed from massively many units (neurons) and their connections (synapses). Furthermore, several properties of neural network models suggest that connectionism may offer an especially faithful picture of the nature of cognitive processing. Neural networks exhibit robust flexibility in the face of the challenges posed by the real world. Noisy input or destruction of units causes graceful degradation of function. The net's response is still appropriate, though somewhat less accurate. In contrast, noise and loss of circuitry in classical computers typically result in catastrophic failure. Neural networks are also particularly well adapted for problems that require the resolution of many conflicting constraints in parallel. There is ample evidence from research in artificial intelligence that cognitive tasks such as object recognition, planning, and even coordinated motion present problems of this kind. Although classical systems are capable of multiple constraint satisfaction, connectionists argue that neural network models provide much more natural mechanisms for dealing with such problems.

Over the centuries, philosophers have struggled to understand how our concepts are defined. It is now widely acknowledged that trying to characterize ordinary notions with necessary and sufficient conditions is doomed to failure. Exceptions to almost any proposed definition are always waiting in the wings. For example, one might propose that a tiger is a large black and orange feline. But then what about albino tigers? Philosophers and cognitive psychologists have argued that categories are delimited in more flexible ways, for example via a notion of family resemblance or similarity to a prototype. Connectionist models seem especially well suited to accommodating graded notions of category membership of this kind. Nets can learn to appreciate subtle statistical patterns that would be very hard to express as hard and fast rules. Connectionism promises to explain flexibility and insight found in human intelligence using methods that cannot be easily expressed in the form of exception free principles (Horgan and Tienson, 1989, 1990), thus avoiding the brittleness that arises from standard forms of symbolic representation.

Despite these intriguing features, there are some weaknesses in connectionist models that bear mentioning. First, most neural network research abstracts away from many interesting and possibly important features of the brain. For example, connectionists usually do not attempt to explicitly model the variety of different kinds of brain neurons, nor the effects of neurotransmitters and hormones. Furthermore, it is far from clear that the brain contains the kind of reverse connections that would be needed if the brain were to learn by a process like backpropagation, and the immense number of repetitions needed for such training methods seems far from realistic. Attention to these matters will probably be necessary if convincing connectionist models of human cognitive processing are to be constructed. A more serious objection must also be met. It is widely felt, especially among classicists, that neural networks are not particularly good at the kind of rule based processing that is thought to undergird language, reasoning, and higher forms of thought. We will discuss the matter further when we turn to the systematicity debate.

Connectionist Representation "?

Connectionist models provide a new paradigm for understanding how information might be represented in the brain. A seductive but naive idea is that single neurons (or tiny neural bundles) might be devoted to the representation of each thing the brain needs to record. For example, we may imagine that there is a grandmother neuron that fires when we think about our grandmother. However, such local representation is not likely. There is good evidence that our grandmother thought involves complex patterns of activity distributed across relatively large parts of cortex.

It is interesting to note that distributed, rather than local, representations on the hidden units are the natural products of connectionist training methods. The activation patterns that appear on the hidden units while NETtalk processes text serve as an example. Analysis reveals that the net learned to represent such categories as consonants and vowels, not by creating one unit active for consonants and another for vowels, but rather in developing two different characteristic patterns of activity across all the hidden units.

Given the expectations formed from our experience with local representation on the printed page, distributed representation seems both novel and difficult to understand. But the technique exhibits important advantages. For example, distributed representations, (unlike symbols stored in separate fixed memory locations) remain relatively well preserved when parts of the model are destroyed or overloaded. More importantly, since representations are coded in patterns rather than firings of individual units, relationships between representations are coded in the similarities and differences between these patterns. So the internal properties of the representation carry information on what it is about (Clark 1993, p. 19). In contrast, local representation is conventional. No intrinsic properties of the representation (a unit's firing) determine its relationships to the other symbols. This self-reporting feature of distributed representations promises to resolve a philosophical conundrum about meaning. In a symbolic representational scheme, all representations are composed out of symbolic atoms (like words in a language). Meanings of complex symbol strings may be defined by the way they are built up out of their constituents, but what fixes the meanings of the atoms?

Connectionist representational schemes provide an end run around the puzzle by simply dispensing with atoms. Every distributed representation is a pattern of activity across all the units, so there is no principled way to distinguish between simple and complex representations. To be sure, representations are composed out of the activities of the individual units. But none of these "atoms" codes for any symbol. The representations are sub-symbolic in the sense that analysis into their components leaves the symbolic level behind.

The sub-symbolic nature of distributed representation provides a novel way to conceive of information processing in the brain. If we model the activity of each neuron with a number, then the activity of the whole brain can be given by a giant vector (or list) of numbers, one for each neuron. Both the brain's input from sensory systems and its output to individual muscle neurons can also be treated as vectors of the same kind. So the brain amounts to a vector processor, and the problem of psychology is transformed into questions about which operations on vectors account for the different aspects of human cognition.

Sub-symbolic representation has interesting implications for the classical hypothesis that the brain must contain symbolic representations that are similar to sentences of a language. This idea, often referred to as the language of thought (or LOT) thesis may be challenged by the nature of connectionist representations. It is not easy to say exactly what the LOT thesis amounts to, but van Gelder (1990) offers an influential and widely accepted benchmark for determining when the brain should be said to contain sentence-like representations. It is that when a representation is tokened one thereby tokens the constituents of that representation. For example, if I write `John loves Mary' I have thereby written the sentence's constituents: `John' `loves' and `Mary'. Distributed representations for complex ideas like `John loves Mary' can be constructed that do not contain any explicit representation of their parts (Smolensky 1991). The information about the constituents can be extracted from the representations, but neural network models do not need to explicitly extract this information themselves in order to process it correctly (Chalmers, 1990). This suggests that neural network models serve as counterexamples to the idea that the language of thought is a prerequisite for human cognition. However, the matter is still a topic of lively debate (Fodor, 1997).

The Shape of the Controversy between Connectionists and Classicists

The last thirty years have been dominated by the classical view that (at least higher) human cognition is analogous to symbolic computation in digital computers. On the classical account, information is represented by strings of symbols, just as we represent data in computer memory or on pieces of paper. The connectionist claims, on the other hand, that information is stored non-symbolically in the weights, or connection strengths, between the units of a neural net. The classicist believes that cognition resembles digital processing, where strings are produced in sequence according to the instructions of a (symbolic) program. The connectionist views mental processing as the dynamic and graded evolution of activity in a neural net, each unit's activation depending on the connection strengths and activity of its neighbors, according to the activation function.

On the face of it, these views seem very different. However many connectionists do not view their work as a challenge to classicism and some overtly support the classical picture. So-called implementational connectionists seek an accommodation between the two paradigms. They hold that the brain's net implements a symbolic processor. True, the mind is a neural net; but it is also a symbolic processor at a higher and more abstract level of description. So the role for connectionist research according to the implementationalist is to discover how the machinery needed for symbolic processing can be forged from neural network materials, so that classical processing can be reduced to the neural network account.

However, many connectionists resist the implementational point of view. Such radical connectionists claim that symbolic processing was a bad guess about how the mind works. They complain that classical theory does a poor job of explaining graceful degradation of function, holistic representation

of data, spontaneous generalization, appreciation of context, and many other features of human intelligence which are captured in their models. The failure of classical programming to match the flexibility and efficiency of human cognition is by their lights a symptom of the need for a new paradigm in cognitive science. So radical connectionists would eliminate symbolic processing from cognitive science forever.

The Systematicity Debate

The major points of controversy in the philosophical literature on connectionism have to do with whether connectionists provide a viable and novel paradigm for understanding the mind. One complaint is that connectionist models are only good at processing associations. But such tasks as language and reasoning cannot be accomplished by associative methods alone and so connectionists are unlikely to match the performance of classical models at explaining these higher-level cognitive abilities. However, it is a simple matter to prove that neural networks can do anything that symbolic processors can do since nets can be constructed that mimic a computer's circuits. So the objection can not be that connectionist models do not account for higher cognition; it is rather that they can do so only if they implement the classicist's symbolic processing tools. Implementational connectionism may succeed, but radical connectionists will never be able to account for the mind.

Fodor and Pylyshyn's often cited paper (1988) launches a debate of this kind. They identify a feature of human intelligence called systematicity which they feel connectionists cannot explain. The systematicity of language refers to the fact that the ability to produce/understand some sentences is intrinsically connected to the ability to produce/understand others of related structure. For example, no one with a command of English who understands `John loves Mary' can fail to understand `Mary loves John'. From the classical point of view, the connection between these two abilities can easily be explained by assuming that masters of English represent the constituents (`John', `loves' and `Mary') of , `John loves Mary' and computes its meaning from the meanings of these constituents. If this is so, then understanding a novel sentence like `Mary loves John' can be accounted for as another instance of the same symbolic process. In a similar way, symbolic processing would account for the systematicity of reasoning, learning and thought. It would explain why there are no people who are capable of concluding P from P&(Q&R), but incapable of concluding P from P&Q, why there are no people capable of learning to prefer red cube to green square who cannot learn to prefer a green cube to the red square, and why there isn't anyone who can think that John loves Mary who can't also think that Mary loves John.

Fodor and McLaughlin (1990) argue in detail that connectionists do not account for systematicity. Although connectionist models can be trained to be systematic, they can also be trained, for example, to recognize `John loves Mary' without being able to recognize `Mary loves John'. Since connectionism does not guarantee systematicity, it does not explain why systematicity is found so pervasively in human cognition. Systematicity may exist in connectionist architectures, but where it exists, it is no more than a lucky accident. The classical solution is much better, because in classical models, pervasive systematicity comes for free.

The charge that connectionist nets cannot explain systematicity is initially quite plausible. However, careful analysis of the content of the claim is needed (Hadley, 1994). Furthermore, the view has been criticized lately by Aizawa (to appear), Garson (to appear), and Wallis, (to appear). One point common to these rebuttals is that symbolic processing models have exactly the same feature which was supposed to deny connectionists an ability to explain systematicity, for there are also classical models that can be programmed to accept `John loves Mary' and reject `Mary loves John'.

