

第四章 精神と宗教

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(4) 社会システム論から次元論の具体化へ

10. 人間理解：人間存在における諸次元の統一性・多次元統一体としての生
 人間は多くのシステムの複合体(システムではない)
 ・自己参照性(自己関係・自己準拠) 次元の独立性
 ・生のダイナミズム：自己同一性、自己創造、自己超越
 閉鎖性に基づく開放性 = 自己同一性・道徳による精神の成立(ティリッヒ)
 ・精神の次元(先行する諸次元を前提として成立する閉鎖的な自己参照システム)
 道徳(精神的主体の成立) 文化(意味世界の創造)
 宗教(パラドックスの脱パラドックス化)
11. 次元論：システムは、先行するシステムの創発的な秩序として生成する(創発性)
 人間存在(生)において、こうして生成した諸次元が統合されている
 生命システム 心的システム 社会システム
 物質・無機的 有機体・生命 心 精神 歴史
12. 新しい次元の創出はいかなる仕方で理解できるのか
 ・カオス、自己組織化、全体論的秩序の生成という問題へ
 ・物質から生命、生命から心、心から社会
 比較的明確な理論化がなされている議論を一般化する
 ルーマン、ホワイトヘッドの方法
13. 神はこの創出性にいかに関わるのか
 神は最高位の全体論的概念

4 - 4 カオスと自己組織化

- 1 カオスと全体論 2 カオス理論と神

1 カオスと全体論

(1) 混沌とカオス理論

1 . 西欧思想史における秩序と混沌

カオスとコスモスの弁証法 (神話、ヒエロファニー)

カオス : 深淵さ (怪物) と豊穡さ (神的) 不安とエロス (憧憬)

mysterium fascinans / tremendum

2 . 聖書の創造論からキリスト教的「無からの創造」へ

cf. 古代オリエントとギリシャ

3 . 近代思想とカオス : 深淵(Abgrund) - 根底(Grund)

Schelling, *Über das Wesen der menschlichen Freiheit*

muß er den Grund seiner Existenz in sich selbst haben

Er ist die Natur in Gott

Schleiermacher, *Dialektik*

Chaos, Mannigfaltigkeit

Welt

Gott, Einheit

4 . 自然記述における非線形性

ニュートン力学という近似値を超えて

カオス理論

予測不可能性

cf. 線形性 : $A = a + B = b$ $A + B = a + b$

5 . One of the striking developments in science in recent years has been the increasing recognition that many dynamical systems --- physical, chemical, biological and indeed neurological --- that are governed by non-linear dynamical equations can become unpredictable in their macroscopically observable behaviour. (in certain cases --- in which there is dissipation of free energy in open systems far from equilibrium --- they manifest new levels and kinds of organization and then the non-linearity resides in the relation between certain key variables of the dissipative system, for example the fluxes of material or energy and the 'forces' controlling them.). Examples of such time-dependence include: turbulent flow in liquids; predator-prey patterns; reactor systems that involve autocatalytic relations; yearly variation in insect and other populations in nature; and the weather. The last-mentioned involves what has been called the 'butterfly effect' (Edward Lorenz), ... (Peacocke [1993] ,p.50)

'order through fluctuation' (52)

In these far-from-equilibrium, non-linear, open systems, matter displays its potential to be self-organizing and hereby to bring into existence new forms entirely by the operation of forces and the manifestation of properties we already understand ... (53)

'Top-down' ('Downward') Causation (53)

6 . 予測不可能性と偶然性あるいは歴史性、その神学的帰結

パネンベルクとポーキングホーン

偶然性・歴史性と聖書的思考法（実在の動的的理解、神の意志への依存性、神の自由）

実在の未来開放性と神の全知全能のケノーシス

(2) 全体論と次元の生成

プリゴジン、デイヴィス、清水博

多次元統一体としての生（相互独立性・自律性と相互関連性・結合性）

還元主義と二元論とに対して

7 . 還元主義(reductionism)から全体論(Holism)へ

自然の階層性と諸階層の自律性、そして諸階層の生成の秩序

cf. オートポイエーシスのシステム、次元論

8 . 自然哲学における一般化の方法

ホワイトヘッド（物理学 実在一般）、ルーマン（生命 心、社会）

9 . プリゴジンの非平衡系熱力学

10 . 「生命 / 心 / 魂」をめぐる全体論（デイヴィス）

What is life ? To the physicist the two distinguishing features of living systems are complexity and organization. (59)

Likewise, the secret of life will not be found among the atoms themselves, but in the pattern of their association --- the way they are put together, in the information encoded within the molecular structures. Once the existence of collective phenomena is appreciated, the need for a life-force is removed. Atoms do not need to be 'animated' to yield life, they simply have to be arranged in the appropriate complex way. (61)

Both hardware and software descriptions describe what is going on inside the computer, each consistent in their own way but at totally different conceptual levels. (62-63)

Hofstadter denounces the question, 'Should the world be understood via holism, or via reductionism?', as invalid. It all depends what you want to know.

