Alastair M. Taylor, Professor of Political Studies and Geography, has divided his professional life between the academic world and international organizations. He is especially concerned with international peacekeeping and political behavior, and with the revision of education toward more integrative, interdisciplinary curricula.

Dr. Taylor is a Canadian citizen, born in Vancouver, British Columbia, in 1915. He studied history at the University of Southern California, where he received his BA (summa cum laude) and MA degrees, and began his teaching career as an instructor in history. After years with the Canadian National Film Board concerned with war-training and documentary films, and experience with the United Nations, he continued his studies and in 1955 was awarded the PhD in the field of international relations by Oxford University. He has been on the faculty of Queen's University at Kingston since 1960.

He had first-hand experience in international relations as a staff member of the Secretariat of the United Nations for six years. Part of this time he was assigned to Indonesia with the field machinery of the Security Council to work toward the resolution of Dutch-Indonesian nationalist conflict. His detailed case-study of this dispute and its outcome was published in Indonesian Independence and the United Nations, with a Foreword by the Rt. Hon. Lester B. Pearson (Cornell University Press, 1960).

These experiences led to a special interest in developing a political theory at the supranational level of societal organization and integration. Dr. Taylor is also presently working at directing research projects connected with international peacekeeping theory and field experiences (with special reference to Canadian decision-making and involvement).

His global approach to the study of human cultures, beyond Western ethnocentrism, has been a part of his outlook since the beginning of his graduate studies in history. He became involved then with Professor T. Walter Wallbank in conceiving and writing what was to be the pioneer work in world history for American universities, adopted by some 300 colleges and universities: a two-volumed textbook entitled, Civilization — Past and Present. He is currently working on its sixth edition. Dr. Taylor has written or co-authored four other books, and has contributed to numerous professional journals in the field of international organization and political behavior, etc.

Dr. Taylor is currently President of the Canadian Association for American Studies. He is also on the Editorial Board of Main Currents in Modern Thought, published by the Foundation for Integrative Education in New York. His article in the January-February 1966 issue on 'Multi-Relationality in Foreign Policy,' was an application of Korzybski's theory.

He has a key role in the efforts of the Foundation for Integrative Education toward developing conceptual common denominators among the physical, biological, and behavioral sciences on the one hand, and the humanities and fine arts on the other, so that present trends toward fragmentation of knowledge on our campuses may be reversed.

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TOWARD A FIELD THEORY OF INTERNATIONAL RELATIONS

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I. INTRODUCTION: AN EPICYCLICAL AGE

As conceptual guidelines to his Science and Sanity, Alfred Korzybski has provided us with a wealth of quotations at once stimulating and challenging. I have chosen three to serve as "texts" for our present Memorial Lecture. (Actually, we might add a fourth, namely the Old Maxim found in the Introduction to the Second Edition of Science and Sanity, adapting it in order to meet the exigencies of this evening's talk: "When in perplexity, listen on" — and hope for the best!)

The first quotation is by Poincare:

Everyone carries in his mind his own conception of the world, of which he can not so easily rid himself. We must, for instance, use language; and our language is made up only of preconceived ideas and can not be otherwise. (The Foundations of Science)   9

The second belongs to Bertrand Russell:

The notion of continuity depends upon that of order, since continuity is merely a particular type of order. (Mysticism and Logic)

The third quotation is provided by Korzybski himself:

Modern conditions of life are, to a large extent, affected by non-Aristotelian ($\overline{A}$) science but exploited by the thoroughly Aristotelian (A) doctrines of the commercialists, militarists, politicians, priests, lawyers, etc., which results in a bewildering chaos, resulting in needless, great, and imposed suffering for the great masses of mankind, as exemplified by such cataclysms as wars, revolutions, unemployment, different economic crises, etc. (Science and Sanity, p. 555)

To such a list, we might add that phenomenon of our own day, namely, student rebellion against an educational system whose values and two-valued semantics alike are regarded by them as both irrelevant and pernicious.

It is on this asymmetrical and disequilibrating relationship existing in the contemporary societal environment between $\overline{A}$ science and technology on the one hand, and A juridical and political traditions and doctrine on the other — resulting in what Korzybski has described as "bewildering chaos" — that we shall concentrate.

Let me conclude my introductory remarks by recalling Oliver Wendell Holmes' "The Deacon's Masterpiece" which, you will remember, begins:

> Have you heard of the wonderful one-hoss shay,
> That was built in such a logical way
> It ran a hundred years to a day,
> And then, of a sudden it — ah, but stay....

Of course the tale is familiar, but what may not be so well known is why Holmes wrote it. He sought to demolish the doctrine of Calvinism and its theory of predestination which is sustained by impeccable logic at

every point. The one-hoss shay was so constructed as to possess invulnerable strength throughout the structure - but when it did collapse, its crumbling was complete, indeed, virtually self-removing. In other words, the inner logic of any major conceptual model may have to call for its acceptance, or rejection, in toto. Yet such systems generally provide evidence of their impending collapse - as when their theoretical construct can no longer be validated by empirical data. A good example is the Ptolemaic model of celestial mechanics. Geocentric with the planets and stars revolving around the earth attached to crystalline spheres, this theory could only be sustained by the device of epicycles (small wheels attached to the larger cycles) in order to account for anomalies in the behavior of extra-terrestrial bodies. In Copernicus' time, some 80 epicycles were required - but his heliocentric model, with the earth revolving in a circular orbit around the sun, reduced their number to 34.[1] The Copernican "revolution" had been effected - yet Kepler, with his belief that "Natura simplicitatem amat," was still not satisfied. Eventually, by determining the orbit of a planet to be an elipse, he demonstrated the mathematical elegance of that Latin phrase by removing the need for epicycles entirely.

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Above everything else, man is a model-maker, and all his systems are continuously being tested by new empirical evidence - so that each in time requires to be superseded by a more relevant model. The limitations of the Newtonian and Euclidean models were exposed during the last century, such as by the Michelson-Morley experiment of light transmission in 1877, which presented science with two alternatives: either to return to the Ptolemaic construct (i. e., the earth was at absolute rest), or to proceed to a new conceptual model - as Einstein did. Anomalies embedded in the N and E systems have been resolved by Einsteinian and E̅ constructs - while the two-valued Aristotelian "shay," replete with semantic "epicycles" designed to prop up the venerable vehicle, must also one day give way to a new, infinite-valued model. This is the pressing work to which Korzybski devoted his life. As part of this necessary process, there is increasing need to (1) recognize the dangerous anomalies-cum-conceptual epicycles existing in the juridical-political construct that was formalized concomitantly with the triumph of N-E-A world-views in early modern times - a construct known as the national state system - and

(2) employ the concepts and analytical tools inherent in N̅, E̅, and A̅ systems for the purposes of constructing a theory of international relations and institutionalization appropriate to Einstein's four-dimensional space-time manifold.

II. Theoretical Basis for a New Socio-political Formulation

In approaching the theoretical basis for formulating a socio-political construct appropriate to our day, we can draw attention to certain fundamental concepts propounded by Korzybski himself. These include:

1. the significance of "structure," "relations," and "multidimensional order";

2. lower- and higher-order abstractions;

3. two-valued vis-à-vis infinite-valued orientations;

4. the mechanism of "time-binding" - and man's role therein.

We believe that the structure and functioning of our conceptual model will be found to be in consonance with these fundamental constructs.

A number of universal, integrating principles - all of them logically compatible - affect the form and function alike of the phenomenal world, organized as systems at levels of progressive complexity. Thus, these systems exist in time-space; they are subject to quantization (continuity-discontinuity); to symmetry (invariance under transformation); and to equilibrium (such as homeostasis among organisms, which are open systems functioning within a larger ecology, and subject as such to negative and/or positive forms of feedback). In the brief time available, I would like to concentrate upon two integrative principles because of their special relevance to the socio-political model which I wish to blueprint within prescribed spatio-temporal boundaries (yet another integrative principle).

The first is isomorphism (as expressed in General Systems Theory). The inter-war years saw important advances made in understanding the relationship of sensory, cortical, and motor neural nets, arranged circularly as well as linearly, thereby permitting data fed in to be "trapped" and retained as information. World War II offered vast scope for the practical application of these developments in neural and information theory. For example, the speed of moving targets required the invention of devices capable of processing enormous amounts of information rapidly so as to make appropriate "decisions" and, in addition, function on the principle

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[1] Sir Herbert Butterfield, The Origins of Modern Science, 1300-1800, new rev. edition, G. Bell and Sons, London, 1965, p. 28.

of self-correction. From what R a p a p o r t has described as the Second Industrial Revolution with the appearance of machines designed to process "not energy [as in the case of the First Industrial Revolution] but information" has come postwar developments in automation and the science of cybernetics. Important implications flow from these developments. On one hand, inter-war neurological research explained how o r g a n i s m s, in addition to transforming energy a s mechanisms, also function as systems capable of processing, storing, and retrieving information, and of making decisions. On the other hand, t h e s e attributes characterize non-living systems a s well. Consequently, it becomes possible to generalize "the concept of 'organism' to the concept of 'organized system.' Organized systems i n c l u d e organisms."[2] Thus the principle of isomorphism p e r m i t s us to group, and compare, one-to-one correspondences between living and non-living e n t i t i e s on the basis of characteristics or attributes shared as organized systems - while conversely, we can employ t h e principle also so as to reveal and analyze those a t t r i b u t e s which m a k e living and non-living entities dissimilar.

At the core of "o r g a n i z a t i o n," in Ashby's opinion, is the concept of "conditionality," namely, once the relation between two entities becomes conditional upon the value or state of a t h i r d entity, a necessary component of "organization" is present.[3] Consequently, the study of organization has inevitably to concern itself with holistic concepts that include relationality, interaction, equilibrium by means of feedback (i.e., circular causal t r a i n s), decision-making, a n d purposeful or goal-seeking behavior. General Systems Theory provides us with a valid epistemological t o o l by w h i c h to correlate sociocultural phenomena with both inanimate and biological levels of organization.

T h e second integrative principle employed in our theoretical construct is that of successive levels of organization. Isomorphism helps e x p l a i n how systems share similarities of structure and function, but we have also to account for degrees or stages of complexity among organized phenomena. We reject the reductionist thesis that laws at t h e lowest level are sufficient to e x p l a i n phenomena at a l l levels; rather, we insist with Margenau that the laws in the more complex biological f i e l d, while not identical with those of physics and chemistry, are nevertheless logically compatible with them. Similarly, we contend that the organization of the most c o m p l e x level, the socio-cultural, can be expected to exhibit - in r e g a r d to its similarities and dissimilarities alike with other levels - this same logical compatibility.

The structuring of the phenomenal world as a hierarchy of successive l e v e l s of organized complexity recognizes the interaction of the "individual" - which may be an electron, atom, molecule, crystal, cell, plant, animal, tribe, state, and so on - with its larger environment. Gerard has employed the term "org" to describe those entities or systems which a r e individuals a t a given level while in turn serving as subordinate units - or "lower-level orgs" - in superordinate entities, or "higher-level orgs." The attainment of each new level of organization is accompanied by a n "explosive increase i n richness of p a t t e r n ... an emergence of u n p r e d i c t a b l e novelty."[4] We s h o u l d also keep i n mind that "the addition of new levels of integration has not involved the abandonment of integration at lower levels. The appearance of multicellularity did not i n v o l v e reduction i n the contribution of cellular complexity to the total picture of integration...."[5] Consequently, the appearance of socio-cultural systems is marked by the continuance of "lower-level orgs" serving as s u b o r d i n a t e units, while the former in turn are characterized b y attributes a n d functions unique to their own level.

We might now list some of the uniformities found among integrative levels:

a. Each level organizes the level below it plus one or m o r e emergent qualities (or "unpredictable novelties"). Consequently, the integrative levels are cumulative upwards, and the emergence of qualities m a r k s the d e g r e e of complexity of the conditions prevailing at a given level, as well as giving to that level its relative autonomy.

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Anatol Rapaport, "Foreword," Modern Systems Research for the Behavioral Scientist (Walter Buckley, editor), Chicago, Aldine P u b l i s h i n g Co., 1968, p. xix.

3
W. Ross Ashby, "Principles of the Self-Organizing System," Principles of Self-Organization, (H. Von Foerster and G.W. Zopf, Jr., editors), New York, Macmillan, 1962, p. 256.

4
R. W. Gerard, "Units a n d Concepts of Biology," Science, 125 (1957), pp. 429-433.

5
Robert Redfield, "Introduction," Levels of Integration in Biological and S o c i a l S y s t e m s, Jacques Catell Press, 1942, pp. 5-26.

b. The mechanism of an organization is found at the level below, its purpose at the level above. Therefore, explanation of phenomena is continuous from below, discontinuous from above. Knowledge of the lower level implies an understanding of matters on the higher level; however, qualities emerging on the higher plane have no direct reference to the lower-level organization.

c. The higher the level, the greater its variety of characteristics, but the smaller its population. This is accounted for by the increase in the number of emergent qualities, and the fact that a given unit is composed of subordinate units. From the standpoint of population, the integrative levels form a pyramid.

d. The higher level cannot be reduced to the lower. Since each level has its own characteristic structure and emergent qualities, any such attempt results in the fallacy of reductionism.

e. Every organization, at whatever level, has some sensitivity and responds in kind. Examples of characteristic behavior include: action-reaction at the physical level, combination-rearrangement at the chemical level, sensitivity-reactivity at the biological level, stimulus-response at the psychological level, and contact-adaptation at the cultural level.

The structure of the levels of organization below the socio-cultural stage can be diagrammed sequentially as shown in Figure 1.*

For some two thousand million years the environment has acted to adapt the organism, so that the resulting symbiosis has been due to the Darwinian process of "natural selection" - which we shall call adaptive equilibration. But with the advent of say Homo habilis who, according to Leakey, was a tool-maker, we find a progressive shift from adaptation - the adaptive specialization found in virtually all orders other than the Primates and which functions in inverse relationship to environmental flexibility[6] - to manipulation, the hallmark of the Primates which are characterized by an over-all absence of adaptive specialization, so that Homo sets about increasingly to adapt and order the external environment to his specialized purposes. The resulting stage of manipulative equilibration - made possible by "unpredictable novelty" emerging at the human level of

organization - is exemplified by a more highly differentiated nervous system than that possessed by the animals for whom "the question of order is less important, as they cannot alter it."[7] This quotation from Korzybski is highly relevant, because it distinguishes in turn between "adaptive" and "manipulative" levels of equilibration. Unique to man is his capability to engage in high-order abstractions, to communicate symbolically, and to possess self-identity and self-direction. This distinction between the pre-human and human levels has been described as "cerebral/conceptual Rubicon," and is akin to Korzybski's term "time-binding" since it is unique to men that "each generation ..., at least potentially, can start where the former generation left off."[8] The relationship of this cerebral/conceptual Rubicon to planetary evolution is represented schematically in Figure 2.

Thus far, we have applied the principle of integrative levels to stages below the "Rubicon" line. But the ubiquity of its presence in socio-cultural constructs can be demonstrated by examples from major institutions, both past and contemporary. Thus the early Christian Church, its own administration patterned on that of the Roman empire, was organized in terms of the following "ascending " divisions: parishes, dioceses, provinces, patriarchates - while the administrative structure today is "capped" and governed by means of the Papal Curia. Again, every military establishment is hierarchically delineated, from say the five-star general through his four-, three-, two-, and one-star subordinates, and eventually down to the lowest level of the non-commissioned ranks, the corporal and private - with each level assigned its appropriate functions. Corporations in the private sector of the economy and governments in turn apply similar principles of organization and administration. If we look at federal governmental structures, we find three major administrative levels: national, state (or provincial), and municipal. (We shall have more to say on this subject later.) Nowhere can this organizational principle be more clearly seen than in the educational system. The learning process from kindergarten through the post-graduate school is carefully structured in terms of precise levels, with each assigned its specific functions. Note, too, that while each grade makes use of the information provided by the grades below, its own curriculum

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* Figures 1, 2, 3, 8, and 9 come from Dr. Taylor's contribution to a forthcoming volume developed by the Foundation for Integrative Education under the Editorship of Dr. Henry Margenau. — Ed.