Connectionism and the Elimination of Folk Psychology

Another important application of connectionist research to philosophical debate about the mind concerns the status of folk psychology. Folk psychology is the conceptual structure that we spontaneously apply to understanding and predicting human behavior. For example, knowing that John desires a beer and that he believes that there is one in the refrigerator allows us to explain why John just went into the kitchen. Such knowledge depends crucially on our ability to conceive of others as having desires and goals, plans for satisfying them, and beliefs to guide those plans. The idea that people have beliefs, plans and desires is a commonplace of ordinary life; but does it provide a faithful description of what is actually to be found in the brain?

Its defenders will argue that folk psychology is too good to be false (Fodor, 1988, Ch1). What more can we ask for the truth of a theory than that it provides an indispensable framework for successful negotiations with others? On the other hand, eliminativists will respond that the useful and widespread use of a conceptual scheme does not argue for its truth (Churchland 1989, Ch. 1). Ancient astronomers found the notion of celestial spheres useful (even essential) to the conduct of their discipline, but now we know that there are no celestial spheres. From the eliminativists point of view, an allegiance to folk psychology, like allegiance to folk (Aristotelian) physics, stands in the way of scientific progress. A viable psychology may require as radical a revolution in its conceptual foundations as is found in quantum mechanics.

Eliminativists are interested in connectionism because it promises to provide a conceptual foundation that would replace folk psychology. Simple cognitive tasks can be performed by neural networks that do not appear to contain any structures that could correspond to beliefs, desires and plans (Ramsey et. al., 1991). It is still an open question as to whether the complexities of human cognition can ever be captured by such connectionist models. Furthermore, the whole issue of exactly what evidence about the brain would support the view that beliefs and desires are actively involved in the brain's processing is a cloudy one. The question is complicated further by disagreements about the nature of folk psychology. Many philosophers treat the beliefs and desires postulated by folk psychology as brain states with symbolic contents. For example, the belief that there is a beer in the refrigerator is thought to be a brain state that contains symbols corresponding to beer and a refrigerator. From this point of view, the fate of folk psychology is strongly tied to the symbolic processing hypothesis. On the other hand, some philosophers do not think folk psychology is essentially symbolic, and some would even challenge the idea that folk psychology is to be treated as a scientific theory in the first place. Under this conception, it is much more difficult to forge links between results in connectionist research and the rejection of folk psychology.

Bibliography

- Aizawa, K. "Representations without Rules, Connectionism and the Syntactic Argument," (to appear)
- Bechtel, W. "Connectionism and Rules and Representation Systems: Are They Compatible?," *Philosophical Psychology*, **1** (1988): 5-15
- Bechtel, W. "Connectionism and the Philosophy of Mind: an Overview," *The Southern Journal of Philosophy*, Supplement, (1987): 17-41
- Bechtel, W. and Abrahamsen, A. *Connectionism and the Mind: An Introduction to Parallel Processing in Networks*, Cambridge, Mass.: Blackwell (1990)
- Butler, K."Towards a Connectionist Cognitive Architecture," *Mind and Language*, **6** (1991):

252-272

- Chalmers, D. "Syntactic Transformations on Distributed Representations," *Connection Science*, **2** (1990): 53-62
- Chalmers, D. "Why Fodor and Pylyshyn Were Wrong: The Simplest Refutation," *Philosophical Psychology*, (1993): 305-319
- Christiansen, M and Chater, N. "Generalization and Connectionist Language Learning," *Mind and Language*, **9, #3** (1994): 273-287
- Churchland, P.M. *The Engine of Reason, the Seat of the Soul : a Philosophical Journey into the Brain*, Cambridge, Mass. : MIT Press (1995)
- Churchland, P. S. *A Neurocomputational Perspective: The Nature of Mind and the Structure of Science*, Cambridge, Mass. :MIT Press (1989)
- Clark, A. *Associative Engines*, Cambridge, Mass.: MIT Press (1993)
- Clark, A. *Microcognition*, Cambridge, Mass.: MIT Press (1989)
- Clark, A. and Lutz, R. (Eds.) *Connectionism in Context*, Springer, (1992)
- Cotrell G. and Small, S. "A Connectionist Scheme for Modelling Word Sense Disambiguation," *Cognition and Brain Theory*, **6** (1983): 89-120
- Cummins, R. "The Role of Representation in Connectionist Explanations of Cognitive Capacities," in Ramsey, Stich and Rumelhart (1991): 91-114
- Cummins, R. "Systematicity" *Journal of Philosophy*, **XCIII #22** (1996): 561-614
- Cummins, R. and Schwarz, G. "Connectionism, Computation, and Cognition," in Horgan and Tienson (1991): 60-73
- Davies, M. "Connectionism, Modularity and Tacit Knowledge," *British Journal for the Philosophy of Science*, **40** (1989): 541-555
- Davies, M. "Concepts, Connectionism and the Language of Thought," in Ramsey et. al. (1991): 229-257
- Dinsmore, J. (ed.) *The Symbolic and Connectionist Paradigms: Closing the Gap*, Erlbaum (1992)
- Elman, J. L. "Distributed Representations, Simple Recurrent Networks, and Grammatical Structure," in Touretzky (1991): 91-122
- Fodor, J. "Connectionism and the Problem of Systematicity: Why Smolensky's Solution Still Doesn't Work," *Cognition*, **62** (1997): 109-119
- Fodor, J. *Psychosemantics*, Cambridge, Mass.: MIT Press (1988)
- Fodor, J. and McLaughlin, B. "Connectionism and the Problem of Systematicity: Why Smolensky's Solution Doesn't Work,"*Cognition*, **35** (1990): 183-204
- Fodor, J. and Pylyshyn, Z. "Connectionism and Cognitive Architecture: a Critical Analysis," *Cognition*, **28** (1988): 3-71
- Garfield, J. "Mentalese Not Spoken Here: Computation Cognition and Causation," (to appear)
- Garson, J. "What Connectionists Cannot Do: The Threat to Classical AI," in Horgan, T. and Tienson, J. (1991): 113-142
- Garson, J. "Cognition without Classical Architecture" *Synthese*, **100** (1994): 291-305
- Garson, J. "Syntax in a Dynamic Brain" *Synthese*, **110** (1997): 343-355
- Garson, J. "Systematicity and Classical Architecture" (to appear)
- Hadley, R. (1994) "Systematicity in Connectionist Language Learning," *Mind and Language*, vol 9, #3, pp. 247-271
- Hanson, J. and Kegl, J. (1987) "PARSNIP: A Connectionist Network that Learns Natural Language Grammar from Exposure to Natural Language Sentences," *Ninth Annual Conference of the Cognitive Science Society*, pp. 106-119
- Hatfield, G. "Representation in Perception and Cognition: Connectionist Affordances," in

Ramsey et. al. (1991): 163-195

- Hatfield, G. "Representation and Rule-Instantiation in Connectionist Systems," in Horgan and Tienson (1991): 90-112
- Hawthorne, J. "On the Compatibility of Connectionist and Classical Models," *Philosophical Psychology*, **2** (1989): 5-15
- Hinton, G. "How Neural Networks Learn from Experience," *Scientific American* (September, 1992): 145-151
- Hinton, G., ed. *Connectionist Symbol Processing*, Cambridge, Mass.: MIT Press (1991)
- Hinton, G. "Mapping Part-Whole Hierarchies into Connectionist Networks," in Hinton (1991): 47-76
- Hinton, G., McClelland, and Rumelhart, D. "Distributed Representations," chapter 3 of Rumelhart, McClelland, et. al. (1986)
- Horgan, T. and Tienson, J. "Representations without Rules," *Philosophical Topics*, **17** (1989): 147-174
- Horgan, T. and Tienson, J. "Soft Laws," *Midwest Studies in Philosophy* **15** (1990): 256-279
- Horgan, T. and Tienson, J. *Connectionism and the Philosophy of Psychology*, Cambridge, Mass.: MIT Press, (1996)
- Horgan, T. and Tienson, J. (eds.) *Connectionism and the Philosophy of Mind*, Dordrecht: Kluwer, (1991)
- Macdonald, C., ed. *Connectionism: Debates on Psychological Explanation*, Oxford: Blackwell (1995)
- Marcus, G. "Rethinking Eliminative Connectionism," (to appear)
- McClelland, J. and Elman, J. "The TRACE Model of Speech Perception," *Cognitive Psychology*, **18** (1986): 1-86
- McClelland, J., Rumelhart, D., et. al., *Parallel Distributed Processing*, vol. II, Cambridge, Mass.: MIT Press (1986)
- Miikkulainen. T. *Subsymbolic Natural Language Processing: An Integrated Model of Scripts, Lexicon and Memory*, Cambridge, Mass.: MIT Press (1993)
- Niklasson, L. and van Gelder, T. "On Being Systematically Connectionist," *Mind* and *Language*, **9**/3 (1994): 288-302
- Pinker, S. and Mehler, J., eds. *Connections and Symbols*, Cambridge, Mass.: MIT Press (1988)
- Pinker, S. and Prince, A. "On Language and Connectionism: Analysis of a Parallel Distributed Processing Model of Language Acquisition," *Cognition*, **23** (1988) 73-193
- Pollack, J. "Implications of Recursive Distributed Representations," in Touretzky (1989): 527-535.
- Pollack, J. "Induction of Dynamical Recognizers," in Touretzky (1991): 123-148
- Pollack, J. (1991) "Recursive Distributed Representation," in Hinton (1991): 77-106.
- Port, Robert, F. "Representation and Recognition of Temporal Patterns," *Connection Science*, **2** (1990): 151-176
- Port, R. and van Gelder, T. "Representing Aspects of Language," *Proceedings of the Thirteenth Annual Conference of the Cognitive Science Society*, Hillsdale, N.J.: Erlbaum (1991)
- Ramsey, W., Stich, S. and Rumelhart, D. *Philosophy and Connectionist Theory*, Hillsdale, N.J.: Erlbaum (1991)
- Ramsey, W., Stich, S. and Garon, J. "Connectionism, Eliminativism, and the Future of Folk Psychology," in Ramsey, Rumelhart and Stich (1991): 199-228
- Rumelhart, D. and McClelland, J. "On Learning the Past Tenses of English Verbs," in McClelland and Rumelhart et. al. Ch. 18, (1986): 216-271

