THE INTERCONNECTED UNIVERSE

Conceptual Foundations of
Transdisciplinary Unified Theory

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Conceptual Foundations of
Transdisciplinary Unified Theory

Ervin Laszlo

Foreword by Arne Naess

Afterword by Karl Pribram

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Foreword

by Arne Naess

Now, at the end of the century, it appears that at its beginning something happened that will have a profound influence far into the future. Without losing touch with observation under carefully registered conditions, the level of abstract thought in natural science theorizing increased immensely. The steps of deduction increased proportionally. The fundamental theoretical postulates of the new physical theories tend to contain concepts more and more abstruse, seemingly of an arbitrary character. That which for most people must appear as an increase of unfounded speculation, and more like invention than discovery, is in reality a consequence of a liberating synthesis of thought and imagination.

The wave of development impinged on philosophy in unpredictable ways. The creative work of Ervin Laszlo is a brilliant testimony of how conceptual imagination—deductively related to careful observation—can make us see the cosmos, and our place within the cosmos, in new ways that are of great inspirational value. Reality as conceived by Ervin Laszlo has what I call 'gestalt character'—a predominance of internal rather than external relations.

Ervin Laszlo often uses the term 'speculation' and does not pretend that, for instance, recent research *implies* a definite conception of consciousness. He differs from the more uncritical author Stanislav Grof, who says that modern consciousness research *reveals* "that our psyche has no real boundaries." The present book is admirably sober—no spiritual *Schwermerie* in the Kantian sense.

Laszlo rightly emphasizes the simplicity of the theories he explains so well. It is a simplicity that takes a great deal of training to perceive; beginners may find the theories 'complicated'. Yet they have a remarkable simplicity in relation to their great power of explanation—in regard to the new, formidable range of phenomena covered by their conceptual framework.

Some philosophers, and I am one of them, intensely admire the creations of mathematical physics—the little that we understand of quantum physics and of Einstein's theory of spacetime and its cosmological consequences. One of the things we wonder about is what would have happened if the famous universal constants, such as Planck's constant, had different values, perhaps only a little bigger or smaller than what they do have. Physicists tend to answer that the evolution of the cosmos would have been vastly different; the cosmos may not even have been created. But what could explain the existence of these preciously tuned constants? Did they evolve out of something preexisting? But how? Ervin Laszlo attempts to answer, even if tentatively, questions at this level of depth.

In regard to these questions it does not seem possible that any kind of observation could be of any use—at least not today. For the present answers must be speculative, as Laszlo admits. Many postulates are required, many premises must be tentatively adopted so that they may explain otherwise unexplainable phenomena. Yet comparatively simple and basic reflections can help us to formulate the relevant questions with clarity.

"A universe of isolated components governed by pure chance could not give rise to the orders that now meet our eye," Laszlo writes. I would say that even if this were conceivable, in such a universe the next moment might see the destruction of everything. If so, why bother to contemplate it?

Obviously we not only can, but should, bother to contemplate a universe that is systematically interconnected. Laszlo formulates the question his book seeks to answer: "How could the evolutionary trajectories of the many things we observe, or infer from observations, not only diverge, but also converge with each other, even when they are separated in space and time?" (p. 4)

A central part of Laszlo's conceptual framework is the quantum/vacuum interaction (QVI) hypothesis. This is a highly sophisticated theory, rather than a hypothesis, in my terminology. I hope that it will be taken seriously by the few professionals who can fully judge its scientific merit. Other readers of the book are advised to joyfully continue reading even if some concepts (for example, 'the Dirac sea of the quantum vacuum', 'the sequential emergence of diversified yet ordered systems', or 'interconnections that bias evolutionary trajectories') are not entirely understood by them; they can get many 'aha-experiences' nevertheless.

Greatly simplified, one might say that Laszlo envisions a world that is constantly created, and where every event that happens locally, even an event in one's consciousness, is connected with events that happen everywhere else. There is no absolute determinism in this world, although evolution exhibits a measure of bias in favor of certain trajectories and directions, rather than others. Complete randomness is out of the question or, strictly speaking, incomprehensible. The time is ripe to work out exact theories of general evolution in the cosmos, transcending the usual distinction between theories of physics and biology, and concepts of the physical and the mental.

There are many of us in science and philosophy who wish to see a growing trend of bold theory formulation inspired by such courageous yet unpretentious efforts as the present study by Ervin Laszlo.

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CONTENTS

Foreword by Arnes Naess	v
Preface	xiii

PART ONE: THEORETICAL CONSIDERATIONS

1. A Transdisciplinary Framework for Evolution	3
Space and time connections in nature	5
<i>Interconnections in evolution</i>	5
<i>The relevance of fields</i>	9
<i>Temporal field connections</i>	11
<i>The evolutionary functions of a holographic field</i>	14
The fifth field	15
<i>Physical roots of the fifth field</i>	16
2. Basic Concepts of Quantum/Vacuum Interaction (QVI)	25
The vacuum postulates	27
<i>Quanta as solitons</i>	28
<i>Secondary waves in the vacuum</i>	30
The interaction postulates	33
<i>Vacuum-quantum interaction</i>	33
<i>Micro- and macro-scale applications</i>	34
Related hypotheses	37
<i>Bohm's implicate order</i>	38
<i>Stapp's Heisenberg quantum universe</i>	39
<i>Sheldrake's formative causation</i>	42
<i>Summary</i>	44