[6] George Gaylord Simpson, The Meaning of Evolution, Mentor, 1955, cf. Chapter 7: "The Concept of Progress in Evolution."

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[7] Alfred Korzybski, Science and Sanity, fourth edition, p. 183 (italics added to the last phrase).

[8] Ibid., p. 39.

FIGURE 1

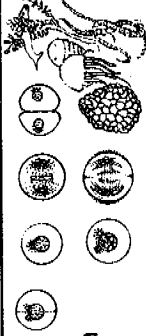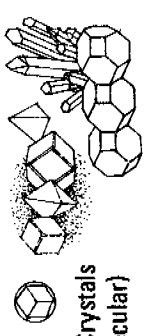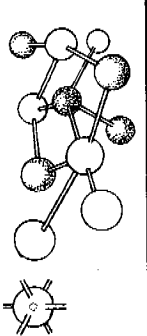## LEVELS OF ORGANIZATION (Adaptive Equilibration)
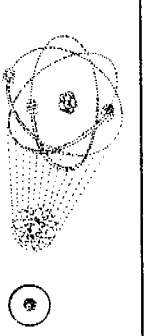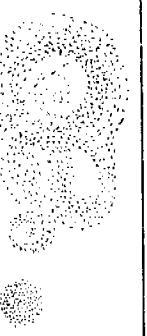
LEVEL	SYSTEM	PROPERTIES/EMERGENT QUALITIES	EXPLICATION: CONT-INUITY	DISCONT-INUITY
		(Sociocultural-Technological Levels) "Cerebral/Conceptual Rubicon"		
L_6 ANIMATE	<u>Open</u> Flora & Fauna (multi-organic)	BELOW + Integration of internal and external environments; biotic equilibration		
L_5 ANIMATE	<u>Open</u> Organisms, Metazoa (multi-cellular)	BELOW + Division of internal functions; neurological codes		
L_4 ANIMATE	<u>Open</u> Cells, Protozoa (multi-molecular)	BELOW + Negative feedback (homeostasis); biochemical codes		
L_3 INANIMATE	<u>Closed</u> macro-molecules, Crystals (multi-atomic-molecular)	BELOW + Internal molecular forces; crystal structure; replication		
L_2 INANIMATE	<u>Closed</u> Molecules (multi-atomic)	BELOW + Chemical bonding		
L_1 INANIMATE	<u>Closed</u> Atoms (Multi-particle)	BELOW + Electrical attractions; Pauli's exclusion principle		
L_0 INANIMATE	<u>Closed</u> Particles	Positions, Velocities Forces		

FIGURE 2

GROWTH CURVES

Energy Production
Symbolic Communication
Technological Systems etc.

Demographic

"MANIPULATIVE   EQUILIBRATION"

(Technological — Societal Evolution)

(Self-Consciousness)

Paleolithic
Mesolithic | Neolithic

Sub - Human Species

Sign Using etc.

Tool Using

Instinctive Behaviour

Hominization

"ADAPTIVE   EQUILIBRATION"

(Biological - Ecological Evolution)

"Conceptual Rubicon"

Q^5

Q^4

Q^3

Q^2

Q^1

ca. 2,000,000,000 B.C.

ca. 2,000,000 B.C.

2,000,000 B.C.

2,000 A.D.

RATE OF GROWTH

S

T

DURATIONAL EXTENSION

Q^1 – Cellular Revolution (Protozoa)
Q^2 – Metazoan Revolution
Q^3 – Appearance of Phyla, etc.
Q^4 – Hominoidea & Other Primates
Q^5 – Homo Habilis (ca.2,000,000)

Arbitrary Selection of Discontinuities for Schematic Purposes Only

displays unique concepts and goals, in turn serving as a sub-level for "higher-order" grades above to which it furnishes information and methodological tools. As a final example, we might take the postal system, because the address on any envelope displays the ubiquity of this principle in action. So economical is the ordering process in the phenomenal realm that no more than five steps are required to single out any individual from the more than three billion inhabitants of this planet. (Similarly, this same ordering principle makes possible all filing systems and the structuring of dictionaries, encyclopaedias, and so forth.)

III.   Evolution of Socio-political Constructs

Having recognized the presence - or to be more precise, the invariance under transformation - of such integrative principles as isomorphism and successive levels of organization in the phenomenal world, we might now attempt to apply them to one major segment of the universal culture pattern, namely, socio-political structures and modes of behavior.

As in the case of Figure 1, the question of delineating the number and categories of organizational levels for the stage of manipulative equilibration depends upon one's own particular approach and purpose. For our part, we have approached this question from the basic standpoint of the man-environment nexus; inasmuch as Homo is a biological and therefore "open" system, it is logical to assume that his societal constructs will also exhibit feedback stabilization with their over-all environment. However, at the manipulative level, this nexus assumes the form of "environmental control systems." Within this conceptual framework, we shall now structure what we consider to be fundamental organizational levels.

The first such level comprises the greatest single segment of human time-space, extending (a) for some 99 percent of the two million years since Homo habilis' advent, and (b) over all the accessible areas of the earth. This is the food-gathering, or Paleolithic, stage of environmental symbiosis, in which man remains a hunter-fisherman equipped with a lithic technology that develops in the direction of progressive specialization and miniaturization, such as microliths. But environmental control is stringently curtailed by the tool-making limitations inherent in flint and bone, as well as by the fluctuations of food supplies in a hunting-fishing economy. Societal behavior patterns at this stage are based primarily upon a biological nexus - family, extended family, clan, and tribe — and inter-relationships existing in the family and larger groupings act as

potent social pressures to ensure conformity or, when offences have occured, to restore the traditional order - a conserving, and highly conservative Weltanschauung appropriate to a severely circumscribed technological-societal control capability. We might describe this stage as occupying an "undifferentiated universal" environment - or TS^0 (paleo) - and, in terms of our schema of organizational levels, as L_7 (i.e., the level immediately above the "Conceptual Rubicon").

The next major quantum shift in socio-technological organization occurs with the domestication of wild grasses and animals, summed up in the expression "Neolithic revolution." The food-gathering hunter or fisherman becomes next the food-producing farmer or herdsman - and his increased technological capability enables him to "stay put," i.e., to localize his environmental control. This results in an increase of population numbers and densities, as well as concomitant changes in societal attitudes and institutionalization, in which the man-environment nexus assumes a progressively less "biological" in favor of greater "territorial" importance. We can designate this development as a "differentiated universal" environment - TS^0(neo) - and also as L_8.

As we know, the application of domesticated cereals to the rich bottom lands of various river valleys — including the Nile, Tigris-Euphrates, Indus, and Huang-ho — made possible still another breakthrough, namely, the "Urban revolution." This was because a new riverine technology provided harvests sufficiently large both to sustain unprecedented population densities and to permit sizable numbers of people to engage in specialized non-agricultural pursuits within an urban environment. Concomitantly, the socio-political center of gravity shifts to the cities which henceforth control the "lower-order" countryside. From a geographical standpoint, the technological capabilities of this environmental stage are still so limited as only to provide control over the river valley and its immediate hinterland (where irrigated by lateral canals). Hence we find a one-dimensional environment (TS^1) organized as L_9. These fluvial societies, sometimes referred to as "hydraulic civilizations," are noteworthy for their longevity by conservatism alike, though they are also marked by important technological and conceptual advances, including the use of metals (in particular, bronze), the advent of writing, and what has been described as "proto-science."

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As from the second millennium B.C. especially, we find environmental control systems acquiring a major two-dimensional capability. Thus Indo-European-speaking peoples fan over much of southern and western Eurasia, equipped with an iron technology. Through the development of maritime technics, the Mediterranean with its hinterland becomes the setting for a number of thalas-socracies - the Helladic, Bydian, Phoenician and, later, Hellenic, Hellenistic, and Roman. In subsequent millennia, men extend two-dimensional control from maritime to oceanic environments (markedly as from the fifteenth century A.D.), and in modern times employ a steam-and-iron technology to open up and exploit vast continental hinterlands in the two Americas, Africa, and much of Asia - while by the end of the nineteenth century, Perry and Amundsen have also "conquered" the two Poles. This historic process of exploring, mapping, and controlling the earth's surface was intimately connected with the Greeks' discovery of the scientific method of higher-order abstraction, so Euclidean geometry could be employed by Eratosthenes to compute the earth's circumference (to a remarkable approximation) and by him and Ptolemy to apply a grid system to the plotting of maps, thereby placing cartography on a scientific basis. The boundaries and manipulative capabilities of this TS^2 environment were progressively enlarged also by the invention of a machine technology (whose stages have been defined by Patrick Geddes and Lewis Mumford as "Eotechnical," "Paleotechnical," and "Neotechnical"). In Korzybski's terminology, L^{10} has been conceptualized and organized by means of A, E, and N systems.

The last hundred years have been marked in turn by vast technological and conceptual revolutions alike. The stage of printing - a TS^2-L_{10} invention - has been augmented (and according to Marshall McLuhan all but outmoded!) by electronic forms of communication, capable of transmission around the globe and through extra-terrestrial space at the speed of light. We have already alluded to Rapaport's "Second Industrial Revolution" in the fields of information, automation, and cybernetics. Meanwhile, man's environmental control capabilities have been extended vertically so as to create a three-dimensional system - TS^3. Conceptually, Newtonian-Euclidean absolutes have been replaced by Einstein's model of relativity and Riemannian geometry. In short, we have made a quantum shift, technologically and conceptually, to a new level of organization - L_{11} - which is global-cum-extra terrestrial in its scope and one requiring a basic
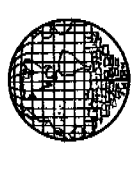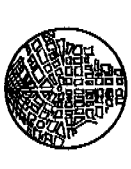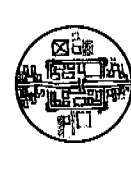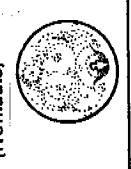
shift in our traditional view of reality, a construct that is $\overline{N}$, $\overline{E}$, and $\overline{A}$.

Thus far, we have attempted in the brief span available to structure socio-cultural phenomena in terms of a broad schema based upon the principal of successive levels of organization and integration. This schema can be depicted as shown in Figure 3. Now we might try to relate these stages of technological-environmental relationality to another closely-connected nexus, namely, epistemological-political relationality (i.e., to the data found in the three right-hand columns in Figure 3).

TS^0 societies are marked by communal forms of organization and decision-making, with deference paid to age as well as to an outstanding hunter who in turn might be chosen leader. The socio-spatial Gestalt that comes to mind is the communal circle, with the headman recognized as primus inter pares. In such a circle, attitudes and actions alike are collective, and law is based upon customary group practices. Lithic man tends to regard existence as a unified continuum, so that organic and inorganic phenomena alike are, in his mind, infused with spirit - thereby all but obliterating the distinction between the natural and supernatural. TS^0 societies all over the world are marked by a telluric culture, in which the female principle - replete with fertility figurines and ceremonies - is embodied in the concept of the Earth-Mother (Magna Mater). The socio-political structure subordinates the individual to his group. The gradual transition from macro-towards micro-durational intervals, or, again, from undifferentiated to measured, "localized" space, is part of the conceptual evolution by which man progressively distinguishes himself from the "group soul." This process is attended by a gradual shift from mythopoeic ideation to logical analysis.

TS^1 societal constructs are hierarchically structured, with a "god-king" (embodying both the male principle and the concept of the solar deity) ruling from the top of a governmental and bureaucratic structure - which is logically diagrammed in political science textbooks as a pyramidal Gestalt. The female principle remains as a conceptual and cultural invariant alike - but it has undergone profound transformation. What was dominant in L_{7-8} is now subordinated to the male principle: Isis serves as a "lower order" consort of Osiris. The ruler is either a god himself or, as in China, possesses the "mandate of Heaven" - with the result that TS^1 imperia are theocratic. Not only does the ruler govern by divine right but all power is concentrated

FIGURE 3

LEVELS OF ORGANIZATION (Manipulative Equilibration)

LEVEL	SYSTEM OF ENVIRONMENTAL CONTROL		PROPERTIES	EMERGENT QUALITIES					Explication: Cont-inuity|Discont-inuity
	EXPLETED SPACE	IMPLETED SPACE		TECHNOLOGY	SCIENCE	COMMUNICATION	GOVERNMENT	CONCEPTUAL/SYMBOLIC STAGE	
L_{11} TS3	Three-dimensional (extra-terrestrial)	Megalopolis ("Ecumenopolis")	BELOW +	Automation Electrical-nuclear energy Cybernetics	Einsteinian Relativity	Electronic transmission (Simultaneity throughout expleted space)	"Ecumeno-cracy" (Supra-national political systems)	"Kosmos": Holism, systems theory, feedback contructs, multi-relationality Differentiated universals Interdependence	→ ←
L_{10} TS2	Two-dimensional (oceans, continents)	City	BELOW +	Machine technology Transformation of energy (steam)	Scientific Method (Newtonian world-view)	Mechanical transmission (printing) Alphabet	National State system Democracy	"Logos": Anthropomorphism ("Man is the measure") Salvation by God-made-man Two-valued logic Independence	→
L_9 TS1	One-dimensional (riverine societies)	Town	BELOW +	Metal tools Non-biological (wind, water) prime movers	Proto-Science	Writing	Theocracy	"Theos": God-King ("Mandate of Heaven") Solar cultus Male principle Rectilinear Gestalten Human dependence	→
L_8 TS0(n)	Particulated Universal (sedentary)	Village	BELOW +	Domestication of plants, animals Animal energy		Ideograms	Biological-territorial nexus	"Mythos":	→
L_7 TS0(p)	Undifferentiated Universal (Nomadic)	Cave/tent (intraterrestrial)	BELOW +	Stone tools Human energy		Pictograms	Biological nexus (family, clan, tribe)	Earth-Mother ("Magna Mater") Telluric cultus (womb/tomb) Female principle / Curvilinear Gestalten (Spatial, Aesthetic, conceptual -including -temporal)	→

"Cerebral/Conceptual Rubicon"

in his person, which gives effect to his "sovereignty," i.e., a capacity to act subject to no other authority. Decision making-and-enforcing in a TS^1 political construct is both uni-dimensional and uni-directional. A TS^1 imperium is usually insulated by terra incognita or low population densities from other similar societal constructs. Consequently, power is employed primarily intra-societally, and directed vertically from god-king to subjects who for their part remain in a state of total dependence without formalized right of political participation. (In TS^0 societies, on the other hand, the application of power assumes a circular Gestalt, involving "feedback" and decisions by consensus). In TS^1 conceptualization, the kingdom or imperium regards itself as the sole, or at least the primary, actor within the political environment, assigning to other states either non-existence or the status of tributaries (an attitude demonstrated, for example, by China in its self-evaluation as the "Middle Kingdom"). In such theocratically-oriented societies, we find monadic forms of thought, expressed in terms of one-valued orientation, namely, "as given" to "other-directed" people, i.e., to populations in a continuous state of socio-psychological dependence.

In TS^2 environments, as population densities increase, the delineation of boundaries becomes increasingly important, both spatially and psychologically - and this political mapping in turn requires appropriate legal modalities. Hence the genesis and formalization of inter-state relations. Power continues to be wielded "vertically" in the intra-societal environment, but now it also becomes progressively "horizontal" in terms of trans-national interests and activities. Within a given polity, the locus and exercise of sovereign power becomes the subject of conflict between the monarch basing his claim on "divine right" - an L_9 construct - and the populace which seeks to vest sovereignty in the collectivity. The eventual emergence of representative forms of government (and democracy itself) is the logical concomitant of an over-all conceptual shift associated with the L_{10} world-view, namely, the triumph of Protagoras' maxim that "man is the measure of all things," a concept attended also by the appearance in Eurasia of a number of major new religions based upon the "avatar" principle (God-made-man). In our schema, the "Theos" of L_9 is progressively replaced in the Western World by the "Logos" of L_{10} as exemplified by the emergence of the scientific method of the Greeks, including their E and A systems. Although our science and technology today enable us to function within a three-dimensioned environmental

control system, our political and juridical concepts and modes of behavior are still rooted to models devised for polities functioning in terms of controlling environments in "flat space," i.e., in two dimensions. Hence our need at this juncture to examine in some detail the character of L_{10} political-juridical constructs and their implications for our present, i.e., L_{11}, "space age."