- Rumelhart, D., McClelland, J., and the PDP Research Group, *Parallel Distributed Processing*, vol. I, Cambridge, Mass.: MIT Press (1986)
- Schwarz, G. "Connectionism, Processing, Memory," *Connection Science*, **4** (1992): 207-225.
- Sejnowski, T. and Rosenberg, C. "Parallel networks that Learn to Pronounce English Text," *Complex Systems*, **1** (1987): 145-168.
- Servan-Schreiber, D., Cleeremans, A. and McClelland, J. "Graded State Machines: The Representation of Temporal Contingencies in Simple Recurrent Networks," in Touretzky (1991): 57-89
- Shastri, L. and Ajjanagadde, V. "From Simple Associations to Systematic Reasoning: A Connectionist Representation of Rules, Variables, and Dynamic Bindings Using Temporal Synchrony" *Behavioral and Brain Sciences*, **16**/3 (1993): 417-494
- Smolensky, P. "Tensor Product Variable Binding and the Representation of Symbolic Structures in Connectionist Systems," in Hinton (1991): 159-216
- Smolensky, P. "The Constituent Structure of Connectionist Mental States: A Reply to Fodor and Pylyshyn," *The Southern Journal of Philosophy*, Supplement, **26** (1987): 137-161.
- Smolensky, P. "On the Proper Treatment of Connectionism," *Behavioral and Brain Sciences*, **11** (1988): 1-74.
- St. John, M. and McClelland, J. "Learning and Applying Contextual Constraints in Sentence Comprehension," in Hinton (1991): 217-257
- Touretzky, D. *Advances in Neural Information Processing Systems I*, San Mateo, CA: Kaufmann (1989)
- Touretzky, D. *Advances in Neural Information Processing Systems II*, San Mateo, CA: Kaufmann (1990)
- Touretzky, D. *Connectionist Approaches to Language Learning*, Dordrecht: Kluwer (1991)
- Touretzky, D., Hinton, G. and Sejnowski, T. *Proceedings of the 1988 Connectionist Models Summer School*, Kaufmann (1988)
- van Gelder, T. "Compositionality: A Connectionist Variation on a Classical Theme," *Cognitive Science*, **14** (1990): 355-384.
- van Gelder, T. "What is the `D' in PDP?" in Ramsey et. al. (1991): 33-59.
- van Gelder, T and Port, R. "Beyond Symbolic: Prolegomena to a Kama-Sutra of Compositionality," in Honavar, V. and Uhr, L. (Eds.) *Symbol Processing and Connectionist Models in AI and Cognition: Steps Towards Integration*, Boston: Academic Press (1993)
- Wallis, C. "Nomic Necessity and Systematicity" (to appear).
- Waltz, D. and Pollack, J. "Massively Parallel Parsing: A Strongly Interactive Model of Natural Language Interpretation," *Cognitive Science*, **9**, 51-74.

Other Internet Resources

- Bibliography on Connectionism (by David Chalmers)
- An Introduction to Neural Nets by Z Solutions
- Connectionsim: A Short Reading List (by Ezra van Everbroeck)
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2 The reductionist/holist debate

2.1 Versions of reductionism

The scientific method is not a well defined one, but one that has arisen historically in the pursuit of scientific truth*1. From this practice some philosophers have abstracted or espoused a "purer" form of ideal scientific practice, which is epitomized in the reductionist approach. It is around this that debate has largely centred. There are many formalisations of reductionism. Here are some examples:

- *"Any phenomenon can be arbitrarily well approximated by an explanation in terms of microscopic physical laws"*

- *"Every definable process is computable"* (*)

- *"Every causal process is syntactically formalisable"*

- *"Every problem is effectively decomposable into sub-problems"*

- *"The explanation of the whole in terms of its parts"*

All of these are subtly different. They all epitomise a single *style* of inquiry, that any phenomenon, however complex it appears, can be accurately modelled in terms of more basic formal laws. Thus they are rooted in an approach to discovering accurate models of the natural world, namely by searching for simple underlying laws. They range from the abstract question of whether all real systems can be modelled in a purely formal way to more practical issues about the sort of reduction preformed in actual scientific enquiry.

In this paper I aim to show the irrelevance of the abstract question; that when faced with a choice of action it is a very similar range of issues that face both the in-principle reductionist and holist. So for the purposes of this paper I will take the abstract definition (*) as my target absolute definition of reductionism (and hence by implication holism).

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4 The number - complexity analogy

Rosen introduces an analogy between what he calls complexity (i.e. things that aren't mechanisms) and infinity; the reductionist/syntactic approaches to modelling correspond to finite steps. He claims that many systems (including all living organisms) are unameanable to such steps and qualitatively different - they correspond to infinity. Thus he postulates that to model these "complex" systems require some transcendental device, like taking limits or some form of self-reference.

I wish to alter this analogy and hopefully deepen it. I wish to take an analogy between numbers and complexity. This size corresponds to the difficulty of modelling a system in a descriptive top-down fashion given a language of representation and almost complete information (model) from the bottom-up perspective of it components*1. Thus infinite size would correspond to infinite such difficulty - i.e. impossibility of such modelling (which roughly corresponds to Rosen's "complexity"). The abstract debate would then correspond to the question "Are there systems with infinite complexity?".

Here we need to examine what we mean by the *existence* of such systems. The problems of showing that such systems exist are remarkably close to those involved in showing that infinity exists. You can not exhibit any real manifestation of infinity, since the process of exhibiting is essentially finite. Even if we lived in a universe that was infinite in some respect, you could not show a complete aspect that was infinite, only either that an aspect appeared unbounded or that a reasonable projected abstraction of some aspect was infinite.

Note that I am not saying that infinity is meaningless, merely that it is always an abstraction of reality and not a direct exhibitable property of any thing. That infinity is a very useful abstraction is undeniable - it may be possible to formulate much of usable mathematics without it, but this would surely make such symbolic systems much more cumbersome. So when we say something is infinite, we are talking about an abstract projected property of our model of the item, even if the thing is, in fact, infinite. It is just that *exhibiting* is essentially a finite process.

I suspect that the same is true of the irreducibly complex. A language of irreducible "wholes" is useful in the same sense that infinity is useful, but *only* as an abstraction of our model, irrespective of whether these "wholes" exist. If they do not exist, the language of the holist is still useful as an abstract shorthand for systems whose complexity is potentially unbounded. If they do exist the language of "wholes" would still be necessarily abstract, i.e. *not* referring to direct properties of real things, *even if the systems referred to were irreducible*. It is just that *exhibiting* such systems (especially formally) is essentially a reductive process.

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6 Heuristics in the search for truth

So whichever is our belief about the abstract reductionist/holist question, we are left with very similar pragmatic choices of action when faced with an overly complex problem. Here reductionist techniques will be of little practical value for us as limited beings and we have to look to other alternatives if we want to make progress on them. Whether you choose another (possibly less successful) approach, depends upon the trade-off between the difficulty of reduction and the importance of progress (of what ever kind) being made onthat problem. In the end, the biggest practical difference between a reductionist and a holist is often only that a reductionist then chooses another problem where the reductionist technique has more chance of success and the holist chooses alternative avenues of attack upon the same problem.

The point is that there is no necessity to prejudge this decision for every case, neither to always say that alternative types of knowledge are worthless, despite the importance of the problem nor to say that it is never worth abandoning a problem because of the type of knowledge that is likely to be gained about it. I call these the extreme reductionist and extreme holist positions respectively.

To hold to the extreme reductionist position in a practical sense, one must surely claim that no problem is so much more important than other more susceptible problems to be worth swapping the sort of analytic knowledge that results from reductionist approaches for other types of knowledge. This can be a result of one of several subsidiary claims:

1. that all problems are practically susceptible - this would amount to denying any practical limitations upon ourselves at all;

2. that there are always a near indefinite supply of equally important problems - denying any real difference in the importance of problems, regardless of circumstance;

3. or that alternative forms of knowledge are always effectively worthless - presumably including the reductionist thesis itself!

To hold to the extreme holist position in a practical sense, one would have to claim that either there was no advantage to reductionist knowledge as compared to another type in any circumstances or that a problem was so important that it was not appropriate for anyone to research any other, more amenable, problems.

These would both be extreme positions indeed! I know of no one that holds them in these forms. The rest of us fall somewhere in between in practice: we accept that there are some worthwhile problems where the reductionist technique works well and we also accept that there are problem domains where the chances of a reductionist technique working are so remote and the problem so important that we would value other forms of knowledge about it.

This does not mean that we will all have the same priorities in particular cases, just that these

decisions are essentially a pragmatic ones differing in degree only. Once attention switches from the sterile abstract question of whether in principle all problems are amenable to a reductionist approach (and thus implicitly excluding the extreme positions outlined above), we can start to consider the rich set of possible strategies for making such choices in different cases*1. This is has been up to now a largely uncharted area, but one that might pay rich dividends.

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The Philosophy of
Instability

Ilya Prigogine

Futures 1989

La "predectibilidad" -que el autor considera, únicamente,
es relativa a _mas_ conocimientos.

Leyes

forecastable = predecible! = deterministicas
not " = no pre-decible! = no deterministicas

[no lo puede predecir]

Volteado hacia arriba!

a lo izquierda

a la derecha

cualquier vibración puede determinarlo

eje

eje

con el fiero hacia abajo

lo más bajo
posible!