Life is a holistic phenomenon. (63)

Closer inspection reveals that there need be no contradiction at all between biology and the second law. The latter refers always to the total system. It is possible for order to accumulate in one place at the price of entropy generated elsewhere. Now an essential feature of living systems is that they are 'open' to their surroundings: they are not completely sealed off or self-contained in any way. (65)

In recent years, some progress has been made in uncovering the principles that control the appearance of collective order. (66)

Ilya Prigogine, and his large research group at the University of Brussels

the systems concerned are driven far from thermodynamic equilibrium, whereupon they become unstable and spontaneously organize themselves on a large scale. He uses the term 'dissipative structures' to describe this organization: 'The occurrence of dissipative structures generally requires that system's size exceed some critical value... (and) involve long-range order through which the system acts as a whole.'

There is no doubt that Prigogine's work has advanced greatly our understanding of far-from-equilibrium physical structures, and helped us to recognize patterns in inanimate systems that are reminiscent of living organisms. (67)

Where is there room in the deterministic predictive laws of electrical circuitry for free will ? (74)

At the neural (brain cell) level, the human brain is equally mechanical and subject to rational principles, yet this does not prevent us from experiencing feelings of indecision, confusion, happiness, boredom and irrationality. (78)

It seems to me that the dualist theory falls into the trap of seeking a substance (the mind) to explain what is really an abstract concept, not an object. The temptation to reduce abstract concepts to things is apparent throughout the history of science and philosophy,

Concepts like usefulness, organization, entropy and information do not involve 'things' in the sense of objects, but relationships between, and conditions of, objects.

The fundamental error of dualism is to treat body and souls as rather like two sides of a coin, wherears they belong to totally different categories. (82)

Mind and body are not two components of a duality, but two entirely different concepts drawn from different levels in a hierarchy of description. (83)

the fact that the lower level is ruled by logic need not contradict the fact that the upper mental level can be illogical and emotional. (84)

In more modern parlance, the mind is 'holistic'. (85)

Can the mind survive the death of the brain by being transferred to some other mechanism or system ? Clearly this would be possible in principle.

Most people, however, do not contemplate the survival of their entire personality; so much of our makeup is tied to our bodily needs and capabilities. (87)

We have already encountered the importance of the feedback and self-coupling in Prigogine's dissipative structures which have the capacity for self-organization, and there seems to be a natural progression from the inanimate through the animate to the conscious --- a hierarchy of complexity and self-organization. But there is another hierarchy buried in this progression --- a hierarchy of conceptual levels discussed in the previous chapter. Life is a holistic concept, the reductionist perspective revealing only inanimate atoms within us. Similarly mind is a holistic concept, at the next level of description. (92)

As emphasized in the foregoing, consciousness, the impression of free will and the sense of personal identity all involve an element of self-reference and can have paradoxical aspects. (95)

if the mind is basically 'organized information' then the medium of expression of that

information could be anything at all; it need not be a particular brain or indeed any brain. (98)

<文献>

- 0 . プリゴジン 『混沌からの秩序』『存在から発展へ』みすず書房
- 1 . 山口昌哉 『カオスとフラクタル』講談社ブルーバックス
- 2 . 東京大学公開講座 『混沌』東京大学出版会
- 3 . ノベルト・ボルツ 『カオスとシミュレーション』法政大学出版局
- 4 . 吉田民人・鈴木正仁編 『自己組織化とはなにか』ミネルヴァ書房
- 5 . 今田高俊 『自己組織性 - 社会理論の復活 - 』創文社
- 6 . 清水博 『生命を捉えなおす 生きている状態とは何か』中公新書
- 7 . 標宣男 『科学史の中のキリスト教 自然の法からカオス理論まで』教文館
- 8 . 河本英夫 「自己組織化とオートポイエーシス」、松山・加國編
『シェリング自然哲学への誘い』晃洋書房
- 9 . Paul Davies, *God and the New Physics*, J.M.Dent & Sons 1983
『宇宙はなぜあるのか - 新しい物理学と神 - 』岩波書店
- 10 . John Polkinghorne, *Belief in God in an Age of Science*, Yale University Press 1998
『科学時代の信と知』岩波書店
- 11 . Arthur Peacocke, *Theology for a Scientific Age. Being and Becoming
--- Natural, Divine, and Human*, Fortress 1993
- 12 . Seorg Singe, *Gott und Chaos. Ein Beitrag zur Rezeption der Chaostheorie in der Theologie
und deren praktisch-theologische Konsequenz*, Peter Lang 2000