In any political system one has to consider such factors as "the types of units involved, the number and nature of their contacts, their goals toward each other, their means of achieving these goals, and the common institutions they establish."[9] Luard has developed a typology of such systems, ranging from "expansive competition" (i.e., the absorption of small states by larger during the period of the Eastern Chou in China, ca. 720-220 B.C.), through "bipolar alliance competition" (among the Greek city-states ca. 480-350 B.C.), "dispersed territorial competition" among emergent national states in early modern times, and "dynastic competition" in the late 17th and 18th centuries," to "nationalist rivalry" in the century following 1815, and competition among super-powers in the contemporary period.[10] Our historical resume of developments at L_{10} comprises a particularized development of our over-all conceptual schema. On balance, the Greek city-states exhibited a dyadic - either/or - orientation which in the Peloponnesian war produced fatal results.

For their part, the Romans were more successful from a geo-political standpoint; thus socio-spatial expansion by means of superior military technology was accompanied by a progressive development of Roman governmental techniques and legal theory, applied to a multi-ethnic world-state — as evidenced by the evolution of Roman law from ius civile to ius gentium. The "fall" of Rome can be explained, on the basis of the principle of integrative levels, as retrogression from a higher to a lower level of socio-political organization (the so-called "Dark Ages), accompanied by socio-spatial fragmentation, requiring a return to environmental control at the grass-roots level, as manifested in such localized equilibrating systems as feudalism and manorialism. Meanwhile, the concept of "sovereignty" (which corresponds to the imperium of Roman law and comprises power to make and administer laws) did not cease with Rome's collapse.

[9] Evan Luard, Conflict and Peace in the Modern International System, Little Brown and Company, Boston, 1968, p. 1.

[10] Ibid., cf. Chapter 1, "Systems."

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"The passing of the imperial order ... did not result in anarchy either in theory or in practice. That order was replaced, not by a plurality of states each of which claimed to rule the world, but by a number of states each of which claimed only to rule itself."[11]

In this way the basis was laid for the development of a system of national states, each of which would claim to be sovereign and independent, and thus subject to no external authority, while yet recognizing its own finiteness because its sovereignty was circumscribed by unavoidable spatial boundaries. In the millennium following the demise of Roman power in the West, we find a condition of "dispersed territorial competition" among the emerging state structures, in keeping with Luard's typology. It is a stage of absolute monarchy, each sovereign embodying in his own person the concept of the "state as primary actor."

Whereas in the days of the Roman imperium, all Western Europe comprised "impleted" political space, permitting a multi-ethnic community to exit under one form of political-juridical organization, and requiring minimal coercive force (i.e., a "police-keeping" function), the loss of this imperial plane of integration reduces the political organizational structure by one level. As a result, with "sovereignty" itself now fragmented into X number of national states, while it remains possible for law, order, and "community" to exist within national, "impleted" space, there is no means to retain the former imperial sense of community, law, and order in "expleted" political space, namely, as between the spatio-political relationships of the various national states themselves. Here we see at work the principle of integrative levels which states that each successive level of organization possesses its own unique qualities or attributes and which, conversely, are lost when there is a reduction from a higher-order to a lower-order of organization. It is precisely in the area of expleted political space where the former imperial administrative and juridical processes have been lost, together with their reliance upon minimal police-keeping control, that armies and navies are now required to advance and/or defend the "vital interests" of these "lower-order" polities - with the resulting new inter-state environment again assuming a state of anarchy. (Little wonder, then, that the creation of a new - if not necessarily "Holy" - Roman Empire has been conjured up in the dreams of Europeans for the past 1500 years.)

The national state system matured within a model of Cartesian spatial co-ordinates and Newtonian mechanics. Hobbes and Locke alike conceptualized the state as occupying a specific two-dimensional plot of the earth's surface, and such a state was in turn "independent" of all other states and absolute in its sovereign pretensions. In conceptualizing the norms of inter-national behavior, Hugo Grotius and other jurists of the period accepted this system and based their concepts of war and peace, aggression and defence (dyadic relations) upon a "spatialized sovereignty" involving one-to-one - i.e., isomorphic - relational thinking.[12] Thus, within this juridical system, each state (as a person in international law) possesses certain essential characteristics, as follows: "(a) a permanent population; (b) a defined territory; (c) a Government; and (d) a capacity to enter into relations with other States."[13] Consequently, because France and Luxembourg (or, again, the United States and say Guatemala or Upper Volta) each possesses the aforementioned characteristics recognized in international law, they all qualify for "sovereign equality" (to employ the terminology of the United Nations Charter, Article 2 (1)). Thus we can see that the traditional nation-state construct employs one-to-one, or isomorphic, relationality. Positivist law accords states equality of status but ignores all relativity of stature, which comprises such variables as: size of population, territory, and natural resources; geographical location; state of technological development and economic organization; literacy and education; and so forth. To employ Margenau's epistemology, we might regard these variables as P (Protocol)-plane actualties; hence, because an abstract (C-field) concept of equality of status does not find correspondence in terms of P-plane equality of stature, the resulting failure to obtain what Margenau would describe as a "verifact" goes far to explain present-day difficulties in either institutionalizing or controlling political behavior in a highly asymmetrical inter-state environment.[14]

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[11] Max Sorensen (editor), Manual of Public International Law, Macmillan, London, 1968, p. 14.

[12] It should be pointed out that one-to-one relational thinking is a special case of two-termed or dyadic relationality. The character of a one-to-one relation applies to the fields of two relations, as Bertrand Russell points out in his Introduction to Mathematical Philosophy, Chapter 6.

[13] To quote the language of the Montevideo Convention of 1933 on the rights and duties of States, Article I.

[14] The author has dealt at greater length with this subject in "Multi-Relationality in Foreign Policy:

The criteria employed by Hugo Grotius and his contemporaries related specifically to boundaries-cum - military technology, i.e., the existing trajectional capabilities of firepower to control two-dimensionality (hence the three-mile limit set until recently for territorial waters). Theirs was an inter-national arena in which independent sovereign atoms moved on collision courses and reacted in terms of one-to-one (or one-against-one!) relations. Alliances merely added other atoms within this relationship. In such a political environment, it was logical to hold that no nation had eternal friends, but only eternal interests - typical dyadic thinking with emphasis on absolute, "eternal" values.

This TS^2-L_{10} political-juridical construct raises a number of fundamental, and in some instances, seemingly unanswerable questions. (Seemingly as insoluble as the related problem of employing a Mercator projection in an attempt to explain, and control, the factors characteristic of a sphere; whatever Euclid may have said about parallel lines meeting in infinity, Mercator's straight meridians certainly do not converge at the two Poles.) One such question is the nature of that highly metaphysical concept, national "sovereignty"; precisely where does it reside and by whom should it be exercised? Constitutional theory and history alike are replete with examples of efforts attempting to resolve this question. Hobbes' Leviathan reposed it in the person of the king; Locke insisted that sovereignty belonged to the people - and a civil war was fought in 17th century England to decide whether King or Parliament would triumph. The growing complexity of society in recent centuries has called for the establishment of more than one tier of government. Given their size and antecedents, the nation-states of Western Europe are two-tiered; in contrast, when TS^2 environmental control systems culminated in continental expansion, resulting in massively proportioned national states (such as the United States, Canada, Australia, India, and Soviet Russia), a federal or three-tiered system of government becomes desirable.

Yet the most traumatic experience in the history of American society occurred over precisely this question, namely, where does ultimate sovereignty and authority reside? Here we can again employ our theoretical construct, the principle

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an Application of Korzybski's Concept to American and Canadian Political Postulates," Main Currents in Modern Thought, Vol. 22, no. 3, Jan.-Feb. 1966, pp. 55-63.

of integrative levels, to help interpret the character of this issue. How shall we term the conflict that raged between 1861 and 1865 - as a "civil war" or "war between the states"? The answer depends upon the level of organization at which the conflict is conceptualized. Although he opposed both slavery and secession, Robert E. Lee held that his first allegiance was to the "sovereign" state of Virginia, which for him represented the highest political authority, to which he was duty-bound in all conscience. For Lincoln, on the other hand, the Union was the supreme level of political organization (and must be preserved, with Virginia and all other states comprising - in our thesis - "lower order orgs" of sub-systems within that federal Union). The conceptual difference was illustrated grammatically in ante-bellum days by the choice of the plural or singular numbers of the verb when attached to the term "United States." The actual conflict was an example of ultimate dyadic polarization (as are all wars); yet though the struggle was waged in terms of either/or, because he was motivated by "higher-order" abstraction, Lincoln rejected two-valued relationality in his Second Inaugural Address. He eschewed "right" versus "wrong" by reminding his audience that each side "read the same Bible and pray to the same God, and each invokes His aid against the other" - yet the prayers of neither had been answered fully because "The Almighty has His own purposes." For either/or, Lincoln substituted "both/and," namely, "charity for all" and the binding up of the nation's wounds - thus calling for the restoration of a multi-relational, infinite-valued "community" so as to "achieve and cherish a just and lasting peace among ourselves and with all nations." (The "Reconstruction" and its aftermath was a tragic rejection in turn of this level of philosophical and political conceptualization - even as the ghettos of American cities are polarized today by either/or dichotomization.)

Nor are we in Canada immune to this fundamental issue, namely, what should be the appropriate form-and-powers of a federal structure functioning as it must concurrently at three levels of political and administrative organization? In a "dual" form of federalism, dyadic forms of relationality are employed, requiring the imposition of detailed legal provisions of powers and political, cultural, and even spatial "safeguards" or boundaries. When the relationship of the citizens concerned is conceptualized as "co-operative" federalism, the juridical and psychological emphasis alike shifts to a community construct, with sovereignty (and its attendant rights and responsibilities) diffused throughout the polity as a whole. (The respective approaches of dyadic and infinite-

valued r e l a t i o n a l i t y is anything but an academic question i n Canada's current p o l i t i c a l evolution, whether one i s dealing w i t h socio-spatial "separatism" i n Quebec or, again, recognition of "uniqueness" o f attributes and functions that e m e r g e with each level of organization and integration.)[15]

As we have seen, in a national s t a t e system, "sovereignty" exists i n impleted, b u t not expleted, political s p a c e, conceptualized originally in terms of two d i m e n s i o n s, namely, the s u r f a c e of the planet. But what happens to t h e concept - and pretensions - of sovereignty a n d concomitant norms of inter-nation conduct in our TS^3 environment, known as the "space age"? Traditionally, states c l a i m the air-space o v e r h e a d - but "how high is up"? Does national sovereignty exist upwards f o r 50,000 feet, 50,000 miles...? S o m e y e a r s ago a U-2 intelligence plane was shot down in the Soviet Union and t h e United States Government was a c c u s e d of violating national air-space; are astronauts guilty of similar violations when they orbit the earth? These are unprecedented questions f o r international law, y e t whether resolved or not, t h e y indicate clearly that the traditional g e o p o l i t i c a l construct of the national state system must undergo profound transformations within the parameters of a three-dimensional environment.[16]

That L_{10} is conceptualized largely in terms of two-valued logic with its "law of the excluded third" (or "middle"), so that everything "must either be, or not be," is corroborated by political and juridical institutions. Some random examples may be cited. The pyramidal _Gestalt_ of TS^1 s o c i e t a l constructs has b e e n replaced by t h e configuration of the cube (or, in its two-d i m e n s i o n a l form, the square) - which becomes the textbook diagram for representative government and the parliamentary system, involving dyadic thinking: government-versus-opposition (however "l o y a l"), yea-versus-nay decisions, etc. (T h i s raises t h e question whether the Westminister model can be retained f o r TS^3 societal c o n s t r u c t s where two-valued forms of logic and decision-making will p r o b a b l y give way progressively t o "triadic" f o r m s of logic (i. e., re-inclusion of t h e "excluded middle") and multi-relational orientations, s u c h as continuous information feedback on all levels of socio-political organization.) Dyadic logic finds appropriate political exemplification in the two-party system in which, theoretically at least, some sort of simple either/or c h o i c e is afforded the electorate. Y e t in m u c h of the world today, the two-party system seems unable to articulate the multi-valued needs a n d goals of a complex society (though I would suggest that George Wallace's Third ("American") party on the A m e r i c a n scene insists forcefully upon traditional forms of d y a d i c conceptualization!). A g a i n, the recently-published memoir by the l a t e Senator Robert Kennedy o n the Cuban missile c r i s i s attests to the presence of an either/or approach t o t h e war-and-peace equation by the highest military advisors in the country. Yet in this respect, they were but echoing the traditional two-valued p o i n t of view e x p r e s s e d by General Douglas MacArthur i n the Korean conflict w h e n he contended t h a t "In war, t h e r e is no substitute for victory."[17] At L_{10}, dyadic thinking reigns supreme, as attested by t h e concept of "independence" which has b e e n traditionally r e g a r d e d as the summum bonum of h u m a n societies (a n d in this regard, we

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[15] To provide one example of this principle at work; students of C a n a d i a n federalism will recall the device of "equalization p a y m e n t s" by which the national government a t Ottawa assists provinces below the national average o f productivity and income with financial payments in o r d e r to assist them t o attain greater parity with the richer provinces. This is a device that only a national, i.e., a supra-provincial, government c a n undertake. Remove t h i s "top" tier, and no equalization payments w i l l be forthcoming, since henceforth the provinces will each be "equal" and "independent" (juridically), a n d in t h e absence of any concept-cum-machinery of "national" interdependence or community, t h e disparate provinces will go their several w a y s, concentrating upon t h e needs and interests of their respective impleted, o r boundaried populations.

[16] Cf., for e x a m p l e, Sir Leslie Munro, "Law and Outer Space," International L a w in a C h a n g i n g World, Oceana Publications, Dobbs Ferry, N. Y., 1963, pp. 105-113.

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[17] Yet in the nineteenth century, British governments had to accept t h e fact that despite the supremacy of the Royal Navy, there w e r e many parts of the world - such as beyond the Khyber Pass or northern Persia - w h e r e two-valued attitudes h a d to defer to multi-relational a c t u a l i t i e s. In other words, there a r e many situations, past and present, which are not s u s c e p t i b l e of two-valued solutions.

find logical compatibility among religious, political, and economic forms of "independence" or freedom, as exemplified by the advent of Protestantism, nationalism, and capitalism in early modern times.) In the intricacies of the national state system, the independence of any one nation may require an alliance with one or more other states in order to obtain, or maintain, a "balance of power." This latter expression in turn attests to a dyadic relational construct. Moreover, political and military "power" is regarded at L_{10} in absolute terms (like the N system itself). Traditionally, inter-state conflicts have been "solved" by recourse to force majeure, its use escalated, if need be to the maximal degree of potency. However, the qualitative and quantitative changes alike resulting from the advent of the Atomic Age (TS^3) must raise a fundamental question for our times, namely, whether power is to continue to be regarded in absolute terms, either as the central factor in inter-national relations or in the traditional right of a state to unrestricted potency.