[se puede predecir
a donde va]
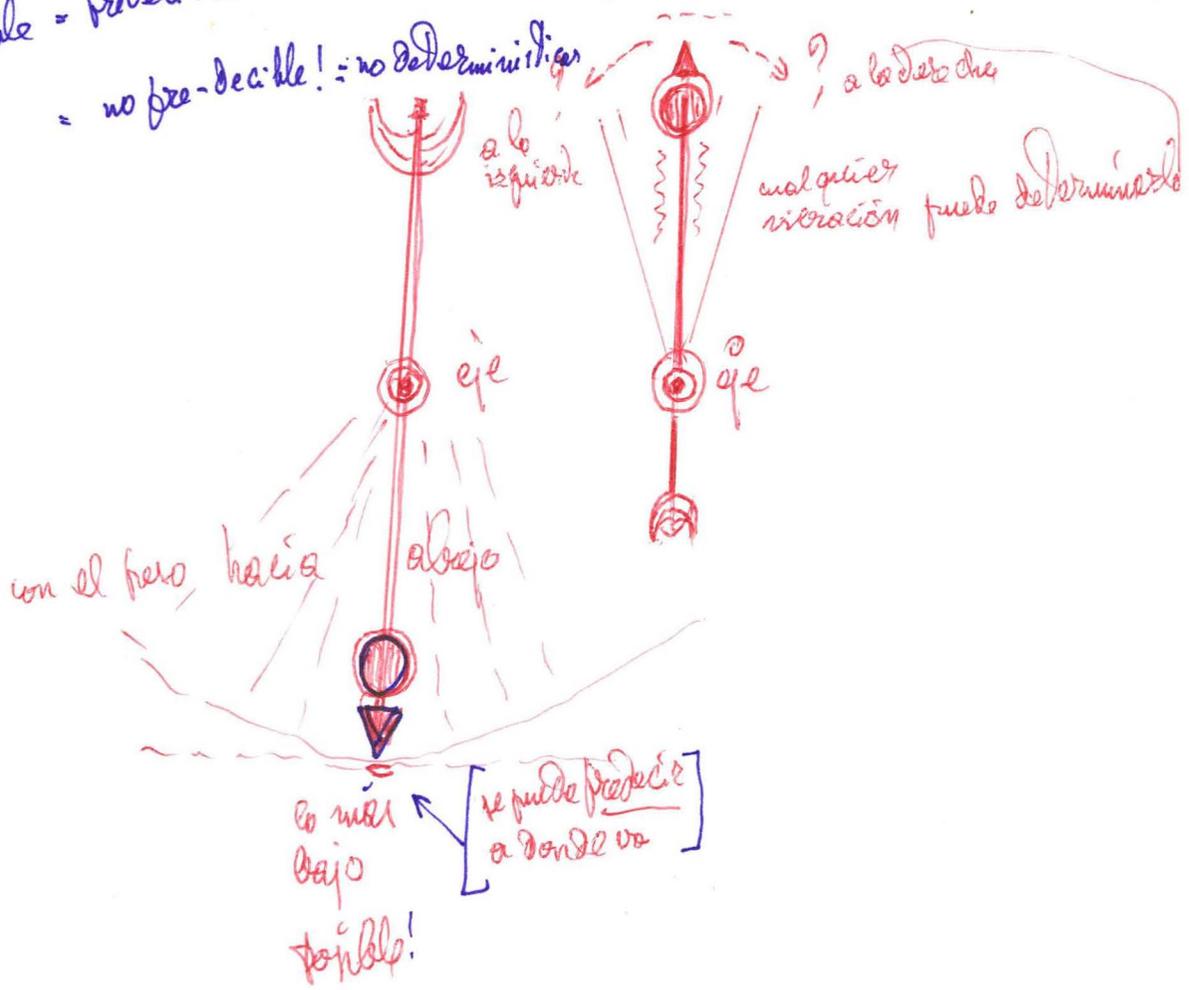
A future that works

In futures studies, as in other modes of policy analysis, gloomy preoccupation with what might go wrong can paralyse needed action right now. Rosy sentimentality can also induce paralysis, that of Pollyanna: We'll surely manage to get out of the rut we're in, so why bother to push?

What is left is the role of practical visionary, a function paradoxical enough to have appealed to Lao Tzu.

One practical visionary, the Norwegian explorer Thor Heyerdahl, says he has edited his philosophy of life down to seven words: 'Translate ideas into events, to serve people.' It is the world's highest calling. But the starting point for thought leading to action is the imaging of a future that works—and that's where futures studies come in.

The philosophy of instability

Ilya Prigogine

Recent discoveries in science have led to the recognition that instability and creativity are inherent to our world. This has major implications for the way we perceive the universe and our place in it. In an unstable world, absolute control and precise forecasting are not possible. In this article, Ilya Prigogine traces the emergence of the new worldview provided by science, and suggests that it offers hope and new responsibility for humankind

The word 'instability' has a strange fate. It is sometimes used with a slightly negative connotation, as if it is something which must be transcended. In fact, its usage is quite recent. The word is used occasionally in physics, where it describes an elementary phenomenon: if I swing a pendulum, holding it so that the weight is at the bottom, it will eventually stop with its centre of gravity as low as possible—this is a stable phenomenon. But it is common knowledge that if I hold it upside down it could fall to the right or the left, and very small vibrations will be sufficient to make it fall one way rather than the other.

This phenomenon is obviously very

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elementary and has probably been known for thousands of years; indeed, early work in mechanics shows that everyone studied the movement of the pendulum in great detail. Very little, however, has been written about the upside-down pendulum. The notion of instability has in some way been ideologically suppressed, for the phenomenon of instability leads naturally to very important, serious problems.

The first of these is the problem of forecasting. Clearly, if I take a stable pendulum and agitate it, I can predict what will happen: it will return to a minimum swing. If, on the other hand, I hold it upside down, it is very difficult to predict whether it will fall to the right or to the left—this depends on fluctuations. So we have on one hand something that is forecastable, and on the other something that is not. This is where the problem of determinism comes in. The pendulum on its minimum swing is a deterministic object: we know what will happen. In contrast, the problem of the pendulum turned on its

Entonces las "leyes de la naturaleza"
 → a) algunas son determinísticas
 → b) otras no son determinísticas!

Pero aquí hay una falacia!: El péndulo hacia arriba "no es predecible", solo porque yo no conozco las fuerzas de las vibraciones!
En sí sería predecible cuando yo las conozca!

La predictibilidad con respecto a las fuerzas naturales va más allá de mis conocimientos!

Quiere eliminar la ruptura entre { ciencias sociales, ciencias naturales y considera que el espacio lo llena la "inestabilidad" contrapuesta a "determinismo"

Lo determinístico = lo podemos controlar
Lo indeterminístico = debemos respetarlo, porque no podemos predecirlo!

Introducir el concepto de "inestabilidad" nos lleva a una "ciencia más general" — que incluye la cultura!"

Eliminarla e regresar a la idea de un mundo hecho todo de una vez que no necesita que Dios regrese nunca. Esto implica que Dios, en su óptica, no cambie de pasado o futuro, esté fuera del tiempo.

_____

_____

head involves a non-deterministic object.

This distinction, between the laws of nature which are deterministic and those which are not, leads to more general problems, about which I shall attempt to draw some general conclusions.

Man and nature

Firstly, there is the question of why in science today the talk is of instability, whereas previously people talked about determinism. Instability has in some way replaced determinism. The introduction of instability allows us a clearer view of human activity within nature, and hence enables us to incorporate humankind more fully into nature. The introduction of instability and non-forecastability, and hence ultimately of time as the essential variable, is highly significant in reducing the cultural fragmentation which currently exists between social science and pure science.

Why does this concept change man's relationship to nature? In a deterministic world nature is controllable, it is an inert object susceptible to our will. If nature contains instability as an essential element, we must respect it, for we cannot predict what may happen.

Secondly, in introducing the concept of instability, we arrive at a more global concept of science, embracing more of the cultural context of the 17th century when Western science was born. In this way, science leads to a more universal message, more respectful of the cultural traditions of other civilizations.

Cultural life in today's world is characterized by fragmentation. In a book which was very successful in the USA, Allan Bloom wrote that science was materialistic, reductionistic, and deterministic, and that time had no place in it.[1] Allan Bloom's reproaches are applicable to the science of 20–30 years ago. But they no longer apply to the science of today, which is neither materialistic, nor reductionistic, nor deterministic.

Leibniz and the elimination of instability

To understand this evolution, we must understand that science is a cultural phenomenon, formed in a cultural context. The most famous evidence of this is obviously the discussion between Leibniz on one hand, and Clarke, speaking for Newton, on the other. Leibniz accused Newton of perceiving a universe to which God had to return from time to time in order to improve it. He went on to claim that Newton therefore had a poor opinion of God, since He was not as good as a good Swiss watchmaker, who could once and for all set his universe in motion and make it work without having to readjust it.

Leibniz's concept of the world prevailed over Newton's. Leibniz appealed to the ever-present omniscience of God, which meant that His return to Earth was not necessary. Science, he believed, would one day achieve the same omniscience—through science, the scientist would succeed in equalling divine knowledge. With divine knowledge there is no difference between the past and the future, since everything is present to an omniscient mind. In these conditions, the elimination of time was inevitable. It was proof that we were beginning to attain quasi-divine knowledge.

That is basically the classical ideology which made the stable pendulum an object of interest and the unstable pendulum an unnatural object, to be mentioned only as a curiosity, or, if possible, to be eliminated from science. But in this concept of eternity, there was obviously no room for events, just as there was no room for innovation in the so-called Newtonian approach. Matter was simply moving mass; this movement was eternal—it had neither beginning nor end. From this point on, there could be no events and no history.

This elimination of instability, this appeal to determinism, and this negation of time created two views of the universe:

- the universe we see around us, which ultimately appears as a regulated automaton as Leibniz saw it, and which is in eternal motion; and
- the view of the universe that we have when we look at ourselves, which is quite different, as Bergson described:

En un mundo de péndulos hacia abajo - solo vale "Determinismo" -

Un universo con <u>inestabilidad</u> abre paso a la "creatividad" - Inseguridad acerca del futuro
y la "construcción del futuro"!