PART TWO: EMPIRICAL EXPLORATIONS

3.	QVI in Microphysics and Cosmology	49
	Interaction effects in microphysics	50
	<i>The quantum-interpretation decision-tree</i>	51
	<i>An interpretation of quantum nonlocality and coherence</i>	53
	Interaction effects in cosmology	60
	<i>The problem of the constants</i>	60
	<i>Non-Big-Bang cosmologies</i>	63
	<i>The multicyclic QVI scenario</i>	66
4.	QVI in Biology	73
	Problems of the synthetic theory	74
	Interaction effects on the organism	79
	<i>The in-formation of the organism</i>	79
5.	QVI in the Cognitive Sciences	87
	The interactive varieties of human experience	88
	<i>ESP</i>	88
	<i>Anomalous recall</i>	93
	The interpretation of interactive experience	95
	<i>Near-death and past-life experiences revisited</i>	97
	<i>A fresh look at ESP</i>	103

PART THREE: SUPPLEMENTARY STUDIES

(i)	QVI Dynamics in the Brain	113
	<i>by Attila Grandpierre</i>	
(ii)	Philosophical Perspectives of QVI Cosmology	119
	<i>by Mauro Ceruti</i>	
(iii)	New Concepts of Space and Time	125
(iv)	Creativity, Archetypes, and the Collective Unconscious	129
(v)	Problems and Prospects of Transdisciplinary Unified Theory	137

CONTENTS

xi

Afterword <i>by Karl Pribram</i>	143
Bibliography	147
Index of Names	157
Index of Subjects	161

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P R E F A C E

Conveying an understanding of the world around us that is rigorous and detailed, as well as complete and consistent, is a perennial ambition of both science and philosophy. In the past, satisfying this ideal required considerable leaps of imagination, binding together the observed facts with rationalistic metaphysics, if not with myths and mysticism. In recent years the prospects for progress have improved. The empirical sciences now research ever more domains of the observable or observationally inferable world, and they do so with increasing rigor. Even more significantly, the increasingly rigorous probings of nature come up with significant similarities: basically analogous processes are discovered in independently pursued programs and fields of investigation. Not many years ago these were still thought to be mainly superficial—suggestive analogies without necessarily deeper meaning. Today, however, theories that unify entire domains of research are actively sought in most fields, first and foremost in the physical and the biological sciences. Grand unified theories are a legitimate, and often even a dominant, program in physics, while the elaboration of the synthetic theory fulfills a parallel function in biology.

The separation *between* the physical and the life sciences has not been satisfactorily bridged, however. Scepticism regarding the adequacy of laws of physics for explaining the laws and regularities of life persists, and the postulation of quasi-biological laws in the physical realm is viewed with distrust. Though in the light of past experiences such attitudes are clearly justified, there are methods of unification available today that can do significantly better. General laws and regularities are discovered in field after field, and they neither inflate physical processes into biology, nor reduce biological processes to

physics. Attempts to bridge disciplinary gaps are now approaching a new threshold of validity and cogency.

The next step in creating rigorous as well as reasonably complete and consistent transdisciplinary theories calls for explicating the basic process whereby the universe evolves in an unbroken (though not necessarily linear) sweep from basic physical entities to the complex open systems that are physicochemical, biophysical, biochemical, biological, ecological, and even psychological in nature. The theory that describes these developmental processes is unified theory of the transdisciplinary variety. Unlike unified theories in the life sciences and grand-unified theories in physics, it does not remain limited to the one or the other disciplinary field but encompasses physics and biology, and ultimately the human and the social sciences, as special elements within a general scheme. Such a scheme, to be scientifically acceptable, must do better than the insightful but speculative attempts of traditional philosophers. Its conceptual framework must be optimally rigorous and consistent, yet simple and parsimonious, and its empirical implications need to be consistent with findings in both the physical and the life sciences. The view put forward here is that the theory that satisfies these requirements is *transdisciplinary unified theory*.

Unless we assume that physical and living nature are inseparably disjoined in reality, we have to acknowledge that there is no genuine unification in science or philosophy that is not transdisciplinary in scope. Indeed, there is no genuine 'grand' unified theory that is not a transdisciplinary unified theory—a genuine GUT is always a TUT.

Fully elaborated TUTs are as yet in the future; the quantitative analysis that a mature theory presupposes is yet to be developed. It is not likely to be developed, however, in the absence of the clarification of the fundamental notions on which that theory would rest. These basic conceptual elements can be already outlined—doing so is the aim of this study. The scheme offered here suggests alternative and highly unified ways of conceptualizing known and as yet anomalous data; exploring ways anomalous data can be rendered consistent with known data; and discovering the basic concepts that could integrate the known as well as the previously anomalous data into a meaningful general theory.

In the context of this endeavor it is well to remember that science grows not only through the piecemeal refinement of established tenets, but through the proposal of new tenets that go beyond the scope of the old. Evidently, not all new tenets become estab-

lished theory; but those that do, make for basic innovation in the theories and concepts of science. It is in the expectation that the present study contains the seeds of such an innovation that it is now placed in the hands of the reader for assessment and elaboration.

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