L_{10} conceptualization also raises moral questions, perhaps the most important being this "right" of any polity to decide, on the basis of two-valued reasoning, when and where to employ power in order to advance or defend its unilaterally-defined "vital interests." As indicated earlier, the structure and behavior of the national state system requires us to differentiate between forms of conduct and values within and outside a given state's boundaries. In the area where there is no overarching level of societal organization with its own emergent, unique qualities of action and values system, we find a lack, not only of order but of candor and honesty - as exemplified by espionage, two-valued national propaganda (and "jamming") around the clock, and a duplicity practised by diplomats in a manner which would be tolerated neither by decent citizens nor the law within their own national societies. In the 17th century, Sir Henry Watton defined an ambassador as "An honest man sent to lie abroad for the commonwealth" - and it requires a Solomon - or better still, a military observer team on the spot - to unravel the truth from the falsehoods in any major dispute argued by national representatives at the horseshoe table of the Security Council, where two-valued logic, alas, remains triumphantly vociferous. With L_{10}, have we reached the end - the summum bonum - of political conceptualization, or is there something beyong the nation-state level of organization and behavior? The question is pertinent because as Lester Pearson has pointed out:

In any rational analysis, we can surely now say that sovereign power, exercised through the nation-state, which came into being to protect its citizens against insecurity and war, has failed in this century to give them that protection. The rationale for change has been established. The will to make it has not.[18]

IV. Emergence of a Trans-national "Network" (L_{11})

In 1877, James Clerk Maxwell declared:

Physical science, which up to the end of the eighteenth century had been fully occupied in forming a conception of natural phenomena as the result of forces acting between one body and another, has now fairly entered on the next stage of progress - that in which the energy of a material system is conceived as determined by the configuration and motion of that system, and in which the ideas of configuration, motion, and force are generalized to the utmost extent warranted by their physical definitions.[19]

In that passage, the famous physicist described the conceptual shift from an N to $\bar{N}$ system, from two-valued to multi-valued orientations involving systems-as-wholes. The physical and mathematical sciences spearheaded this quantum shift from L_{10} to L_{11}; fortunately, general systems theory and other integrative techniques are presently demonstrating that a similar breakthrough is possible in the re-conceptualization and analysis of contemporary societal phenomena. As Drucker points out:

Every one of our disciplines has moved from cause to configuration (the same term employed earlier by Maxwell). Every discipline has as its center today a concept of a whole that is not the result of its parts, not equal to the sum of its parts, and not identifiable, knowable, measurable, predictable, effective or meaningful

[18] Lester B. Pearson, "Beyond the Nation-State," Saturday Review, 15 February 1969, p. 54.

[19] J. C. Maxwell, Matter and Motion, Macmillan, New York, 1920, p. vi.

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through identifying, knowing, measuring, predicting, moving or understanding the parts. The central concepts in every one of our modern disciplines, sciences and arts are patterns and configurations.[20]

"System," "process," "motion," "configuration" are hallmarks of an L_{11} level of organization and integration, infinitely reticulated to provide continuous "feedback" and dynamic equilibration among all components comprising a given system, the latter in turn functioning as a sub-system within a planetary ecological system (itself a "lower-order org" within a solar organization, and so on to the galactic level of integration and, perhaps, still beyond....). On the basis of logical compatibility, the counterpart of L_{11} scientific and disciplinary "configurations" and "patterns" will be found in the socio-political sphere in the emergence of a trans- and supra-national communications and institutional network, functioning so as to help create and maintain a three-dimensional, i.e., global, environmental control system. We have empirical evidence to support the evolution of such a network.

This evidence takes a statistical form, providing data[21] relating to the following subjects:

1. International congresses and exhibitions (including the annual number of international meetings, 1681-1919);

2. Evolution of International Organizations:[22]

   a. Non-governmental organizations, 1693-1954;
   b. Inter-governmental organizations, 1815-1964;

3. International organizational structure according to disciplines (and their distribution, 1693-1954, 1956);

4. Geographical distribution of establishment of organizations;

5. Governmental Membership in Inter-governmental (United Nations) Organizations.

As we shall see, this statistical evidence provides proof of the accelerating growth of trans-national organizations and congresses. The process of international institutionalization may be said to begin about 1815, but it becomes significant only in the past hundred years. The dramatic character of this accelerating growth-rate is shown in Figures 4 through 7. One can ask whether these curves of acceleration are asymptotic; at this juncture, it would appear from the available evidence that (with one exception) they show no sign of "flattening out" in the foreseeable future.

1. International Meetings, 1681-1919 (cumulative) 23

   (The first meeting was a medical congress held in Rome, 10 March - 8 June, 1681; the second was a congress of physical and natural sciences, held in Geneva in 1815; the third, held in 1838, was the first Celtic congress convened at Abergavenny.)

2. International Non-governmental Organizations, 1693-1954 (cumulative)

   (In 1693 was founded the Rosicrucian Order; in 1823, the British and Foreign Anti-Slavery Society came into existence, as well as the Royal Asiatic Society. Whereas only five NGO's had been founded between 1693 and 1833, 625 were established in the decade following World War II.)

3. International Inter-governmental Organizations, 1815-1965 (cumulative)

   (The Central Commission for Navigation of the Rhine was founded in Vienna in 1815, but the next two IGO's were not established until the middle 1850's. In effect, the existence of international inter-governmental organizations is a phenomenon of the past 100 years, with over 160 being established in the 20 years following World War II.)

[20] Peter F. Drucker, Landmarks of Tomorrow, Harper and Brothers, New York, 1959, p. 4 (italics added).

[21] Assembled and published, by the Union of International Associations, Brussels.

[22] We accept the following definition of an international organization as "a relatively permanent complex system of social interaction taking place across nation-state boundaries." See Adrea Rosenberg, "International Interaction and the Taxonomy of International Organizations," International Associations, 1967 (November), No. 11, p. 722.

FIGURE 4

INTERNATIONAL MEETINGS, 1681–1919 (CUMULATIVE)
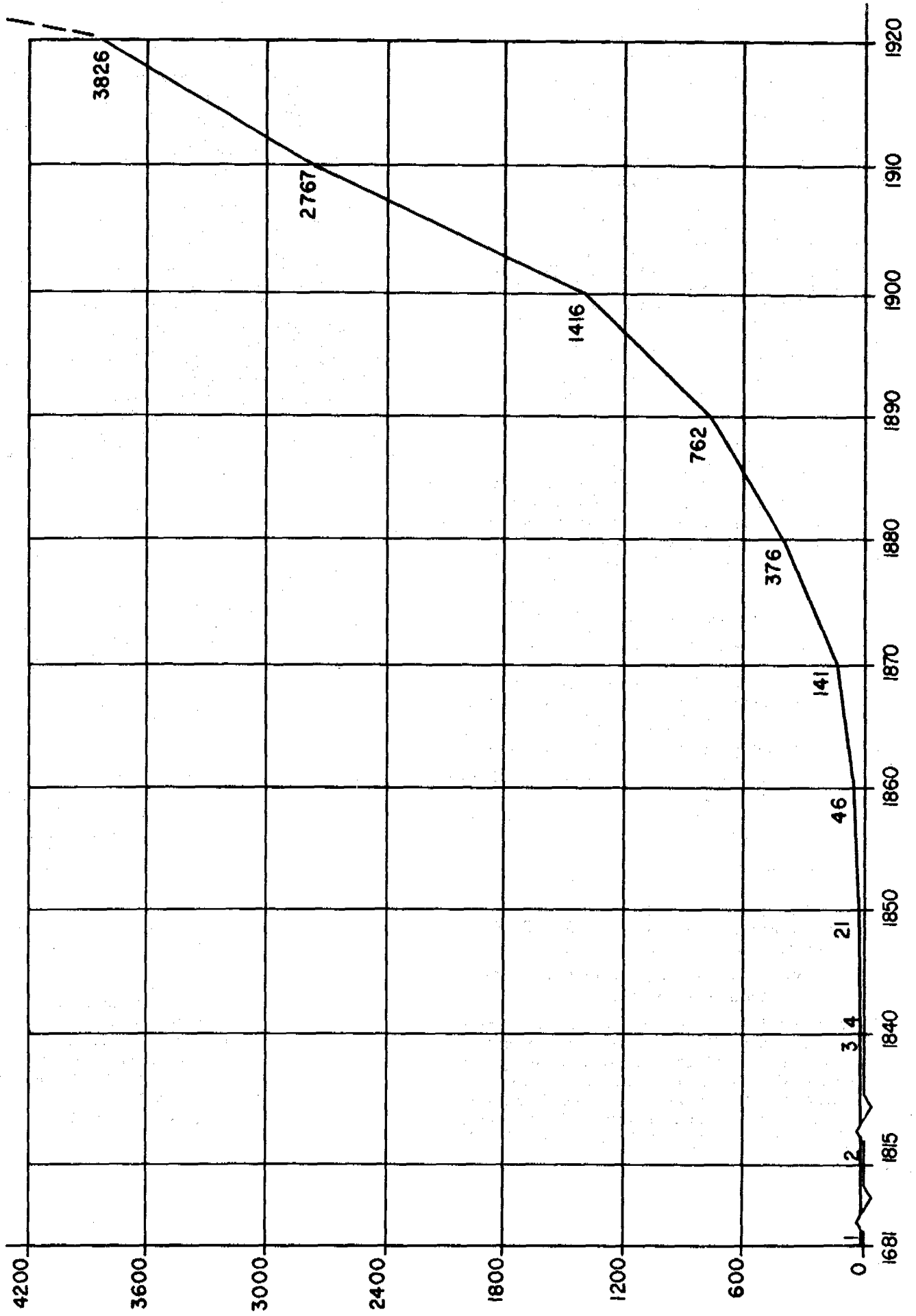
FIGURE 5

INTERNATIONAL NON—GOVERNMENTAL ORGANIZATIONS (CUMULATIVE)

————— ESTABLISHED   — — — — ACTIVE 1954
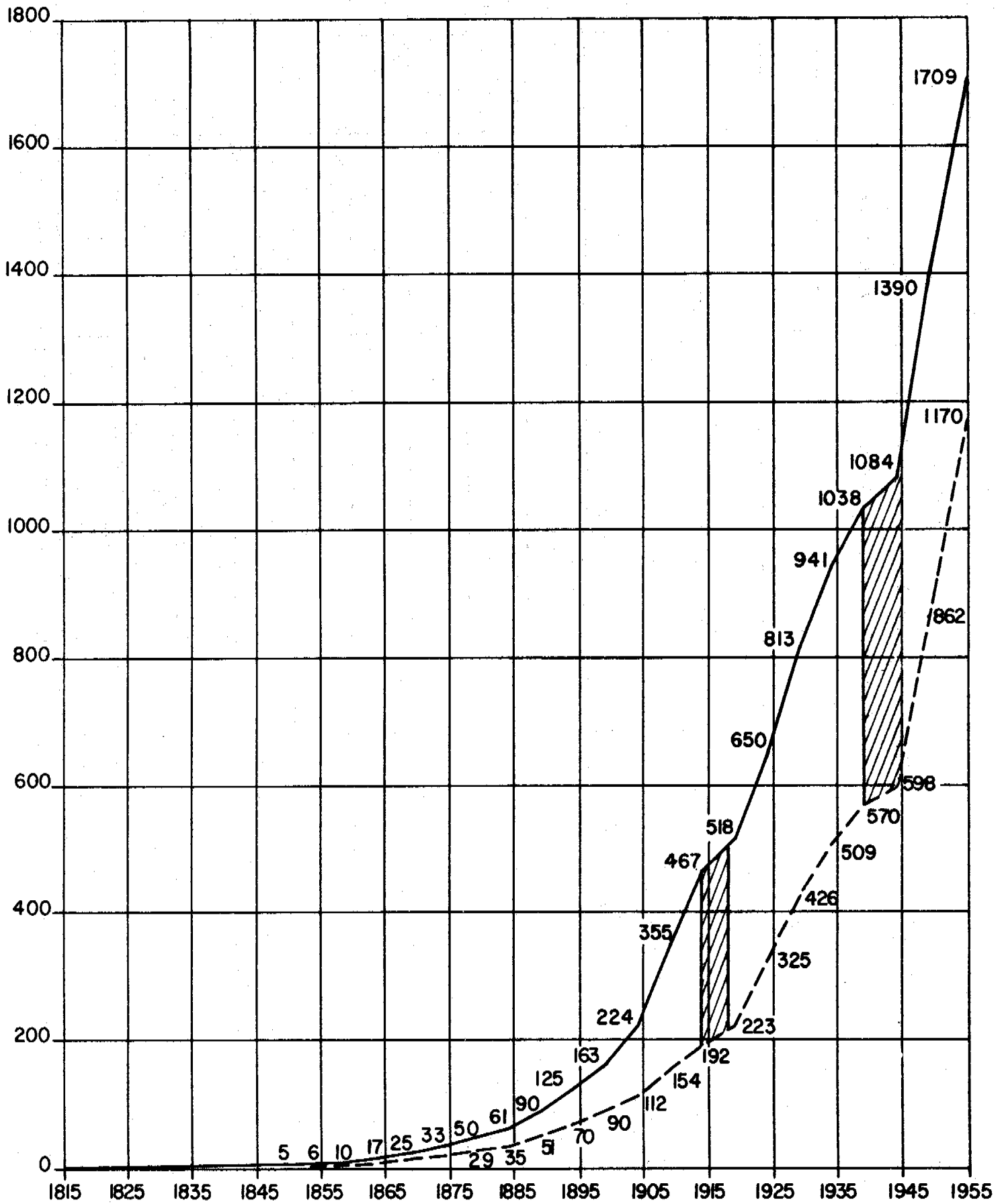
FIGURE 6

INTERNATIONAL INTER-GOVERNMENTAL ORGANIZATIONS (CUMULATIVE)

——— ESTABLISHED   ———— ACTIVE 1954   ·········· ACTIVE 1964
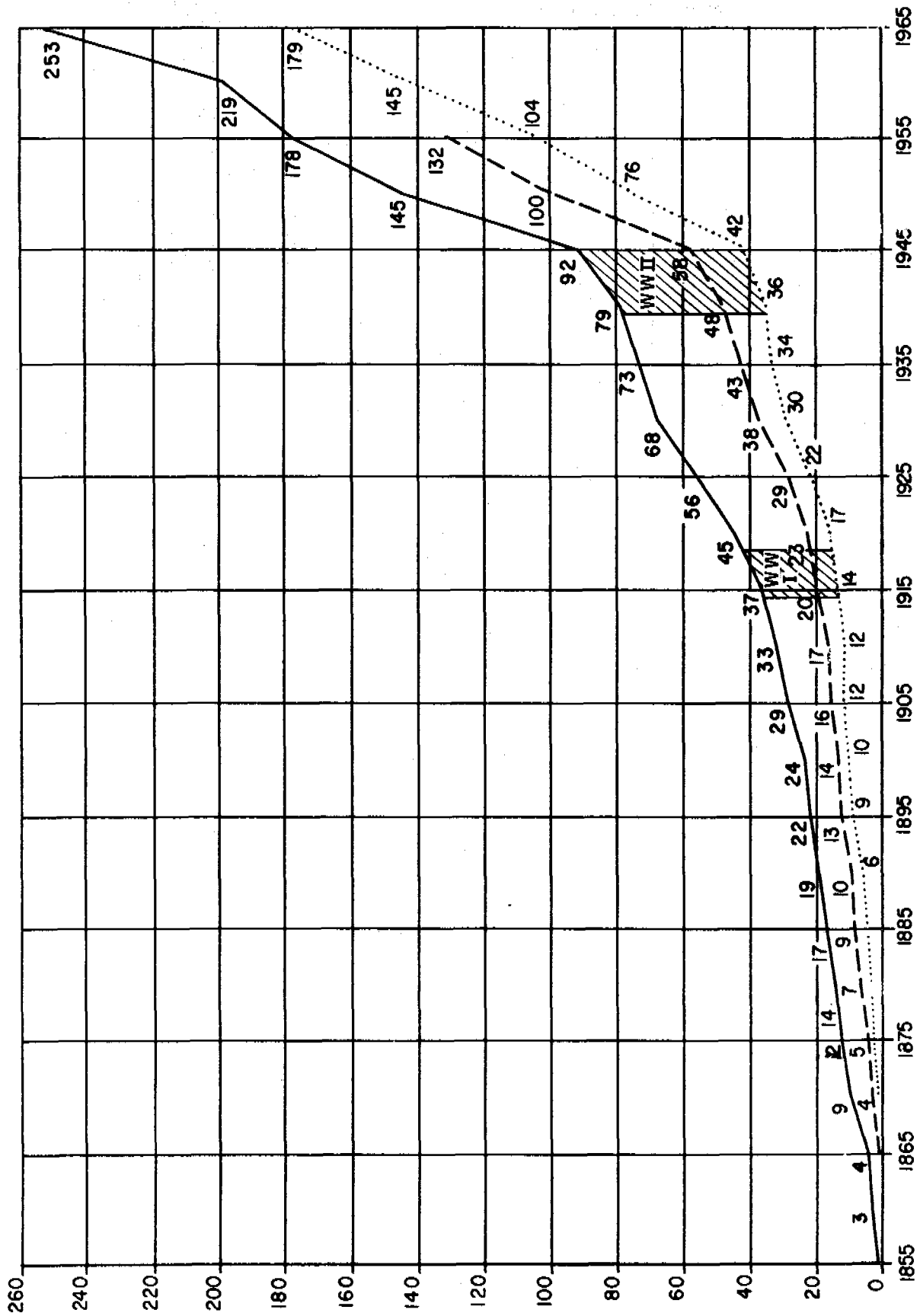
FIGURE 7