  - Si la ciencia trata de incorporar la inestabilidad entonces:
  a) el mundo hacia fuera = natural
  b) el mundo hacia adentro   tienden a acercarse = convergen!

'I believe I experience creativity at every moment of my life.'

In effect, all human and social interaction and all literature is the expression of uncertainty about the future, and of a construction of the future. Today, as physics attempts to incorporate instability, the world we see outside us and the world we see within are converging. This convergence of two worlds is perhaps one of the important cultural events of our age.

New discoveries

The introduction of instability is clearly not the result of an aspect of 20th century history of science. It is due to the convergence of a series of experimental and theoretical discoveries:

- discoveries about the structures of non-equilibrium, in which coherence establishes itself in the system, and which are the result of irreversibility, and of time;
- hence, the discovery of the constructive role of time; and
- the discovery of new ideas about a dynamic, unstable system, which completely changes our view of determinism.

In 1986, Sir James Lighthill, then President of the International Union of Pure Applied Mechanics, wrote that he wished to apologize in the name of his colleagues for having: 'misled the cultivated public for three centuries by claiming determinism of Newtonian systems; since 1960 this has proved to be incorrect'.[3] This is an astonishing declaration—while we all make mistakes and apologize for them, it is quite extraordinary that someone should apologize in the name of the scientific community because it has propagated incorrect ideas for three centuries.

These incorrect ideas have played a fundamental role in all science—the pure sciences, our perception of social science, economic sciences, philosophical sciences, which have created Kant's *problématique*, and almost all Western thought, which has been torn between the two images of the deterministic external world and the internal, non-deterministic world.

Finally, we should cite discoveries in the field of elementary particles, which show that matter is unstable, and discoveries in cosmology, which show that the universe has a history, although traditionally it could not have had a history, for the universe was the whole, contained the whole, and the idea of history had no meaning. I will now go on to review some of these stages.

The simplest discoveries, because they are the most immediate to us, are in the realm of macroscopic, chemical, and atmospheric phenomena. In the 19th century the famous law of growth in entropy was formulated—this was seen primarily as growth in disorder, because, it was believed, time had to be eliminated. Once again we have an ideological judgment. It should be emphasized that science is an ideology—science too is based on a culture, and often the important, new questions which rejuvenate science come from questioning which emerges from other cultural viewpoints. The fact that today other cultures participate in the scientific culture is, I believe, a great source of hope. Other questions will be posed, leading to new investigation, which in turn will be incorporated into the scientific mainstream.

Order and disorder

Today, we know that increase in entropy is not an increase in disorder, for order and disorder are created simultaneously. If we take two containers and put two gases in them, for example hydrogen and nitrogen, and if we heat one and cool the other, we find that there is more hydrogen in one container and more nitrogen in the other, due to the difference in temperature. Here we have a dissipative phenomenon which creates disorder, while the flow of heat also creates order: hydrogen on one side, nitrogen on the other. Order and disorder are intimately connected—one implies the other. This is the change we are witnessing in our perception of the universe today.

Our view of the universe has long been partial. It has been like the view we have from the aeroplane when we arrive in, say, Venice; we see the magnificent buildings and squares, and say: 'What an extraordinary structure'. But when we are in Venice, we see that there is also

pollution, and mosquitoes—we see both aspects. Interestingly, in contemporary cosmology the universe is to a large extent—I would even say essentially—formed by disorder, in which order floats.

We know today that for every billion thermal photons in disorder, there is one elementary particle supposed to be able to transmit ordered structures. Our perception of the universe has become dualistic—the two aspects of order and disorder coexist and give us a different vision of the universe. Not only does non-equilibrium lead to both order and disorder, but it also leads to events, because more possibilities appear than do in a state of equilibrium. In a situation far from equilibrium, equations become non-linear, and non-linear equations usually have more than one solution. We now know that at any given moment, new solutions are emerging; it is the phenomenon of bifurcation which leads to new solutions which imply a new spatio-temporal organization. For example, a chemical clock is something in which all the molecules become blue at the same time, then red a little later, then blue, then red.

So molecules can communicate. Coherence far from a state of equilibrium acquires huge dimensions in comparison with what happens in a state of equilibrium. In equilibrium each molecule can see only its immediate neighbours. Out of equilibrium the system can see the totality of the system. One could almost say that matter in equilibrium is blind, and out of equilibrium it starts to see. Hence there are events, fluctuations which prepare for an event, amplification, sensitivity to the external world, historical perspectives due to other successive forms of organization, and the appearance of a series of new categories of phenomena, called attractors.

If we pick up a pendulum which has been left to itself, it returns to one point—this is a punctual attractor; but in the case of chemical clocks, we are talking about periodic attractors. Subsequently much more complicated attractors have been discovered, strange attractors which correspond to numerous points. The system moves from one point to another—it is a mixture of

stability and instability. What is curious, and central to the interest of many physicists, chemists, meteorologists and ecologists, is that our environment, our climate, our ecology, and even our nervous system can only be understood in the light of such systems, which are both stable and unstable. They are determined by strange attractors and hence by a mixture of stability and unstability; it is therefore difficult to forecast what will happen.

Respect, not control

Of course, this does not mean that these systems elude science; we have not chosen the world we describe, we are born into a certain world and we must take account of this world as it is, reducing as far as possible our *a priori* feelings. This world is unstable—this is not a capitulation, but on the contrary an encouragement to combine new experimental and theoretical research which takes account of this unstable character. The world is not a victim offered up for us to dominate; we must respect it. The world of unstable phenomena is not a world which we can control, any more than we can control human society in the sense that extrapolation in classical physics led us to believe.

At the time of the discovery of non-equilibrium structures, there was also a revolution in the study of trajectories. We know today that the trajectories of many systems are unstable—once again, the word 'instability' emerges, because we can only predict what will happen over a short time interval. This short time interval, which is called the temporal horizon, or the Lyapunov exponent, means that after a certain time the trajectory eludes us and we lose information. We need to be aware that our knowledge is still a limited window on the universe; because of instability we must abandon the dream of total knowledge of the universe. From our window, we must extrapolate and guess what the mechanisms could be. An unstable world means that although we may know the initial conditions to an infinite number of decimal points, the future remains impossible to forecast.

There is a close analogy with a work of literature: in its first chapter a novel begins with a description of the situation in a finite number of words, but it is still open to numerous possible developments and this is ultimately the pleasure of reading: discovering which one of the possible developments will be used. Similarly, in a Bach fugue, once the theme has been given it allows a great number of developments out of which Bach has chosen. This world is very different from the classical world, and it extends to all of physics and cosmology. Instability leads to a new rationality, which puts an end to the idea of absolute control, and with it an end to any possible idealization of a society under absolute control. The real is not controllable in the sense which science claimed.

Enter the narrative

Science today introduces a narrative element. The former dichotomy between the social sciences, based on a narrative element, and the pure sciences, based on the laws of nature, is breaking down. In the old ideology, events—whether the birth of life or the birth of the universe—were considered almost anti-scientific. This is illustrated in a famous story by Asimov.[4] A highly advanced civilization asks a computer how to defeat the second principle. The computer replies: 'Not enough data', and continues to calculate for millions and millions of years, until there are no more people, and nothing is left except the giant computer, directly connected to space–time. Finally, the computer understands how to defeat the second principle. At this moment, a new universe is born. Now we can understand how the narrative element, the element of the event, enters into our vision of nature.

Freud said 'The history of science is the history of progressive alienation'. Galileo showed us that we were not at the centre of the planetary system. Darwin showed us that we were one animal among others. Freud showed us that our consciousness was only one inward part of the unconscious. The history of science is alienation—an idea also found in Monod's work.[5] In today's different vision of science, however, the opposite is happening. In a universe essentially based on instability and creativity, humankind is in a way once again at the very centre of the fundamental laws of the universe as we understand it today.

This is also an important factor in ending the cultural fragmentation between different civilizations. China, for example, developed an impressive science, but never concerned itself with knowing how a stone falls, because the idea of the laws of nature, in the legal sense in which we consider them, was alien to Chinese civilization. China saw a coherent universe, a universe in which every event was linked to other events. Science today will, I hope, retain the analytical precision of Western science, but will also have a concern for the global, holistic perspective, thus going beyond the fragmentation of classical culture.

Risk and responsibility

Obviously there is no risk in a deterministic universe. There are risks in a universe which we see differently, particularly in a human universe. I will not discuss this problem in more detail here, but it is clear that in going back to the very foundations of science from this viewpoint, humankind necessarily has choices, and choice means ethical responsibility. Valéry wrote: 'Time is construction.' I believe this is precisely right. Time is not something already made, which would appear unfolded before a supra-human consciousness. It is something which is constructed at each moment. Humankind can participate in this construction.

References

1. Allan Bloom, *The Closing of the American Mind* (New York, Simon and Schuster, 1987).
2. Henri Bergson, *The Creative Mind* (Totowa, NJ, USA, Littlefield and Asams, 1975).
3. James Lighthill, *Proceedings of the Royal Society, A407*, pages 35–50 (London, Royal Society, 1986).
4. Isaac Asimov, 'The last question', in *Robot Dreams* (New York, Berkley Books, 1986).
5. Jacques Monod, *Chance and Necessity* (New York, Vintage Books, 1972).

Reductionism and Holism

Reductionism is, more than any other, the logical error of the New Age of Science. It is the attempt to explain away complexity by assuming that everything can be explained through a reduction in scale. When a psychologist tries to explain the human mind in terms of biology alone -- or worse, in terms of machines, he is falling into reductionism. When a biologist tries to explain the workings of a living being in terms of chemistry alone, he is falling into reductionism. When a chemist tries to explain the structure of molecules in terms of physics alone, he is falling into reductionism.

The reason why reductionism is classed as a logical error is not simply that one shifts one's level of analysis. The error of reductionism is that man is largely ignorant of the constraints imposed by the change of scale. The reductionist changes scale to deny aspects of his object of study which he feels he can do without.