GOVERNMENTAL MEMBERSHIP IN UNITED NATIONS ORGANIZATIONS

TOTAL MEMBERSHIP

1700 · 1600 · 1500 · 1400 · 1300 · 1200 · 1100 · 1000 · 900 · 800 · 700

705 · 1596 · 1660

1945 · 1950 · 1955 · 1960 · 1965

UN	——
ILO	— —
UPU	—·—
WMO	—··—
IBRD	········
IMF	

130 · 120 · 110 · 100 · 90 · 80 · 70 · 60 · 50

51 · 79 · 65 · 60 · 112 · 122 · 103

1945 · 1950 · 1955 · 1960 · 1965
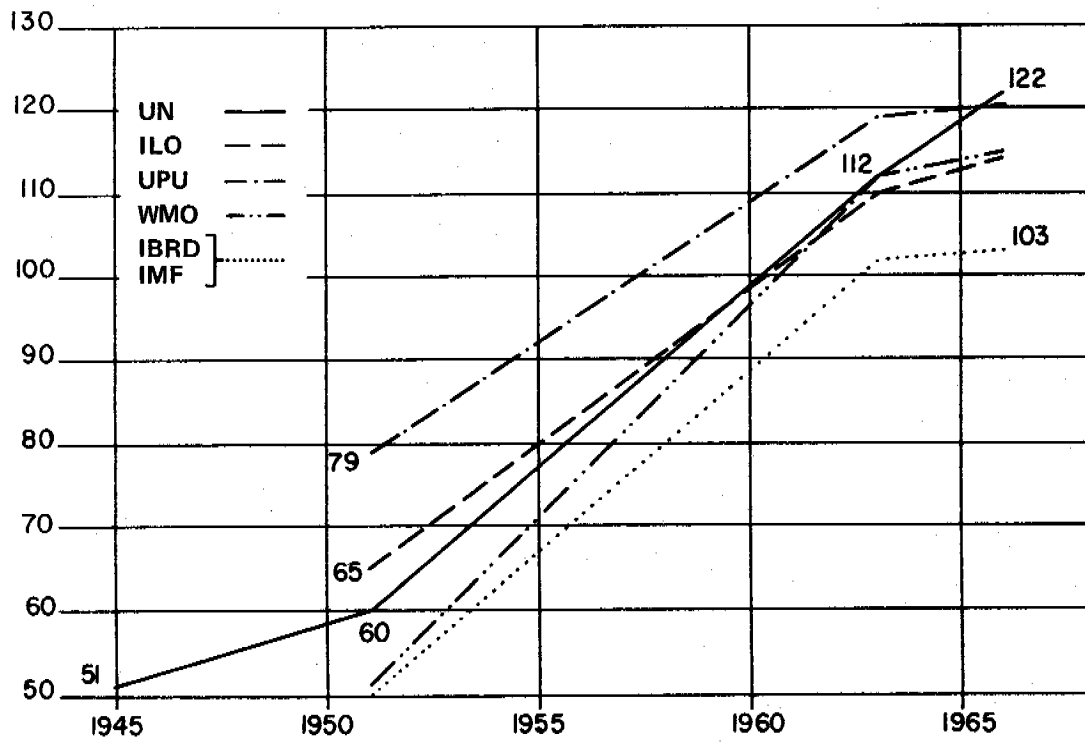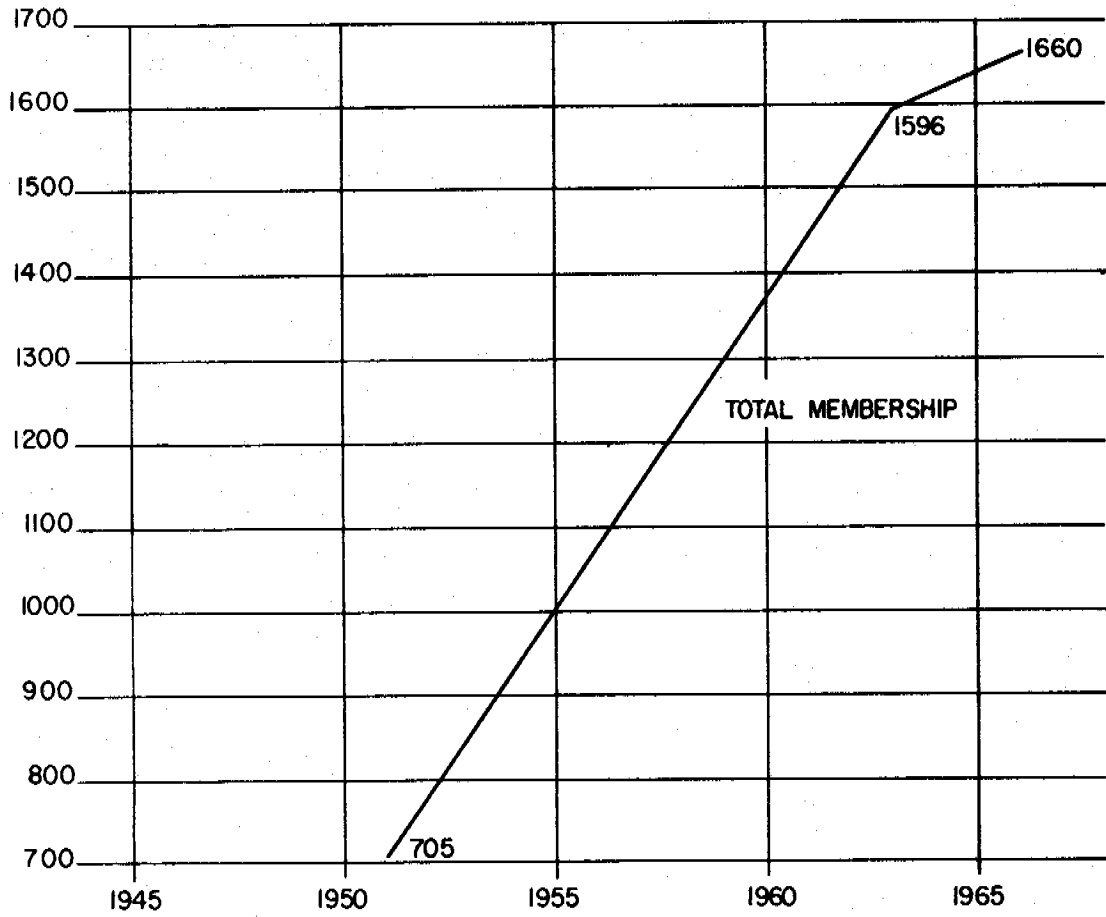
4. Governmental Membership in United Nations Organizations

A breakdown of inter- and non-governmental organizations covering the period 1693-1956 shows a remarkable continuity in the pattern of discipline, as follows:

	Distribution of Organizations created 1693-1954	Distribution of Organizations active in 1956
Law, economics, labor, commerce	40 %	39 %
Science and technology	31	28
Assistance, education, youth	11	12
Philosophy, morals, religion	8	13
Arts	6	3
Sports	4	5
	100 %	100 %

The creation of international and inter- and non-governmental organizations has been concentrated in eight countries, seven of which are located in Western Europe:

France	428
Belgium	245
United Kingdom	189
Switzerland	183
United States	129
Germany	110
Netherlands	85
Italy	84

The following preliminary conclusions can be drawn from the statistical data provided above:

1. In modern times, and especially within the period since 1815, a trans-national network has been undergoing rapid construction. This network is at once institutional and communicational, inasmuch as a constant exchange, or feedback, of information results to all parties interstitially connected.

2. The institutional framework comprises two major components: inter- and non-governmental organizations. Since World War II the proportion of IGO's created has increased markedly. Overall, however, the data shows a fairly stable ratio between IGO's and NGO's, whether regarded from the standpoint of initial creation or from that of continued activity - averaging out at some 9-1/2 times as many NGO's as IGO's.

3. This relationship suggests that:

a. The international communications and institutional network that has come into existence in modern times comprises a societal totality - one, moreover, that can be expected to continue to enlarge both in size and in interstitial intricacy.

b. It is not realistic to examine international political activities solely within, or even primarily from the standpoint of, a formal governmental framework. Its study requires a much broader, and more behavioral, orientation — people rather than governments per se have become increasingly the focus of concern and involvement.[23] In effect, the institutional and communications network proliferating throughout the world comprises the exchange of empirical data, ideational constructs and models, and behavioral programmes of activity especially among specialists, whether in governmental, non-governmental, or disciplinary spheres. This exchange has for its purpose to universalize the dissemination of data, to secure methodological uniformities, and to maximize professional standards to the level attained within the most-favoured nation.

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[23] "Dans cette perspective les rapports entre les gouvernements cessent d'etre le centre d'interet; ce qui importe, c'est l'histoire des rapports entre les peuples." (Pierre Renouvin, general introduction to L'Histoire des relations internationales, Hachette, 7 volumes.)

4. The preceding conclusion does not, however, minimize the continuing crucial role played by governments in the evolution of the network. What we are witnessing in the contemporary world is a dual proliferation: in the numbers of components comprising inter-governmental and non-governmental bodies, and in the numbers of sovereign national governments. It is probable that the growth curve in the latter sphere will demonstrate an asymptotic character earlier than in the former — because of the rapid drawing to a close of the process of decolonization in the period since World War II, so that the great majority of former dependencies have now become independent states. Moreover, many of these newly-emergent states, especially in Africa (and possibly in parts of the Caribbean as well), have already demonstrated marked political instability and lack of economic viability, suggesting that the law of diminishing returns has begun to apply to the process of territorial and political fragmentation and, in fact, may require a reversal of this process through the creation of larger political and economic communities. Meanwhile, the statistical data makes abundantly clear that both established and newly created nations feel impelled to acquire membership in the United Nations "family" as well as in other inter-governmental bodies. (As of 1966, for example, only one Member of the United Nations - Indonesia - had seen fit to leave the Organization, yet within less than two years it reversed its decision and rejoined. Several governments have also withdrawn from one or more Specialized Agencies, but the over-all figure has been of minimal significance and, moreover, in some instances again resulted in subsequent re-application for membership.)

5. Admittedly, the foregoing study is at best only an initial - and very crude - statistical attempt to analyze this communications and institutional network that is not only evolving simultaneously on the national and international planes but, significantly, is fusing them within a total global societal environment. We believe that sufficient data has been adduced to justify more sophisticated study and acquire greater quantitative precision. Specifically, such studies will require more detailed statistical data so as to demonstrate:

a. The geographical orientation and significance of this network, such as by analyzing:

(i) IGO and NGO memberships by countries and continents;

(ii) The location of headquarters and regional offices of IGO's and NGO's;

(iii) The spatial relationship between membership in the IGO's and NGO's and indices of economic and technological development (such as utilizing data regarding GNP, energy production and consumption, etc.);

b. The size and operational structure of IGO's and NGO's (by Secretariat, budget, field activities, etc.);

c. A comparison of growth-rates and function between organizations operating respectively on the inter-national and intra-national planes, and the specific areas where (i) overlap of functions and administration, (ii) feedback of information, and (iii) fusion of objectives and activities are occurring.

6. The following postulate is also advanced, namely, that functional correlations exist between the accelerated growth-pattern found in (a) the international communications and institutional network adumbrated above and (b) technological, demographic, and other contemporary phenomena capable of being analyzed on a trans-national scale. Specifically, we suggest that under (b), statistical and tabular correlations be attempted in such fields as:

(i) Transportation (including the acceleration in freight and passenger-miles - by land, sea, and air - in the period from 1815 to 1965);

(ii) Mass communications (employing data provided by the UPU and ITU during the periods of their existence); [24]

(iii) Publications (including scientific and popular books and periodicals between 1815 and 1965);

(iv) News media (newspapers, radio and television stations, and audiences);

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[24] The kind of study illustrating what we have in mind is found in Robert M. Taylor, International Mail Flows: A Geographic Analysis Relating Volume of Mail to Certain Characteristics of Postal Countries, University of Washington, 1956; University Microfilms, Ann Arbor, Michigan, 1967: this admittedly preliminary investigation of the complexities of international mail flow calls for further empirical and theoretical work, as the author makes clear; meanwhile, he has reported a number of findings under such headings as population, area, distance, political and cultural; for a summary see Chapter 5, pp. 132-141.

(v) Population growth (1815-1965: rural-urban, national and global ratios, together with projections of future demographic developments);

(vi) Production and consumption of energy (1815-1965, together with changes in prime movers and projections of energy requirements for the decades ahead);

(vii) Trans-national societal mobility, both temporary (including tourism) and permanent.

7. Finally, we suggest that the changes occurring in our societal milieu, as reflected in the growth of a trans-national communications and institutional network, are both quantitative and qualitative. Mankind has acquired a technology capable of accelerating its environmental control within the traditional two-dimensional framework associated with all human experience prior to this century, and has now added a third dimension possessing an as yet immeasurable, extra-terrestrial potential. This three-dimensional capability - which must be fused in turn with a time-dimension reduced in our electronic communications technology to global immediacy - requires the construction of new conceptual models appropriate to the scale of operations on which we are now embarking (and to which the "network" discussed above eloquently attests). These new conceptual constructs will be social, economic, and political no less than technological - and together, they will progressively alter the character, and quality, of planetary existence everywhere. In short, we are hurtling into a global environment that is total - and immediate with every point in time-space relative to every other point. The rectilinear world of Issac Newton is being rapidly recast into the curvilinear continuum of Albert Einstein.

V. The United Nations: An L_{10} or L_{11} Construct?

The thrust of the evolutionary process towards the construction of new and higher levels of organization applies to socio-cultural no less than to biological phenomena. We live in an age when mankind's most massive problems: war-and-peace, the population explosion, and the growing gap in living standards between developed and underdeveloped societies, are trans-national in their scope - as are the problems and potential alike of both "outer" and "inner" space (including the pollution of our atmosphere and rivers, and the exploitation of the resources of our oceans which cover three-fifths of the planet's surface). The United Nations and its Specialized Agencies were

created to cope with such trans-national questions. Yet whether the Organization can function meaningfully must depend ultimately upon the willingness of national governments to accept a level of political organization and decision-making - and enforcement - above their own. In other words, will they permit sovereignty (which in this context becomes a synonym for "asymmetrical" freedom of action and ultimate direction) to be invested in a supra-national construct, with their own acceptance of the status of sub-systems within a planetary socio-political system?

Because dyadic thinking is so engrained in our makeup, we should not be surprised to learn that discussion regarding the character, structure, and authority of the world Organization has brought to the fore two antithetical concepts. Our authority here is the late Secretary-General, Dag Hammarskjold:

On the one side, it has in various ways become clear that certain Members conceive of the Organization as a static conference machinery for resolving conflicts of interests and ideologies with a view to peaceful coexistence, within the Charter, to be served by a Secretariat which is to be regarded not as fully internationalized but as representing within its ranks those very interests and ideologies.

Other Members have made it clear that they conceive of the Organization primarily as a dynamic instrument of governments through which they, jointly and for the same purpose, should seek such reconciliation but through which they should also try to develop forms of executive action, undertaken on behalf of all Members, and aiming at forestalling conflicts and resolving them, once they have arisen, by appropriate diplomatic or political means, in a spirit of objectivity and in implementation of the principles and purposes of the Charter.