At the lowest level, we find the nuclear physicist. He has no lower level to which he can escape. Reductionists would like for people to think that everything at the subatomic level is clear and easily understood. Nothing, however, could be farther from the truth! Quantum physics is the tomb in which reductionism must be laid to rest. For the quantum physicist reintroduces the very concepts which reductionists had tried so hard to strip away from the higher levels of analysis -- ideas such as the soul and free will.

True enough, the physicist tries to obscure the fact that he is reintroducing these ideas. He speaks of observers, rather than souls. He speaks of uncertainty, rather than freedom. Yet, a philosopher sees clearly through such obstructionism to the truth.

In addition, the philosopher, sees another, more subtle error in reductionism. For he recognizes the difference between absolute and relative being. Changes in scale often involve changes from the absolute to the relative -- or from the relative to the absolute. When a biologist cuts a frog into pieces, he ends up killing the frog. What he learns about the dead pieces of the frog may help him to understand a living frog. Even so, he can not claim to have studied the living frog. The reductionist, however, claims that a frogs is nothing more than the pieces which the biologist has studied. His **logical error** is in not recognizing the fact that in cutting the frog into its parts, the biologist has changed the relative existence of the living organs of an absolute, living frog into the absolute existence of dead organs of a relative, dead frog.

Holism is the reverse of reductionism. Taken to extremes, it too can be a logical error. As such, however, it is not particularly significant today. For any attempt to introduce a holistic view into public discussion is immediately met by vehement condemnation by the reductionist, who considers holistic concepts to be unnecessary.

The philosopher avoids both extremes, reductionism or holism. Each point of view -- each scale of observation -- must be respected for what it tells man about the real world. When one selects a point of view, one must consciously avoid any attempt to explain away or negate other equally valid views of reality, recognizing relative and absolute existence for what they are.

Life is a miracle waiting to happen.

Please send your comments to: Bill Overcamp

Introduzione all'Astrologia Umanistica

di Giuseppe Zezza

INTRODUZIONE

Lo scopo di quest'articolo è quello di permettere, a chiunque s'interessi di astrologia o ne sia attratto, di familiarizzarsi con la corrente di pensiero dell'Astrologia Umanistica, scoprendone i punti salienti e le opere di coloro che hanno enormemente contribuito alla sua nascita e sviluppo.

Penso che uno dei modi migliori per raggiungere questo scopo sia quello di fare un piccolo salto nel tempo (poco più di un secolo), introducendo, in modo cronologico, gli elementi che hanno contribuito alla nascita e sviluppo dell'Astrologia Umanistica e che oggi ne sono parte integrante.

- L'Approccio OLISTICO e CICLICO
- Dane Rudhyar
- Alexander Ruperti

L'APPROCCIO OLISTICO e CICLICO

E' molto importante capire bene l'utilizzo del termine olistico e cosa rappresenta nell'Astrologia Umanistica.

L'etimologia della parola deriva dal greco " holos " che significa " intero, totalità, globalità ". Dalla stessa radice derivano le parole inglesi " whole, wholeness e heal ", che significa guarire, nel senso di " rendere intero ".

Ora nell'Astrologia Umanistica si mette in evidenza come ogni persona abbia una funzione all'interno di un INSIEME più grande cioè l'Umanità, come pure ogni pianeta svolga una propria funzione all'interno di un INSIEME più grande che è il Sistema Solare.

Questo concetto può essere anche utilizzato per un solo individuo il quale,

di per sé, funziona in modo autonomo ma è anche composto da cellule che svolgono una propria funzione all'interno di un insieme più grande, l'Organo, che a sua volta svolge una funzione in un insieme più grande, l'Apparato. Ora quando una cellula non svolge più la propria funzione e cerca di gestirsi in un altro modo, magari assumendo un ruolo dannoso per l'insieme di cui fa parte, ecco che l'intero organismo si ammala.

Questo discorso può farci facilmente dedurre cosa succede nella società quando qualcuno svolge un'attività dannosa per l'Insieme al quale appartiene. Lo stesso discorso ci fa capire come siamo tutti in interrelazione con un Insieme più grande del quale siamo parte integrante.

Dane Rudhyar fu il primo a parlare di Astrologia Umanistica, cioè di un'astrologia centrata sulla persona e tutte le sue parti, come corpo, psiche e come membro di una società determinata.

L'Astrologia Umanistica utilizza un approccio globale, detto olistico, degli elementi a disposizione di ciascuno per realizzare concretamente le potenzialità presenti al momento della nascita, considerando la persona come individuo unico, ma al tempo stesso parte integrante dell'universo con il quale è in continua relazione e trasformazione.

Nell'insieme delle sue opere, Rudhyar sottolinea l'importanza, per la persona, di diventare un " individuo ", che ha un senso ben diverso da quello che utilizziamo correntemente. Egli attribuisce a questo termine il valore del 'Sé transpersonale' (tipo quello sviluppato nella psicosintesi di Roberto Assagioli) consapevole, a livello della coscienza, della propria funzione all'interno di un insieme più grande, che realizza il proprio potenziale vivendo il proprio tema.

L'Astrologia Umanistica si occupa innanzitutto della persona e si propone di precisare il senso della sua vita. L'interpretazione del tema natale si orienta più verso la conoscenza del Sé che verso la conoscenza dell'avvenire o di qualsiasi altro oggetto esteriore. Essa permette di sprigionare le potenzialità e le risorse dell'individuo che incarna il tema. Lo studio del tema natale da' anche la possibilità di situare una qualsiasi tappa della vita in un processo di sviluppo dinamico e significativo.

L'Astrologia Umanistica si basa sulla conoscenza e crescita (sviluppo) dell'individuo in funzione delle sue possibilità e da quelle offertegli dal suo ambiente. Piuttosto che attardarsi sugli eventi e la loro previsione, essa si sofferma sul significato che ciascuno può dare a quello che gli succede. Questo metodo cambia il senso di una 'crisi' che diventa allora

un'iniziazione e un'apertura a una presa di coscienza sempre maggiore.

Essa utilizza i concetti di " olismo " e di " ciclo " : una visione olistica permette di mettere in relazione diversi elementi considerandoli, in primo luogo come degli Insiemi coerenti e autonomi ed in secondo luogo come partecipanti ad un Insieme più vasto ; un approccio ciclico situa ciascuna tappa della vita in un processo di crescita personale con la possibilità di capire il senso di ciascuna esperienza.

* * *

DANE RUDHYAR,
" L'UOMO-SEME " PER LA NUOVA ERA

"...Nous arrivons au point tournant. Tout dépend de la clarté de notre savoir et de la pureté, de la compassion, de notre façon d'aimer. CONNAISSANCE et AMOUR sont tous deux essentiels. La connaissance seule est ténèbre, l'amour seul est aveugle et possessif. Toute transformation spirituelle profonde et radicale, capable de modifier la réalité totale de l'Homme, nécessite un mental (1) éclairé et un coeur tout inclusif...".(2)

Il 23 marzo del 1895, nasce a Parigi, **Dane Rudhyar** (3) (Daniel Chennevière).

1911 — 1916

Durante la giovinezza subisce l'asportazione di un rene e perde il padre all'età di 16 anni. A 21 anni lascia Parigi - la sua famiglia, la sua lingua e la sua cultura - per emigrare negli Stati Uniti, dichiarando che :

" *La cultura europea è nella sua fase autunnale*".

Rudhyar si interessa inizialmente alla musica, iniziando a studiare pianoforte a sette anni e cominciando a comporre all'età di diciassette.

Nella stessa epoca scrive un opera su Claude Debussy. In seguito fu il primo ad introdurre in America la musica politonale dissonante.

Rudhyar è anche pittore e autore di 45 quadri e disegni che resistono a qualsiasi classificazione, non rientrando in nessuna delle categorie conosciute. A priori non figurative, li si potrebbe qualificare " astratti ", ma il termine " simbolico " sarebbe senza dubbio più appropriato per definirli.

La sua pittura visualizza ed evoca degli stati intimi di coscienza attraverso l'armonia dei colori e dei ritmi a volte " dissonanti " nella loro combinazione specifica.

Rudhyar scopre C.G. Jung negli anni trenta attraverso tre delle sue opere :
"Tipi Psicologici ", "Psicologia dell'Inconscio", e " Dialettica dell'Io e
dell'Inconscio".

Contemporaneamente Rudhyar è conquistato dalle idee metafisiche che Jan
Smuts (4) espone nelle sua opera più importante " Holism and Evolution "
ed è appassionato di filosofia orientale (Il segreto del Fiore d'Oro, Yi King,
presentati da Richard Wilhelm) e, quindi, cerca un nesso tra il nostro
universo psicologico e la nostra dimensione cosmica.

Ed è proprio l'astrologia, grazie all'insegnamento di Marc Edmund Jones in
particolare, che gli fornirà questo legame.

A partire dagli anni 20, Dane Rudhyar ha abbozzato, con il nome di
" Synanthropy ", l'idea di una nuova civiltà di natura globale dove
l'Umanità vivrà unificata.

Dane Rudhyar iniziò dagli anni 30 a riformulare e ristrutturare i principi
base dell'astrologia tradizionale, integrando diverse correnti di pensiero
come quella di C.G. Jung e la visione olistica introdotta da Jan Smuts.

Per oltre 50 anni, Dane Rudhyar ha diffuso le sue idee seguendo una via ben
determinata : l'instaurazione di una nuova civiltà dove i valori necessitano
una trasformazione per corrispondere alla fase di transizione attraverso la
quale l'Umanità transita in questo momento.

Dane Rudhyar è partito per un'altra dimensione il 13 settembre del 1985.

* * *

ALEXANDER RUPERTI

*"...On peut donner un sens à la vie de chacun, non pas pour accroître
l'égoisme, mais pour être plus efficace dans la fonction que l'on est
censé remplir au sein de l'humanité.*

*Comme beaucoup d'astrologues, j'admets qu'il y a une intention derrière
l'univers. Si l'on observe bien ce qui se passe autour de nous, on
découvre que chaque chose, apparemment isolée, possède un sens par
rapport à l'ensemble auquel elle appartient. On n'est pas un indivídu*

> *dans le vide, mais par rapport au groupe dont on est issu. L'astrologie
> constitue un moyen de mettre en pratique cette interrelation dans
> l'univers..."* (5)

Il 23 maggio del 1913, nasce a Stuttgart, Alexander Ruperti.

Figlio di padre russo e madre austriaca emigrati a Londra, a vent'anni segue
gli insegnamenti di Alice Bailey in Inghilterra e s'interessa all'astrologia.

Nel 1936, nel momento in cui voleva abbandonare l'astrologia, perché non
corrispondeva a ciò che pensava di trovarci, sente parlare di un nuovo libro
" Astrology of Personality " scritto da Dane Rudhyar (del quale non aveva
mai sentito parlare) che riformulava l'astrologia in funzione del pensiero
del XX secolo. Fu per lui una rivelazione e scrisse all'autore che gli rispose
subito dando inizio alla loro ininterrotta collaborazione.

Da allora Alexander Ruperti cerca di diffondere e far conoscere questa
nuova corrente di pensiero, prima in Inghilterra e, dopo, in Svizzera, dove
arriva nel 1939 per delle vacanze e rimane bloccato, con la madre invalida,

dallo scoppio della guerra.

In seguito Ruperti traduce in francese le opere di Rudhyar e, subito dopo la guerra, organizza dei seminari il cui contenuto è dattilografato e messo in circolazione anche in Francia. Egli esercitò questa attività fino al 1952 quando riprese il suo vero lavoro che era nell'ambito medico (l'osteopatia).

.Per circa 20 anni non si occupò più di astrologia fino al 1973, anno in cui ricevette una lettera da Dane Rudhyar che gli chiedeva se volesse rappresentare la Svizzera nell'ambito di un movimento internazionale che si stava per formare per la ricerca astrologica. Ruperti accettò ed iniziò a partecipare alle conferenze che erano organizzate una volta l'anno in un paese diverso. In questo periodo si rese conto che il suo modo di spiegare Rudhyar creava un grande interesse. Infatti a molte persone piaceva ciò che diceva Rudhyar ma pochi riuscivano a capirlo come Ruperti aveva potuto farlo, quindi egli diventò una specie di 'ponte' tra Rudhyar e coloro che si interessavano al suo pensiero.

All'epoca soltanto due dei suoi libri erano stati pubblicati ed erano esauriti. Fu un editore olandese che, dopo averlo sentito parlare ad una sua conferenza in Europa, decise d'incaricarsi della pubblicazione e distribuzione dei suoi libri, che poi furono distribuiti anche in America.

In seguito Alexander Ruperti collaborò alla traduzione dei libri di Rudhyar in lingua francese affinché l'essenza del suo pensiero fosse tradotta nel migliore dei modi.

Alexander Ruperti fu un pioniere dell'Astrologia Umanistica in Europa, senza il quale Dane Rudhyar e le sue opere sarebbero ancora sconosciute in Francia.

Alexander Ruperti ha lasciato questa vita terrestre il 18 gennaio del 1998.

RAH - RESEAU ASTROLOGIE HUMANISTE

Nel 1984 Alexander Ruperti crea, in Francia, Svizzera e Spagna, il Réseau Astrologie Humaniste (Rete Astrologia Umanistica) avente come obiettivo di interessare ciascuno, a livello personale o professionale, a questa nuovo approccio dell'astrologia e dell'uomo, favorendo gli scambi sul suo pensiero e quello di Dane Rudhyar .

Lo stesso organismo organizza dei programmi di formazione (Corsi,

seminari e conferenze)

Per oltre 40 anni Alexander Ruperti è stato portavoce del suo amico e Maestro Dane Rudhyar.

CONCLUSIONE

Non è facile riassumere, in poche pagine, un argomento così vasto e che è stato trattato in decine di libri. Ma spero di essere riuscito, con questa introduzione, a darvi un idea della grande eredità che questi due personaggi hanno lasciato a tutta l'Umanità, affinché attraversi questo momento di transizione nel modo più consapevole possibile, attingendo al proprio bagaglio di potenzialità, risvegliando il proprio Sé (transpersonale) e realizzando ciò che siamo come potenzialità, creando una nuova civiltà di natura globale dove l'Umanità vivrà unita.

NOTE :

1. Mentat : dal latino 'mens, mentis'. Neologismo proposto da Dane Rudhyar per tradurre il termine inglese 'mind' : che non corrisponde né all'intelletto, né al mentale, né allo spirito e ancora meno al cervello. E' piuttosto un punto d'incontro tra lo spirito e la materia, una specie di incrocio, di punto di congiunzione tra " l'alto " e il " basso ", e, allo stesso tempo, il luogo di sintesi dei due, appannaggio dell'uomo. (Tratto dalla prima parte del libro di Rudhyar " Les Maisons Astrologique ", dove Marief Cavaignac spiega al lettore le difficoltà nel tradurre il pensiero filosofico ed astrologico di Rudhyar utilizzando dei termini che nel linguaggio comune assumono un altro significato, ed appunto per questo spiega il significato dei più' difficili.)

2. "...Arriviamo ad un punto di svolta. Tutto dipende dalla chiarezza del nostro sapere e dalla purezza della nostra compassione, del nostro modo di amare. CONOSCENZA e AMORE sono entrambi essenziali. La conoscenza da sola é tenebre, l'amore solo é cieco e possessivo. Qualsiasi trasformazione spirituale profonda e radicale, capace di modificare la realtà totale dell'Uomo, necessita di un mentale illuminato e di un cuore inclusivo...". Frase di **Dane Rudhyar** tratta da:"L'astrologie de la personnalité" - Librairie de Medicis

3. Il nome " Rudhyar " deriva dal sanscrito (rudra), simbolo di un'azione dinamica paragonabile all'energia elettrica liberata attraverso il fulmine. Nei " Veda ", testo sacro dell'India, il Dio Rudra é il distruttore e il Dio Rigeneratore. Rappresenta l'energia che presiede a tutti i mutamenti che disintegrano gli schemi fuori moda (antiquati, caduti in disuso), simbolo di potenza della volontà e della forza vitale. L'adozione di un nuovo nome era del tutto simbolica, e rappresentava la sua completa devozione al suo ideale, e cioè quello di " trasformare la nostra civiltà – trasformando l'insieme dei 'valori'. (Tratto dal libro di Rudhyar " L'Astrologie de la personnalité ").

4. Jan Smuts, maresciallo e uomo di stato Sud-Africano, Primo Ministro dell'Africa

del Sud dal 1919-1924 e dal 1939-48, filosofo e autore del libro " Holism and Evolution " nel 1926, fu il primo ad introdurre il termine " Olismo " e il suo pensiero influenzò in modo profondo la corrente di pensiero anglosassone.

5. "...Possiamo dare un senso alla vita di ognuno, non per accrescere l'egoismo, ma per essere più efficaci nell'esercitare la funzione che siamo chiamati ad adempiere all'interno dell'Umanità. Come molti astrologi, ammetto che esiste un'intenzione dietro l'universo. Se si osserva bene ciò che ci succede intorno, scopriamo che ogni cosa, apparentemente isolata, possiede un senso rispetto all'Insieme al quale apparteniamo. Non siamo degli individui nel vuoto, ma in rapporto ad un gruppo dal quale discendiamo. L'astrologia costituisce un mezzo per mettere in pratica questa interrelazione con l'universo...". Frase di **Alexander Ruperti**, tratta da un depliant del RAH che descrive gli aspetti essenziali dell'astrologia Umanistica.

Torna Indice

If reality is a seamless whole, then all disciplines investigating that reality are intimately connected. No one branch of knowledge can develop separately from all others and do full justice to itself.

Introduction   Synthesis   Holistics   Spiritual Responsibility

<div align="center">

Forums **to develop the synthesis of:**

</div>

Economics   Faiths   Education   Politics   Psychology   Arts
Esoterics   Symbiosophy   Biosophy   Philosophy   Science   Health

The study/research/discussion events centering on these subjects are intended to promote efforts to train the mind to see fields of knowledge as integral parts of one interrelated whole.

Experts are welcomed but everyone is encouraged to develop and hold informed and considered views on others' expertise.

The idea behind these forums is to evolve a new kind of learning institution in the form of future-evolution-oriented places of learning with faculties sharing a 'Round Table'.

The notion of a round table is meant to convey a collaborative and friendly approach to learning for the love of a subject, not necessarily for academic benefit or career gains.

Goto TOP. Return to Manifesto.

Forums to develop holistic understanding are held depending on demand.

Introduction

According to a holistic view of knowledge any subject is a composite of all other subjects.

A holistic philosophy requires a holistic theory of knowledge--a new epistemology.

Epistemology: Theory of the method or grounds of knowledge. Return

A theorem of holistic knowledge: Any subject is a composite of all other subjects.

The symbol below illustrates this.

...A circle with twelve lines radiating from the centre (but do not join at the centre) and extending beyond the circle creating twelve equal sectors...

Every element indicates an important idea. The sectors extend into infinity both outwards and inwards. The circle and the lines show that the mind must have boundaries when it is dealing with subjects. The centre is empty because the subjects converge and fuse into a composite whole.

Applying holistic thought

Philosophers and scientists have recognised the need for this approach. The study of whole systems has been developing during the second half of the century under such headings as general systems theory and systems sciences. Interdisciplinary research, cybernetics, operations research, systems

analysis, are all disciplines engaged in understanding problems in a holistic way. Not an easy task: *...everything in the universe is connected to everything else... and if each relation helps to determine the nature of the thing that is related, then everything is what it is because everything else is what it is. This is perhaps rather confusing, and sounds metaphysical. But the resulting thought is important: the totality of what exists is an integrated system, and anything split off from the totality and considered separately is incomplete. In practice, we have to split things off and consider them separately, but we shall have to be extremely careful how we do it.*

We cannot bring everything into consideration and somehow must determine the boundaries of the problem in hand. Again, in practice, the scientist needs to enlarge the scope of her study in every dimension until the factors she is bringing in seem to make no tangible difference to the answers she is getting. At the very least, this process is going to take her outside the apparent problem area by one step in every direction. (Stafford Beer, Decision and Control, 1996)Goto TOP

What is holistic thought?