Naturally, the latter concept takes as its starting point the conference concept, but it regards it only as a starting point, envisaging the possibility of continued growth to increasingly effective forms of active international cooperation, adapted to experience, and served by a

Secretariat of which it is required that, whatever the background and the views of its individual members, their actions be guided solely by the principles of the Charter, the decisions of the main organs, and the interests of the Organization itself.[25]

As Hammarskjold points out, the first concept "is firmly anchored in the time-honoured philosophy of sovereign national States in armed competition of which the most that may be expected in the international field is that they achieve a peaceful coexistence." For its part, the second concept "opens the road towards more developed and increasingly effective forms of constructive international cooperation."[26] In terms of our schema, the first concept is "firmly anchored" in L_{10} - a level of "inter-national" conceptualization - whereas the second is strongly oriented towards L_{11}, in which the United Nations possesses its own raison d'etre and autonomy, precisely because it is an integral part of our "international" (TS^3) environmental control system. The conceptual difference between "inter-national" and "international" has been likened to that between the Ptolemaic and Copernican constructs. In the former, the earth is the "primary actor" in an asymmetrical, two-valued, dominant relationship with all other celestial bodies; in the latter, a 180° shift of perspective and emphasis occurs, so that while two-valued orientations still exist, the planet is subordinated to the dominance of the sun in a solar system. Actually, we would develop the analogy into a post-Copernican concept, in which reality is based in the force-fields - gravitational and electro-magnetic - which account ultimately for the character, structure, and behavior of all elements (including sun and planets alike) within those fields. In this post-Copernican analogy, each level of political organization - municipal, state, national, regional, global - is in a state of constant transaction concurrently with every other level, all of them resonating to the equilibrating forces (involving both negative and positive forms of feedback) operative within a global (TS^3) environment.[27]

The opposing interpretations of the United Nations of which the late Secretary-General wrote is reflected in a conceptual ambivalence implanted in the Charter itself. Thus, the Preamble voices the aspirations of the world's peoples as a global community, yet Article 2(1) bases the Organization "on the principle of the sovereign equality of all its Members." In every colonial dispute we find Natural Law, as expressed in the principle of the right of self-determination, in direct confrontation with Positivist legal doctrine, as enshrined in that of domestic jurisdiction (Article 2(7)). Again, is the United Nations only the instrumentality of its sovereign masters, or is it something more - an international "legal personality" equipped with powers of its own, such as the capacity to bring claims against offending States for damage caused to the Organization or its personnel; or again, the right of the Secretary-General to raise at the Security Council (under Article 99) any matter which in his opinion may threaten international peace and security. In addition, the United Nations can be designated as an Administering Authority in the Trusteeship System (Article 81), and though this step has never been taken, the Organization was authorized in the case of the West Irian question to assume administration of the former Dutch dependency for a specified period. Elsewhere we have attempted to answer the question of the character of the United Nations:

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[25] Introduction to The Annual Report of the Secretary-General (1960-1961).

[26] Loc. cit.

[27] This past summer, while attending at Stratford Ontario, a performance of "Romeo and Juliet," I was struck by the significance of the "generation gap" portrayed, but more importantly, by the exemplification of the profound conceptual shift inherent in the views of reality held respectively by the two generations. Among the parents a dyadic concept was held: either the Montagues or the Capulets (the isomorphic character of the protagonists being specifically described by Shakespeare as "two households both alike in dignity"), existing in armed competition in Verona. But to the "star-cross'd lovers" the identical environment is conceived not in terms of dichotomy and death, but complementarity and life (which, i.a., to the Taoists would take the form of yin-yang relationality and process). Perhaps, mutatis mutandis, this is also the difference between "fire-power" and "flower-power"!

... Is the United Nations the instrumentality of its M e m b e r s and nothing more? Is it not also a political "isotope" created by the national state system as the result of an accelerating interaction of political, economic and social forces in a global field - and does this "isotope" not have u n i q u e properties of its own, including a q u a s i-sovereign existence and t h e power to bombard the political nuclei of its s o v e r e i g n parents until p e r h a p s one day they m a y in turn be transformed from i n d e p e n d e n t into interdependent elements? This may be fanciful c o n j e c t u r e - yet it remains t r u e that the Organization was able t o p e r f o r m [in this particular instance, t h e resolution of the Indonesian Question] what the Powers that b r o u g h t it into existence could not h a v e achieved either singly or in disparate groups.[28]

Yet in t h e most vital of all areas, peace and security, the potential of L_{11} conceptualization and decision-making is largely aborted by the ingrained attitudes a n d legal doctrine of L_{10}. At San Francisco in 1945, the framers of the Charter envisaged two collective security systems. The first, calling f o r peace-enforcement measures whenever peace in any part of the world was threatened or breached, derived its authority from Article 43, under which all members were to make armed forces available at the Security Council's call. A second collective security s y s t e m was authorized under Article 51 and C h a p t e r VIII, recognizing regional arrangements for individual or c o l l e c t i v e self-defense. I n a s m u c h as t h e first system, requiring great-power collaboration, fell victim at the outset to the Cold War, and was n e v e r implemented, Member states established numerous regional blocs such as NATO, CENTO, SEATO, the Warsaw Pact, and the Arab League. In our view, these regional defence s y s t e m s have comprised an "escape hatch" from L_{11} involvement and obligations alike, and instead have enshrined L_{10} two-valued orientations, thereby perpetuating the concept of balance-of-power and the traditional alliance system itself. It is scarcely irrelevant to note that these provisions of the Charter have been invoked both by Washington to justify

its involvement (through SEATO) in V i e t n a m, and by Moscow to j u s t i f y its intervention (through the Warsaw Pact) in Czechoslovakia in 1968. Regional security blocs are geared to action at the h i g h end of t h e power scale, namely, acceptance of the use of force - c o n v e n t i o n a l and/or nuclear - a s the ultima ratio. Yet if the United Nations per se h a s b e e n consistently by-passed b y the g r e a t powers (except t o "legitimize" r e g i o n a l pacts and action u n d e r the Charter), and h a s therefore proved incapable of playing any coercive role at t h i s end of the s c a l e, it has proved able t o devise techniques for containing conflict at the lower end.

T h i s was because of n e w e l e m e n t s introduced into the war-peace e q u a t i o n. D u r i n g the 1950's there emerged numerous Afro-Asian Member s t a t e s that came t o dominate numerically the General Assembly; there also developed a thermonuclear stalemate. T h e n e w Members denigrated the purpose of regional defence systems while employing t h e i r strength in the Assembly to activate the n e w collective measures machinery a s seen in UNEF and other "peacekeeping" operations. Meanwhile, because the nuclear "balance of terror" had inhibited the super-powers from mounting decisive action of their own, the i n i t i a t i v e progressively shifted to the lower end of the power scale - calling for action that required a new f o r m, namely, that of "an instrument f o r the p a c i f i c settlement - or the pacific p e r p e t u a t i o n - of disputes."[29] This represents a significant b r e a k with t r a d i t i o n a l forms of conflict-resolution i n w h i c h dyadic attitudes prevailed, i. e., General MacArthur's quoted maxim-cum-the application o f maximal amounts of fire-power t o ensure "victory." Given the l e t h a l capabilities of space-age technology, the modalities of traditional w a r f a r e can n o longer operate (except in all-out conflict, a t t e n d e d by t h e r i s k of planetary i m m o l a t i o n). In t o d a y's highly fluid m i l i t a r y operations, exemplified increasingly by guerrilla warfare, gone are the dyadically-delimited b o u n d a r i e s s e p a r a t i n g "combatant" from "civilian," war-zone from "behind the lines" - b e - cause there are n o lines. The war theatre has become total a n d all-pervasive, s p a t i a l l y, demographically, and psychologically. I r o n i c a l l y yet logically, no less than the constructs conceptualized at L_{11} for peaceful purposes, TS^3 warfare has been

[28] Alastair M. Taylor, I n d o n e s i a n Independence and the United Nations, Cornell University Press, Ithaca, 1960, p. 436.

[29] Inis L. Claude, Jr., The United Nations and the Use of Force, Carnegie E n d o w m e n t for International Peace, New York, 1961, p. 375.

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acquiring a "field" construct in turn. In such an environment, where it is next to impossible to categorize the population neatly into "friend" and "foe" (vide South Vietnam), the problems are more easily recognized as multi-relational and infinite-valued in their structure and process alike - and as requiring a community-oriented response in turn if any viable societal equilibrium is to be restored. In such a milieu, international peacekeeping techniques, involving minimal use of coercion, and accepting the need to adopt relativistic rather than absolute "solutions" - such as conflict-containment as a more acceptable option than all-out destruction to bring about a "tidy" and definitive "peace" - find their logical place.

Elsewhere we have stated that in the evolution of international peacekeeping, we shall have to avoid "either/or" forms of thinking. Thus far, many peacekeeping operations have resulted from the process of decolonization in which (as we mentioned earlier) the parties involved embraced domestic jurisdiction or self-determination as antithetical principles - interpreting the dispute as intra- versus inter-national. In the second, or post-decolonization, stage, the international community will have to create appropriate legal and political modalities to cope with disputes that can be expected to erupt within, or between, numbers of newly-emergent, underdeveloped sovereign states (as occurred in 1960 in the Congo, and presently in Nigeria). At the same time, all such disputes will still be inextricably intra-planetary because of the technological and political exchanges occurring throughout a global environment in which messages are transmitted at the speed of light.

> In such an environment, too, we must accept the inevitability of change in our search for general political equilibrium. Otherwise, the United Nations itself will remain the prisoner of dichotomous thinking, accused of being either "revolutionary" or "counter-revolutionary" - and peacekeeping in turn can then be subverted to act as an agent also of "either/or." To view "equilibrium" and "change" rather in terms of "both/and" is to recognize the pre-eminence of the total environment, to which the United Nations and the Specialized Agencies are all committed. Within such an overarching environment, peacekeeping becomes simply one of the components to be employed in the control and resolution of conflict.... In many cases, ... we shall have to concern ourselves with both conflict-management and massive socio-economic programs of

assistance to shattered societies. Within the United Nations itself, much more will have to be done than in the past to co-ordinate the political actions initiated by the Security Council, the General Assembly, and the Secretary-General, with programs developed by the Economic and Social Council and the Specialized Agencies - because peacekeeping can be rendered futile unless economies are made viable and the living standards - and dignity - of men and women everywhere become commensurate with the promise of our technology.[30]

This over-all approach suggested for the United Nations comprises a field or community concept, because it is multi-relational and multi-valued. By the same token, however, we must distinguish between "multi-relationality" and "multilateralism" as applied to the process of community-building. In effect, the first term subsumes the latter, but the converse need not follow. One can construct a multilateral model solely in terms of dyadic postulates; the result would be a series of interlocking bilateral arrangements or, again, a congeries of regional collective systems (such as NATO and NORAD, ANZUS and SEATO, etc.). Multilateralism continues to focus on the independent sovereign state as its own ultimate decision-maker and object of concern. To employ a metaphor from biology, we are still at the stage of the single-celled organism, and while political protozoa can concatenate to form aggregates such as alliances, no inner transformation must necessarily occur so as to metamorphose the concatenated grouping into a new morphological structure, the metazoan, which possesses different functions and environmental potential. The question arises whether external pressures and opportunities alike can bring about a radical adaptation to the changing planetary environment. Put into analogous terms, the question is whether an "alliance" (L_{10}) can evolve into a "community" (L_{11}) - or whether the latter must be conceptualized de novo. NATO comes to mind as an example. Article 2 of the North Atlantic Treaty (sometimes referred to as the "Canadian article") calls on the signatories to "eliminate conflict in their international economic policies and

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[30] Alastair M. Taylor, "Peacekeeping: the International Context, "Peacekeeping: International Challenge and Canadian Response, Canadian Institute of International Affairs, Toronto, 1968, pp. 38-39.

... encourage economic collaboration between any or all of them." In point of fact, Article 2 has remained a dead-letter, but even if fully implemented, maximal economic "collaboration" could surely represent only optimal "concatenation" - neither conceptually nor behaviorally does it seem able to provide the framework for structuring a new constitutional entity, namely, a North Atlantic "community" (such as Christian Herter has envisaged in his proposed "Atlantica" with its own political and juridical machinery). Nor, judging by developments in Southeast Asia and Eastern Europe alike, have SEATO and the Warsaw Pact structures been very successful either in community-building. In contrast, the European Economic Community has a "metazoan" potential to transcend the limitations of L_{10} alliance-constructs, grounded as they are in Positivist legal doctrine. Whether, however, this supra-national construct with its multi-relational orientation and political goals[31] can survive and expand must depend upon the capability of its proponents to overcome the state-centred multilateralism of traditionalists such as Charles de Gaulle, committed as he is by training and attitude to an L_{10} Weltanschauung.

In the last analysis, the attainment of a supra-national level of organization and integration, that is, the organization of a three-dimensional environment as L_{11}, requires a sense of shared involvement in a "community" construct. It can be based upon a functional foundation - and in fact we have already examined empirical evidence that trans-nationalization occurred in the social, economic, scientific, and educational spheres (especially in the form of non-governmental organizations) a considerable length of time before political and juridical formalization.[32] In effect, there is usually a time- and conceptual-lag between the "functional" and the "formal," i.e., before de facto is transformed into de jure. Meanwhile, however, the process of community-building and trans-national integration goes on. According to Ernst Haas:

[32] Canadians are acutely aware of the dynamics of economic trans-nationalization. By the mid-1960s, the penetration of their economy by American business interests had reached the point where "almost one-half of Canada's manufacturing sector was owned or controlled by U. S. interests." (Roy A. Matthews, "A New Atlantic Role for Canada," Foreign Affairs, Vol. 47, No. 2, January 1969, p. 339.) Yet if this fact has created a situation "which many observers considered far more dangerous to the country's political sovereignty than was the orientation of its foreign trade" (loc. cit.), it seems also inevitable that factors such as geographical location and economies of scale will call for enhanced industrial efficiency through what has been described as the "continental rationalization" of resources - natural, human, and financial alike. That economic trans-nationalization has also been accelerating in Western Europe is the thesis of J.-J. Servan-Schreiber's The American Challenge. In his view, the growing European dependence on American investment and business control could in the long run reduce a Europe of separate states to the status of an American economic colony, even as Europe itself had earlier reduced large regions overseas to such a status because they were underdeveloped and politically disunited. To cope with this American challenge will require the creation of "a united Europe," "a third great industrial power with no imperial pretensions - one whose only strategy is to help build a more unified international community." Europeans will have to engage in "an intellectual leap into the future over a thousand discouraging obstacles" because it will involve recognition of a salient factor, i. e., "the nation-state is not the ultimate form of social organization.... There is no other solution than forming some kind of federal organization." This viewpoint is shared by Pearson who declares: "The fact is that the sovereign state is now becoming virtually obsolete as a satisfactory basis for rational economic organization, at least in industrially developed societies." (Lester B. Pearson, "Trade, Aid, and Peace," Saturday Review, 22 February 1969, p. 23.)

[31] In this regard, see Walter Yondorf, "Monnet and the Action Committee: The Formative Period of the European Communities," International Organization, XIX, No. 4, Autumn 1965, pp. 885-912.

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If the present international scene is conceived of as a series of interacting and mingling environments, and in terms of their participation in international organizations, then integration would describe the process of increasing the interaction and the mingling so as to obscure the boundaries between the system of international organizations and the environment provided by their nation-state members.[33]

Evidence abounds that L_{11} is rapidly emerging, formally in the proliferation of both inter- and non-governmental organizations, behaviorally in the annihilation of time-space by electronic means of communication and dissemination of knowledge and attitudes on a global scale - resulting in such metaphors as Doxiades' Ecumenopolis and Marshall McLuhan's "global village." Numerous individuals advocate the transformation of the United Nations into a world government - and Clark and Sohn have proposed a detailed plan for revising the Charter so as to equip the United Nations with legislative, executive, and judicial institutions, backed up by a strong international police force capable of maintaining peace and security. To other scholars, however, this is an impractical, or at least premature, proposal. For our part, while eschewing the role of crystalgazer, we also reject the dyadic approach that the United Nations must either remain as it is, an obviously imperfect - and where great-power interests are involved, a dangerously ineffective - vehicle, or alternatively, that it must be transformed as quickly as possible into the supreme planetary authority. The evolutionary process is always open-ended, and the principle of integrative levels should counsel us to avoid any simple

extrapolation of form or function alike from available data on the existing level of organization. It may well be that one or more political levels will emerge between L_{10} and the world government.