Dealing with wholes requires specific methodologies. The kinds of methods required emerge from the qualities natural to whole systems. General Systems Theory and the Systems Sciences mark mans developing ability to study phenomena in a holistic way.

One of the components within the holistic theory of knowledge is the holistic knowledge base. Its representation is the mandala described earlier. A better model can be a solid with twelve 'corners' and 20 triangular sides -- an icosahedron. The thirty 'edges' then naturally integrate the subjects into a holistic object.

The subjects are not separate entities but made up of facets of an intuited whole. The twelve-ness, though arbitrary, is the result of a useful convention.

Twelve subject facets give an enumeration where the classes are not meaninglessly general and not too numerous to clutter the representation with unnecessary detail. Resolution of finer details can be easily achieved by subdividing the facets and/or combining separate facets or their sub-divisions.

The mandala also represents 'faculties' of a new type of learning circle. The vision is to attract for every facet *a group of enthusiast-specialists*--ideally twelve for each facet--in love with chosen fields of study and life application. Goto TOP Return to Forums Return to Manifesto

Avatar of Synthesis

According to Alice A Bailey (The Externalisation of the Hierarchy), one of the Beings associated with human development in the near future is the *Avatar of Synthesis* so named because of the quality and objective of the force It wields. As the Being Itself does not take physical form, a lesser Avatar who can descend into the physical plane is waiting a call from humanity and thus transmit the stimulus and

quality of the force of the greater Avatar. Return

Knowledge without action is sterile; action without knowledge is blind.

Knowledge of spiritual matters is also sterile unless it is expressed through action *in* the world. Love is not enough. It is *love in action* that has the power to transform the world. As a saving force, spirituality is to be practised *through* physical world reality not in parallel with it.

The challenge to people of goodwill is to perceive the opportunities in the crisis facing humankind. A prerequisite for meeting this challenge is the transforming, consciously, of goodwill into will-to-good. The world does face a megacrisis of resource shortage, overpopulation, pollution, alienation and crime, confusion, fear of the future, disconnection with the past. All these problems may herald a catastrophe or, through the effort needed to eliminate them, can lead to a glorious new future.

Human evolution is the unfoldment of spirituality through the plane of manifestation. This unfoldment is at a cross-roads as evolution itself had often been at cross-roads in the past; and we are responsible for the outcome through conscious evolution. It is true that we have not done very well so far; but we can do a lot better as implied by our capacity to learn from mistakes, if we choose, and by the obvious power to change our environment for better or worse.

As appropriate ways of knowing are essential to guide appropriate action, it is proposed to *somehow* develop an Institute of Holistic Knowledge or Institute of Holistics. Some basic ideas towards this [...] If interested, please help us to refine and develop them. The weekly forums are intended to be part of this effort and the subjects are treated as interdependent aspects of the whole which is "more than the sum of the parts". Goto TOP

Holism as a philosophy is expounded fully in a remarkable book, Holism and Evolution by General Jan C Smuts written in 1926.

A recent book The Fifth Discipline- Art and Practice of the Learning Organization by Peter M Senge on systems thinking in a managerial context, is a good source of ideas about knowledge as a holistic enterprise.

Holism suffers the disregard of the academic world. The term is impishly mis-pronounced as 'woolism'. The real problem is that while the methodology is sound, it is more difficult to make it rigorous to meet the standards which analytic and compartmentalized thought can achieve. (See the attempt by Stafford Beer quoted earlier.)

Social Change Forums--Discussion Events (also known as Neighbourhood Forums for Social Change) 1997/98

Conscious Evolution for the 21st Century

With Humankind a species has appeared in evolution which can direct its own future. This is conscious evolution.

> Man is in the making; but henceforth he must make himself. To that point Nature has led him, out of the primeval slime... Let him look no more to her for aid; for it is her will to create one who has the power to create himself. If he fails, she fails; back goes the metal to the pot; and the great process begins anew. If he succeeds, he succeeds alone. His fate is in his own hands... *G. Lowes Dickinson,* quoted by Kenneth Walker in *Life's Long*

Journey

The biggest danger to a civilization is the corruption of its philosophy and the devaluation of the role of ideas in the public mind.Return

Culture, civilisation, the quality of private and social life, the values we embrace; all this is expressed in practical ways through the institutions we build in society. And the human aspirations that give purpose to these institutions are, in the final analysis, the result of the dominant philosophy in society.Return

"HOLISM"

"SYSTEMIC PHILOSOPHY'

cómo entender un "SISTEMA"?
Ph viendo que encierra una "intención".

General Principles

Systemic philosophy asks the question, "How can we understand systems?" With the perspectives of systems philosophy, we look at the world in terms of facts and events in the context of wholes, and we understand them as integrated sets purposefully arranged in systemic relations. In contrast to the analytic, reductionist, linear, single cause-and-effect view of the philosophy of classical science, systems philosophy brings forth a reorganization of ways of thinking and knowing perceived reality, a view manifested in synthetic, expansionist, dynamic, and multiple/mutual causality modes of thinking and inquiring, how things work more than what things are. BHB

ALFRED NORTH WHITEHEAD

"While each scientific theory selects out and abstracts from the world's complexity a peculiar set of relations, philosophy cannot favor any particular region of human enterprise. Through conceptual experimentation it must construct a consistency that can accommodate all dimensions of experience, whether they belong to physics, physiology, psychology, biology, ethics, etc.." (-)

Serving Humanity as an Objective bhb

It is the main objective of GST says Boulding, to develop "generalized ears" that overcome the "specialized deafness" of the specific disciplines. meaning that someone who ought to know something that someone else knows isn't able to f ind it out for lack of generalized ears. Developing a framework of a general theory will enable the specialist to catch relevant coumniunication from others. In (the closing section of this paper, Boulding referred to the subtitle of his paper. GST as "the skeleton of science"

Knowledge, Action, Spiritual Considerations es

...What so we mean by systems science? While the different historical disciplines of the sciences have all developed their specific conceptual tools and rules, systems science hold that the large diversity of observable phenomena around us, can be made intelligible by using a limited number of abstract, primordial, and universal invariants and of relations between them.

Why a Systems View? bhb

The second half of the twentieth century is marked by massive changes affecting all aspects of our lives. We are experiencing the major societal TRANSFORMATION from the industrial machine age to the post-industrial information/knowledge age. These changes and transformations are reshaping our thinking and recasting the way we view ourselves, the systems of which we are part, the environments in which we live, and THE WAY WE VIEW the world.

Jan Smuts, Father of Holism hb

Holism (from the Greek Holos, whole) is the theory, which makes the existence of "wholes" a

fundamental feature of the world. It regards natural objects, both animate and inanimate, as "wholes" and not merely as assemblages of elements or parts. It looks upon nature as consisting of discrete, concrete bodies and things, and not as a diffusive homogeneous continuum. And these bodies or things are not entirely resolvable into parts; in one degree or another they are wholes which are more than the sum of their parts, and the mechanical putting together of their parts will not produce them or account for their characters and behaviour. The so-called parts are in fact not real but largely abstract analytical distinctions, and do not properly or adequately express what has gone to the making of the thing as a whole.

A Starting Place gb

A top-down systemic strategy, this involves imagining the whole oceanic unity of the universe, as we all vaguely remember experiencing it in the womb, then making a division, say between self and other, then conversationally and experimentally exploring the connections across the boundary between self and other. Then successively by making other analagous distinctions, say between the self and the family and the other, or between the living and the non-living, we can explore the connections across those boundaries using guiding metaphors as heuristics and rigorous logic for detailed self-correcting theory and model building.

Synergy and the Systems Sciences pc

Although it plays a significant role in most, if not all, of the scienctific disciplnes its importance is not widely appreciated because it travels under many different aliases, including emergence, cooperativity, symbiosis, coevolution, symmetry, order, interactions, interdependencies, systemic effects, even complexity and dynamical attractors. In this paper it is proposed that the term "synergy" be utilized as a pan-disciplinary lingua franca for co-operative effects of various kinds.

Is there a general System? tm

The idea of a General System is not necessarily new. If we discard our cultural and spiritual affinities, the concept of a General System can be traced back three thousand years to when the Chinese Yin/Yang was first conceived. Since that time, many writers, East and West, have spoken of a General System, although most if not all of their systems have been stated in the cultural specific language of the author. It is this necessary particularity that limits and confines the system to his culture and subsequently eliminates the generality. We call it the problem of "Misplaced Generality."

New Concepts of Matter, Life and Mind el

In light of what scientists are beginning to glimpse regarding the nature of the quantum vacuum, the energy sea that underlies all of spacetime, it is no longer warranted to view matter as primary and space as secondary. It is to space or rather, to the cosmically extended "Dirac-sea" of the vacuum that we should grant primary reality. The things we know as matter (and that scientists know as mass, with its associated properties of inertia and gravitation) appear as the consequence of interactions in the depth of this universal field. In the emerging concept there is no "absolute matter," only an absolute matter- generating energy field.

General Semantics as a philosophy pp

"... a language, any language, has at its bottom certain metaphysics, which ascribe, consciously or unconsciously, some structure to the world." (*Science and Sanity*, p.89) "We do not realize what tremendous power the structure of an habitual language has. It is not an exaggeration to say that it enslaves us through the mechanism of s.r. (semantic reaction) and that the structure which a language exhibits, and imposes upon us unconsciously, is *automatically projected* upon the world around us.

Whorf Sapir Hypothesis lvb

We are thus introduced to a new principle of relativity which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar...We cut up and organize the spread and flow of events as we do largely because, though our mother tongue, we are partes of an agreement to so so, not because nature itself is segmented in exactly that way for all to see. (Whorf, 1952, pg. 21)

Home

- la teoría del "caos - cósmico"!

- la teoría = "fractal" —

correlación de formas - y modelos

como encontrar en el caos - formas racionales