Indeed, given the complexity of our TS^3 environment and the large number of national governments presently in existence, the creation of but a single supreme decision-making and enforcing authority would appear to be too drastic and "truncated" a step to envisage.[34] The emergence of "economic communities" - in Western Europe, Meso-America, and East Africa, for example - may well

[33]Ernst B. Haas, Beyond the Nation-State: Functionalism and International Organization, Stanford University Press, 1964, p. 29. Regarding Haas' pioneering studies exploring integration in the European setting, see The Uniting of Europe (Stanford University Press, 1958) and Consensus Formation in the Council of Europe (Berkeley, University of California Press, 1960). Meanwhile, Karl Deutsch and his associates have developed a conceptual framework for examining the processes of integration and security-building, and for exploring the factor of integration in the following region: Political Community and the North Atlantic Area: International Organization in the Light of Historical Experience (Princeton University Press, 1957).

[34]We find an interesting analogy in contemporary morphological research into natural and man-made systems. As Wilson points out: "One possible source of information on systems of complex structures is in the analysis of how complexity and bigness are treated in the natural order. We observe throughout nature that the large and complex is constructed in a hierarchical modular manner from the small and simple. Direct confrontation of the large and small is avoided, a hierarchical linkage is always interposed. Bigness is avoided in the sense that the ratio between the size of any structure and the modules out of which it is built is functionally bounded. If there are demands for a structure to continue to grow in size or complexity, then a new level in the hierarchy and a new module are introduced so that aggregate-to-module ratios may remain bounded." A. G. Wilson, "Morphology and Modularity," New Method of Thought and Procedure (F. Zwicky and A. G. Wilson, editors), Springer-Verlag, New York, 1967, pp. 302-303. To demonstrate the applicability of the method of morphological comparison, Wilson cites two examples involving aggregating forces, one connected with city problems and planning, the other with celestial densities and organization. On the basis of analogical reasoning, a strong case can be made for the logical emergence - and need for planned structuring - of regional governmental bodies to comprise L_{11} and equipped with appropriate legislative, executive, and judicial powers. A planetary, or "world," government could conceivably "cap" this hierarchy and thus become L_{12} - thereby creating a modular structure that would avoid "direct confrontation of the large and small," such as now exists in the United Nations General Assembly where super- and minuscule-powers are lumped together in terms of L_{10} juridical isomorphism.

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portend the evolution of a number of regional supra -national authorities throughout the world.[35] Again, there is also evidence (as we have seen) indicating that we may be entering into a new kind of "participatory democracy" — involving citizens at all levels of socio-cultural organization, both governmental and non-governmental, functioning transactionally across existing political boundaries by means of electronic media (much of it yet to be invented) within a planetary socio-political field. All this may seem somewhat fanciful — but each new level of organization and integration provides its unique qualities and surprises — and in a three -dimensional environment "the sky's the limit."

VI. CONCLUDING OBSERVATIONS

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Finally, we might relate briefly our schema to four concepts which have long concerned — and indeed even bedeviled — attempts at socio-cultural model-building. They are "reductionism," "progress," "sovereignty," and "freedom." These concepts pose fundamental problems and therefore test the validity of our own model both as a construct and analytical tool. In the space available, we can only adumbrate what we believe to be the logical compatibility which exists at once between the problems themselves and the applicability of the principle of integrative levels to their attempted resolution.

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[35] In recent years, a number of Canadians have been advancing the proposal that some form of free-trade area should be developed among a broad group of industrialized countries, such as a North Atlantic Free Trade Area (NAFTA). "The proposition, which was first formulated by the Canadian-American Committee in 1966, and has found many of its strongest supporters among Canadians, has been viewed in some quarters abroad as essentially anti-EEC. It is not seen that way in Canada, where the concern is to use an approved GATT technique, the regional free-trade arrangement, to move rapidly, and under conditions bound by treaty, to full freedom of trade with a major group of countries - hopefully including the Common Market." (Matthews, op. cit., p. 345.)

(a) "Reductionism" (the problem of "Social Darwinism"). Darwin's theory of natural selection was restricted by its author to the biological field. However, the theory and its underlying concepts were subsequently applied to phenomena in human societies, a development known as Social Darwinism — and was exploited to legitimize such varying doctrines as laissez-faire, Marx's class struggle, nationalism, racism, eugenicism, and militarism. To the Social Darwinists, cultures, or again "States," were regarded as organisms and subject to the same laws applying to biological systems. For example, because states had to have "living room" (Lebensraum), and because only the "fittest" both within and among species survived, the advocates of Geopolitik or of, say Hitler's "Aryan supremacy" were justified in recourse to war as a part of an inevitable evolutionary struggle for continued existence and improvement. That a scientific theory can be employed in attempts to legitimize doctrines that are morally repugnant to many who accept the functioning of "natural selection" within Darwin's own frame of reference raises an important question. Does a fallacy inhere in transposing to human societies concepts which are originally formulated to explain phenomena restricted to physiological and/or biological organization — and if so, where does the fallacy reside?

This question brings us to consider the application of the principle of successive levels of organization and integration. Certain uniformities found within that principle can be applied to our discussion of Social Darwinism. We will recall that these levels are cumulative upwards, with each being more complex than the one below. Again, since each level has its own characteristics, structure, and emergent properties, to reduce the higher to a lower level of organization necessitates losing the structure and attributes found only at the higher level itself. Hence, to suppose that the higher level can be reduced to the lower is to commit the error of reductionism. On the basis of this principle, Social Darwinism is demonstrably fallacious. Even as the structure and organization of organisms are more complex than inorganic phenomena, so in turn human societies make use of the inorganic and organic levels of organization as a physical foundation while, in addition, functioning as new and still more complex systems. Consequently, to describe a human society as an "organism" is to lose those very qualities of structure, self-regulation, and self-direction unique to its own plane. Inter alia, because the fallacy of reductionism prevents us from simplistically equating human society with biological systems, it

follows ineluctably that we cannot divorce the former from ethical and moral factors which are exclusively its possession. Yet this is precisely the attempted line of reasoning and action advocated by many Social Darwinists in their efforts to "justify" the rule of force, war, and territorial expansion in the name of survival of the fittest.

As stated before, when speaking of "lower" and "higher" levels, we are of course referring to the organization of phenomena in terms of successive degrees of complexity and integration so as to function as "systems." Man's heritage has been described as of two different kinds. "One has been accumulated through perhaps two billion years of evolution and is included in the molecular structure of his genetic makeup." The other, built up during a period of some two million years of communication, "is encoded in the symbolic structure of his knowledge."[36] Note that the organization of these two strands of man's heritage represent two very different forms of organization. Thus genetic traits are transmitted in impleted, or what we might call biological, space, whereas man's cultural traits are transmitted in expleted space, that is, in space external to the organism - namely, across dermal boundaries - through the communication of knowledge and behavior patterns by members of his species. As a result, with man the "time-binder," the acquisition of knowledge, and with it the capability to move from a lower to a higher level of societal complexity, can be both gained and lost. Indeed, the historical record is filled with examples of both kinds of socio-cultural experiences (and we have already referred to one such example, the "fall" of the Roman imperium in the West, in which the processes of disequilibration were so potent as to result not only in the fracturing of that level of integration but also in the loss of societal technics and the concomitant reduction of socio-cultural organization to the feudal and manorial levels). Yet this is very different from the process of "reductionism" to levels below the "Conceptual Rubicon," precisely because the levels of organization above that line comprise the stage of manipulative equilibration; therefore, these socio-cultural constructs are unique to human experience. Thus we can say that while human organisms comprise socio-cultural societies, or again, "states," and function as sub-systems within these super-ordinate structures, the converse does not hold: a human society and/or state, while functioning as its own dynamic system and comprising elements from L_0 to L_6, i.e., the inanimate and animate levels of phenomenal organization, has its own unique properties and purposes, and hence can never be reduced to the concept of some kind of biological "organism."

(b) "Progress." The "fall" of Rome, or again, the devastations of two world wars in our century, raises the question of "progress" in human affairs. It has long been on the minds of philosophers and historians alike, and came strongly to the fore with the publication of Condorcet's famous essay, The Outline of a Table of Progress of the Human Spirit, written at the time of the French Revolution. Condorcet envisaged the progressive advance of man to an ideal future. In the nineteenth century, it was confidently believed that mankind was inevitably progressing, just as the evolutionary theory showed apparent progress in the natural world. Here again, we can perceive a logical connection between "progress" and "Social Darwinism" to the extent that each is postulated upon an evolutionary thesis - but once more, it is necessary to avoid the pitfalls of a fallacious transposition of ideas.

In consonance with the principle of integrative levels, it can be demonstrated that each level of phenomena is organized in terms of systems so as to maintain equilibrium (by means of either positive or negative forms of feedback, or of both). The dynamics of equilibration are functioning no less in regard to socio-cultural systems, so that every human society, wherever positioned between L_7 and L_{11}, functions holistically both vis-à-vis the larger ecological framework and internally, namely, it possesses its own inner logic and purpose (as expressed in terms of what has been called the "universal culture pattern"). Given a viable equilibrium both between the society in question and its larger ecology and among the components interacting to comprise the societal system itself, the resulting symbiosis can theoretically be maintained indefinitely. Hence we find vestiges of L_8 socio-cultural systems in certain parts of the world, such as among the shifting cultivators of the highlands of New Guinea or, again, in the upper Amazon basin - while for their part, living as they do above the tree-line (and hence unable to engage in any form of food-production), the Eskimos have demonstrated

[36] Heinz von Foerster, "From Stimulus to Symbol: the Economy of Biological Computation," Sign, Image, Symbol (Gyorgy Kepes, editor), New York, George Braziller, 1966.

a brilliant capability to come to terms with their circumscribed ecology by means of a highly sophisticated arsenal of specialized tools and weapons so as to retain an L_7 equilibrium. Such a symbiosis (which in the case of the Eskimos has been described by Toynbee as a veritable tour-de-force) is complete in itself - and to speak of "progress" in such a context is irrelevant, indeed meaningless.

All too often, we have tended to confuse progress with "progression" or mere movement. To board an airplane at Chicago and fly westward for two hours is in fact the reverse of progress if we find at the end of that time that our destination should have been New York. In other words, progress would seem to imply a goal, and the question arises whether this can be predetermined and remain fixed. Certainly a Wall Street banker and a Marxist economist have vastly different concepts of progress and appropriate societal goals. Standards vary from culture to culture and from century to century; we are already far enough removed from our Victorian forebears to perceive that the social goals which they considered desirable differ in many respects from those we value now. Actually, much of our concern with the concept of progress, indeed our desire to believe in the "inevitability" of progress, reflects Western ethnocentricity. [37]

The principle of integrative levels warns us against any linear approach towards the evaluation of organized phenomena in terms of some specific or preconceived value system. Each level has its own raison d'etre, its own autonomy, its own properties or qualities. To suggest that the culture of twentieth century New York is superior to that of Periclean Athens, or Mesolithic Jericho, is about as meaningful as to argue that a rose is "better" than slime-mold. What we can say in each case is that there has been an advance in complexity of organization - and here our conceptual principle provides us with at least a partial resolution of this question of "progress." Speaking of "progress in science," Collingwood suggests that this would consist "in the supersession of one theory by another which served both to explain all that the first theory explained, and also to explain types or classes of events or 'phenomena' which the first ought to have explained but could not." Thus Darwin propounded a theory to account for phenomena which the theory of fixed species could not explain. Again, we have "the now more familiar relation between Newton's law of gravitation and that of Einstein, or that between the special and general theories of relativity." [38]

Here we have examples of the evolution of the conceptualizing process, as demonstrated in the movement from lower- to higher-order abstractions capable of controlling increasingly complex numbers of phenomena and organizing them into systems possessing their own inner logic and cohesion - thus, as a result, adding to man's capability to engage in manipulative equilibration. Put into different words, the move from lower- to higher-order levels of abstraction represents "progression" towards universalization of organization and control. And this is precisely what is happening in regard to socio-political levels of organization as well. Hence the historic quantum shifts from L_7 to L_{10} - and in our century especially, a quantum shift in turn towards L_{11}, i.e., in the direction of trans-national or planetary political constructs.

(c) "Sovereignty." The principle of integrative levels throws light as well upon the inter-related question of "sovereignty," which lies at the core of political metaphysics as expressed in the concept and operation of the national state system, and has even acquired an almost mystical significance (since it is invoked as the summum bonum of the State and as sanctifying war-or-peace decisions and the commitment of individual citizens to life-or-death participation on the battlefield). This doctrine was first explicitly formulated in 1576 in the De Republica of Jean Bodin who argued that the essence of

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[37] "It was not until the latter half of the nineteenth century that the attempt was made to define the idea of progress with some precision and to link it with scientific and philosophical theories of development. The popularity of the idea was due in great measure to the buoyant hopefulness inspired by the triumphs of applied science. On the scientific side the idea was later given powerful impetus by its association with the biological theory of evolution. The culminating point was reached towards the end of the century....Despite its vagueness, it thus became part of the general mental outlook and for many it provided the basis for a working faith of great vitality." Morris Ginsberg, The Idea of Progress, A Revaluation, Methuen, London, 1953, pp. 1-2.

[38] R. G. Collingwood, The Idea of History, Oxford, Clarendon Press, 1949, p. 332.

statehood, the quality that makes an association of human beings a state, lies in the unity of its government; and that the "ship of state" (a highly appropriate metaphor to employ in the oceanic stage of TS^2 environmental expansion and control) would be a ship without a keel in the absence of a summa potestas, or maiestas, namely sovereign power. To Bodin, "he is sovereign who recognizes nothing greater than himself save only Immortal God."[39] Sovereignty is thus both absolute and inalienable. Beginning with Bodin and continuing through Grotius, we eventually come to Hobbes' Leviathan, "the most complete expression of the new state theory and a turning point in political thought."[40] By the seventeenth century, sovereignty is conceptualized in keeping with the prevailing philosophy of a universe based upon mechanism and natural harmony - the Cartesian-Newtonian universe of absolute values. As a result, "the word sovereignty becomes something in the nature of a magic wand which can conjure up the whole sense and content of the state's general power. From the quality of being simply the highest authority there is deduced the whole of that absolute omnipotence which the modern state claims for itself ... The champions of popular sovereignty view with the defenders of monarchism in exalting its claims."[41]

Despite these political and juridical pretensions, however, precisely because of the spatially fragmented and dyadically conceptualized nature of the national state system, no analogous power to make and enforce laws exists in inter-national relations, i.e., in expleted geopolitical space. Nor for that matter, as we have already seen, is it a simple matter to discern where the supreme power lies in the intra-national sphere in all cases either (especially where issues of jurisdiction involve a federal structure). The problem both of retaining the traditional concept of "sovereignty" and of applying it consistently becomes progressively

difficult to resolve in a TS^3 environment, which is at once multi-relational, multi-dimensional, and where "interdependence" represents a higher order of abstraction than the TS^2 concept (and ideal) of "independence." What is required is a new conceptual model, one that is not two-valued in its orientation and boundaries, and where "to govern" becomes synonomous with "to control," i.e., to recognize that "form" (or "organization") and "function" (capacity to act) are inextricably related to the nexus between any given system - biological or socio-cultural - and its larger environment, or ecosystem.

As seen from this conceptual standpoint, the principle of integrative levels acquires a special applicability. This is because each level organizes the levels below it plus one or more emergent qualities or properties (so that the integrative levels are cumulative upwards), and because the mechanism of an organization is found at the levels below, its purpose at the highest given level. Consequently, it follows that "sovereignty," i.e., the capacity of a system to act, functions at any given level in terms of its own properties together with those of the levels below. Similarly, there is a direct relationship between degree of autonomy and the level of organization - with maximal freedom (or motility) and direction being found at the topmost level. Relating this approach in turn to the stage of manipulative equilibration, we find that Homo is able to exercise progressive control over the man-environment relationship (though the latter must always be regarded as a transactional process[42] - never as "conquest"). At each level of manipulative equilibration, man remains the invariant factor; from L_7 through L_{11}, he is at the centre of his own socio-cultural constructs - and to this extent he is

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[39] De Republica, Book I, Chapter IX.

[40] John Bowle, Western Political Thought, An Historical Introduction from the Origins to Rousseau, London, Jonathan Cape, 1948, p. 289.

[41] O. Gierke, Natural Law and the Theory of the State (edited by Sir E. Barker), Cambridge University Press, 1934, Vol. I, pp. 40-41.

[42] The term "transaction" is employed in this paper in the sense found in John Dewey and Arthur F. Bentley, Knowing and the Known (Boston, Beacon Press, 1960), p. 304. Cf. the distinctions which they draw between "self-action," "interaction," and "transaction," which represent historical developments in conceptualizing relationships between the "knowing" and the "known." Thus in "transaction" the knowing-known is taken as one process, whereas in the interactional approach the knowings and knowns are viewed as separate components and allotted "irregular degrees of independence."

"sovereign" at each level of organization in turn. Thus, he possesses freedom to act within the conceptual boundaries of his own constructs. Translated into terms of political model-making, this is what democracy is all about. With L_{10} emerges "Logos" - Protagoras' maxim again coming to mind - and this conceptualizing quality is not to be discarded at L_{11} but requires further amplification and strengthening (see below under our discussion of "freedom"). Conversely, totalitarian conceptualization represents retrogression to an L_9 construct of "Theos" (see Figure 3), namely, unquestioning authority imposed from above, with no feedback tolerated.

Each one of us lives concurrently at more than one level of socio-cultural organization: as individuals, and also as members of a family, a municipality, a state (province), a nation-state, and through the last-named as participants in intergovernmental agencies. How shall we schematize this continuing transactional involvement? Earlier, we employed the triangle to depict the overall ordering process in the phenomenal world, and again as the appropriate conceptual Gestalt for TS^1-L_9 socio-cultural constructs. On the other hand, the pyramid projects a hierarchical concept which is at once static and distorting, especially when applied to TS^2 - L_{10} constructs (which involve two-way dialogue and decision-making) - and it becomes still more distorting in a TS^3 - L_{11} environment which must be conceptualized in terms of an Einsteinian time-space manifold, involving circular causal chains, electronic communications, and continuous feedback in an emerging planetary society that will be progressively resonating as a multi-dimensional, reticular system. For such an Einsteinian model of reality, we require logically a Gestalt of at least four dimensions. Since this cannot be projected visually, we must be content to employ a configuration that will at least diminish the factor of distortion found in the pyramid. Hence we shall depict the centrality of man in the decision-making process, i.e., his "sovereignty," in the way illustrated in Figure 8.

The principle of integrative levels can thus be conceptualized as either triangular units or "Chinese boxes." In the hierarchy of the former, all units are identical except for size, whereas in actuality the levels of organized phenomena comprise an endless set of variations at once structural and functional. Moreover, there is continu-

ous and simultaneous transactional involvement both within each level (or "box") and among all levels. Nevertheless, the two Gestalten above possess similar relationships to the extent that they can be employed to demonstrate our integrative principle, whether we are concerned with L_0 - L_6 or, again L_7 - L_{11}. For example, the triangle ABC can represent an ecosystem, comprising organisms (AEG) which are in turn composed of cells (AHJ), for their part made up of molecules (AKM). "The properties of the whole ecosystem are intimately interrelated with the properties of each subordinate level, down to the smallest."[43] Alternatively, ABC can be envisaged as the international environment, composed of countries (AEG), comprising in turn state or provincial entities (AHJ), for their part made up of municipalities (AKM). Throughout the socio-cultural environment, man himself - whom we might designate "Vitruvian Man" in this context - remains the invariant unit at the centre of the decision-making process, empowered to move "outwards" in any direction and to position himself, as and where he desires, in each of his own socio-political constructs.

(d) "Freedom" (vis-à-vis Form-Function Relationality). Yet here we encounter an important related question: how much freedom does man possess in his decision-making role? To what extent can he exercise his "sovereignty"? In our search for an answer, we might re-examine Figures 1 and 3. In ascending the levels depicted therein, we can perceive the presence of order or form which is associated with concepts of organization and continuity, in effect, determinacy. In contradistinction, the properties and emergent qualities found on any given level, while organized holistically into a system of their own, comprise a corpus of attributes which makes that system function uniquely, that is, differently from those on other levels. This functional aspect of the levels is characterized by discontinuous (quantum) behavior so that, when viewed from above, the levels exhibit qualities of indeterminacy. The form-function relationship present within the integrative levels may be expressed schematically as shown in Figure 9.

[43] Clifford Grobstein, The Strategy of Life, San Francisco and London, W. H. Freeman and Co., 1965, p. 41. (The author is indebted to the publishers for permission to reproduce Mr. Grobstein's diagram in Figure 8.)
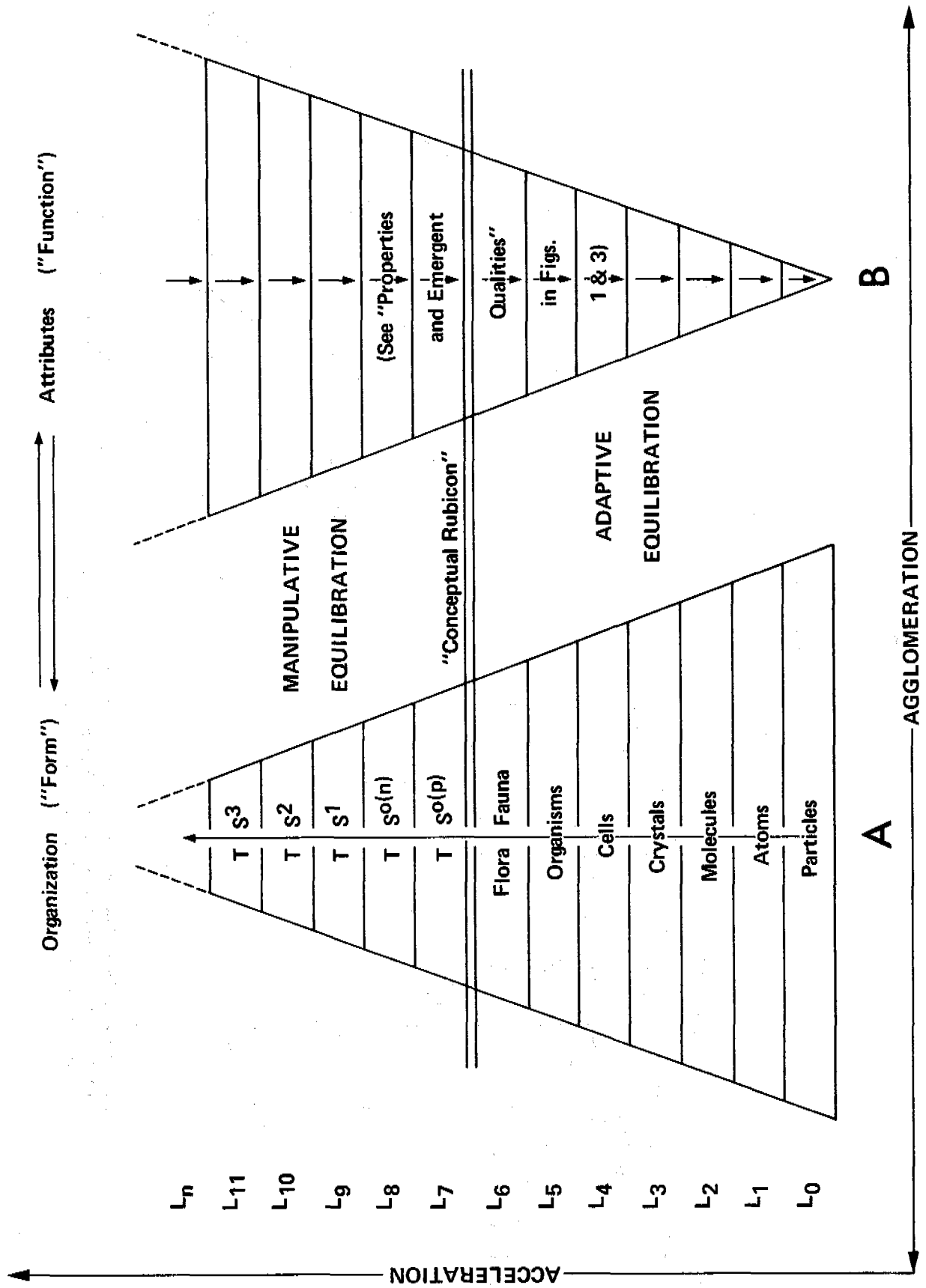
FIGURE 8
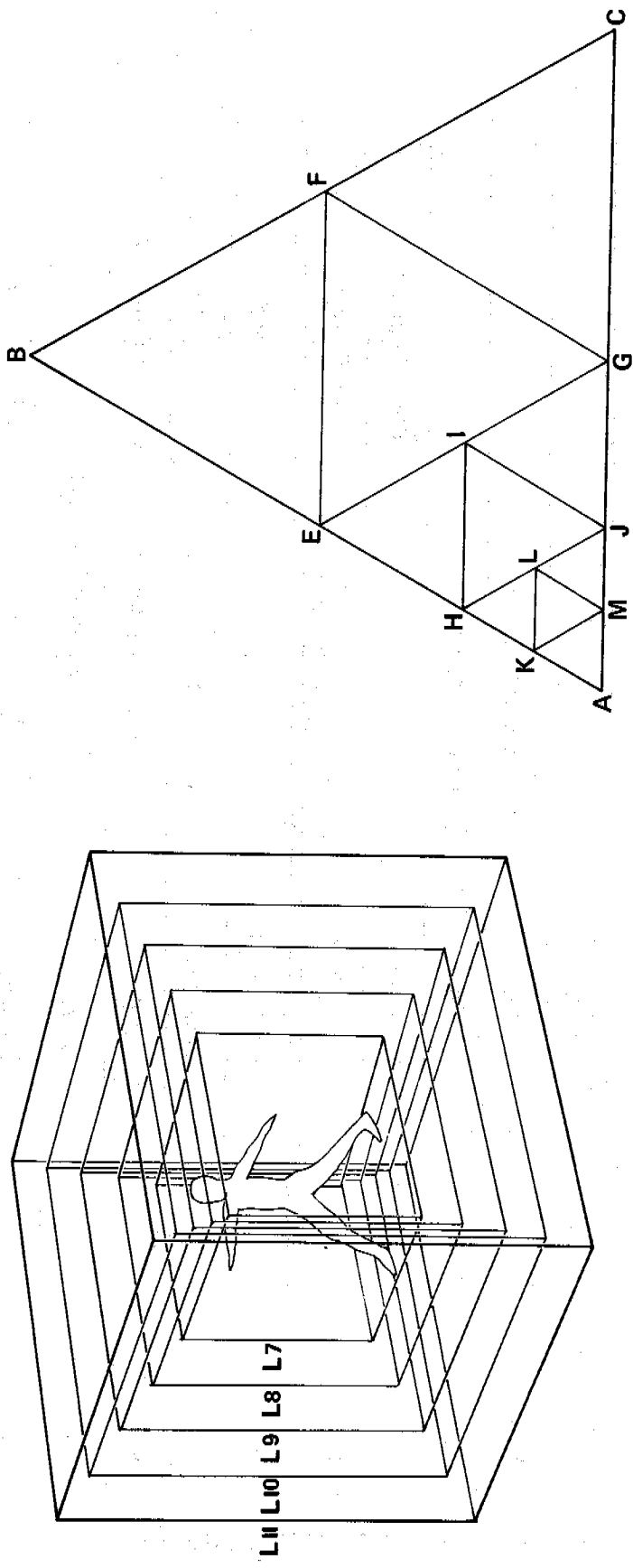
Hierarchical order in Chinese boxes and subdivided triangles. Note that the triangle ABC is made up of four identical triangles, one of which is AEG. Similarly, AEG is made up of four triangles, one of which is AHJ. This triangle, in turn, is made up of four triangles, one of which is AKM.

FIGURE 9

PRINCIPLE OF INTEGRATIVE LEVELS

The process of organizing successive levels has been accelerative; thus, the formation of inanimate systems occurred prior to, and over a much longer period of time than, biological evolution, while the latter in turn exhibits continued acceleration as we move from L_4 through L_6. At the socio-cultural levels, the factor of acceleration is again present as we proceed from L_7 to L_{11} (and which is schematically depicted in Figure 2 as well).

The agglomeration arrow relates to a major uniformity in the principle of integrative levels, namely, that the higher the level, the greater its variety of characteristics, but the smaller its population. That an inverse ratio exists between the number of organized systems and the number of attributes or functions has, in our view, far-reaching implications for understanding the equilibrating process in the phenomenal world. The further we descend, the fewer the variables and therefore the easier it becomes for man both to forecast the behavior of systems and in turn to engage in manipulative equilibration. (Conversely, the problems of control multiply for the behavioral and social scientists in proportion to their ascent above the line demarcating the Conceptual Rubicon - as becomes quickly apparent, for example, to anyone structuring a textbook which undertakes to survey socio-cultural developments from TS^0 to TS^3.) Triangle A illustrates the continuing thrust of the organizing principle in the phenomenal world to move towards universal constructs and forms of control, i.e., to display invariance (symmetry). This is accompanied by concomitant tendencies towards stability and, at the socio-cultural level no less than elsewhere, by progressive uniformity. Thus, contemporary developments in virtually every sphere of human society display accelerating tendencies towards agglomeration and standardization. On the other hand, triangle B is "inverted" precisely because of its progressive multiplicity of properties and functions, thereby exhibiting yet another universal tendency, i.e., towards increasing variability. If triangle A is associated with invariance, continuity, and stability, triangle B explains the presence in the phenomenal world of variety, discontinuity, and motility.

Here we find an apparent paradox present in the socio-cultural stage (as elsewhere). Triangle A poses massive challenges to men qua individuals because of its thrust towards agglomeration and conformity, at once technological and societal - so that L_{10} and L_{11} present the kinds of problems examined in Ortega y Gasset's The Revolt of the Masses (or, in its most frightening forms, in George Orwell's 1984). Yet triangle B makes clear that the evolutionary process is open-ended and that, at the manipulative stage, each new organizational level is accompanied by an increase in the number of variables, and hence of choices available to men. In this way nature and man alike can retain a dynamic equilibrium between "organization" and "freedom." Hence we contend that no societal constructs, either in theory or application, will prove valid unless this binary principle of invariance $\rightleftarrows$ variance (organization $\rightleftarrows$ freedom) is both recognized and implemented in terms of form and function alike. We would emphasize again that at all levels above the Conceptual Rubicon, we are dealing with man's own constructs, and consequently he remains sovereign within each of these levels. Therefore, if he does not approve of what he finds on L_{7-11} in triangle A, he can reconceptualize his relationship with the extra-dermal environment and function in terms of a new symbiosis more relevant to his newfound needs or goals.[44] In this regard, too, we would draw attention to the level above L_{11} - which we have designated as L_n. Here, where the broken lines depict an ongoing process at work in the conceptualizing sphere, we recognize levels of cognition and creativity that transcend three-dimensioned environmental control systems - or again, which take account of supra-phenomenal constructs, such as Kant's noumenal world or what Boulding has described as "ultimates and absolutes and the inescapable unknowables [because] they also exhibit systematic structure and relationship."[45]

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[44] Including, of course, the creation of new socio-political levels of organization, whether intra- or supra-national. For example, the problems posed by accelerating urbanization may well call for the development, and formalization, of a "metropolitan" level which could conceivably require the substitution of new spatio-economic boundaries to replace traditional state or provincial jurisdictions. Regarding the problems and potential of regional development in Canada, for example, see J. Wreford Watson, "Canada Divided: Problems of Region and State," University of Edinburgh Journal, Autumn 1965, pp. 146-158.

[45] Kenneth E. Boulding, "General Systems Theory - The Skeleton of Science," Management Science, 2 (1956), pp. 197-208.