

BOTOND GAÁL

OPENING UP A CLOSED WORLD

With the author's compliments
to the Western Theological Seminary
August 12, 2014

Botond Gaál

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Appendix

**Nature, Description of Nature and Mathematics
by
Kálmán Kérdő**

**István Hatvani Theological Research Center
Debrecen Reformed Theological University
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With deep appreciation and gratitude
to my Alma Maters:
the Debrecen University
and
the Debrecen Reformed Theological University,
which belong together

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The author of this book established the
István Hatvani Theological Research Center
in 1993.

The aim of this Center is to help all of the professors and students
at the Debrecen University
in examining and better understanding the relationship between
natural sciences and Christian theology

in order to promote progress in all fields of the human culture.

István Hatvani (1718-1786) was an outstanding
physicist, mathematician,
chemist, physician, philosopher and Calvinist theologian
who,

as a professor of the Reformed College of Debrecen,
embodied a European standard in teaching science and theology.

* * * * *

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CONTENT

Content.....	7
Foreword	9
Introduction.....	11
The religious situation of the ancient world in the middle east ...	15
The significance of the Jewish people: a new religious perspective.....	16
The significance of the early Greeks: new perspectives in the field of sciences.....	29
The Greek <i>more geometrico</i> period	39
Postulates	51
Axioms	52
Jewish monotheism and the christian trinitarian perspective	55
Ptolemy closes, Copernicus opens.....	61
Europe establishes a new mathematics.....	65
„Out of nothnig I have created a new and different world”	73
Axiomatization and the upward opening infinite world.....	85
A mathematician offers religions a change of perception.....	91
Theology and a new <i>more geometrico</i> perception.....	99
The continuous and discrete world	107
At which points can closed worlds be opened?	115
Systems of Church doctrine.....	116
Church organization	120
The openness and closedness of political systems	123
The openness originating from man’s freedom	125
The openness of universities.....	127
Bibliography	129
Index.....	137

FOREWORD

A remarkable event occurred on November 3, 1823, and has greatly preoccupied me. This is when the Hungarian mathematician, János Bolyai wrote to his father: "Out of nothing I've created a new, different world!" I have asked myself: what exactly does this actually mean? In what manner did János Bolyai create a new and different world? For this was one of the most magnificent moments in the history of sciences.

I have studied mathematics and physics at the Faculty of Natural Sciences of the Debrecen University, and later theology at the Reformed Theological University. As a theologian I've made the observation also, that on many occasions during its history, the Christianity also had to "create new and different tenets" in order to get nearer to its propagated truths. I have experienced this very same concept in physics also, and here it is sufficient to mention the names of Newton, Maxwell, Planck and Einstein. The question of particular interest to me was the extent in which the method and the spirit of scientific advancement may be utilized in theological thinking. Christianity always emphasizes new life, a different and renewed philosophy compared to a former. This similarity has prompted me to investigate in greater depth the thoughts of János Bolyai: in what way did he create out of nothing a new and different world? At this point I discovered that he sought out the specific element of the Euclidean geometry which rendered it closed, and he simply unlocked this closed world. I have found this to be of value and edifying in all such systems of thought, which claim scientific austerity. Including theology, of course!

A good opportunity has been presented by a prestigious international scientific research grant project, entitled Global Perspectives on Science and Spirituality announced by Elon

University of North Carolina and the Université Interdisciplinaire de Paris in 2004, for me to expand upon this subject. I have been awarded the grant! It has been of great interest for me to see, if during the development of religious mores or doctrines the same characteristics have been predominant as it was in mathematics? I came across many similarities, parallels and analogies. Part of my program was the publication of the results of my research in a book. This is the book you have in your hands! To the chapter ten Kálmán Kérdő prepared a practical explanation on the perspectives of modern mathematics. I am grateful for this appendix. The entire book is but a brief introduction to a larger topic of scientific theorem. Therefore, I beg the reader to commit to the further contemplation upon what has been written and continue it without restraint and in good conscience.

I would like to express my thankfulness to the Center of Theological Inquiry (Princeton, New Jersey, USA), the research institute which has accommodated me for three months and made possible for me to research and complete this book. The famous Princeton libraries have presented splendid possibilities for this work. — I owe great thanks to my friends Dávid Pándy-Szekeres and Lehel Deák for the translation.

Autumn 2006, Debrecen/Princeton

Botond Gaál

INTRODUCTION

The natural disposition of man has him at odds with any world which is closed. He prefers, instead, to bask in freedom, a state which offers infinite possibilities for activity, reflection and creativity. It is through these that the world accrues in knowledge, in morals, in arts and in its perspectives for progress. To a certain extent, the feeling of "closedness" —as it is intertwined with a pining after freedom— can be found in practically every culture. The tension between closedness and openness eventually rises to the surface, irregardless of into which of these two conditions man has been born. Given this, the question, simply enough, is reduced to arriving at the point in the evolution of social progress where man becomes aware of this tension and then determining the extent to which he will be able to resolve this tension. It appears that different civilizations¹ have resolved this tension in different ways and at different stages of their development and the resolutions reached have always played an important role in the advances made in our world. The long train of historical experience shows that civilizations tend to pass on their particular values one to another and in this way embrace the spirit of opening that which is closed. In as far as this process of give and take occurs in favourable circumstances, the different peoples and societies are able to more rapidly discern the reasons for their closedness and, as a consequence, the embracing of freedom can open wide the gates towards further progress. This, however, is not the only mode of progress because in numerous instances

¹ The word „civilization” is most often used in a very general way, often as a synonym of the word „culture”. The Anglo-Saxon world generally uses it this way. In Europe, in academic usage, culture consists of the deeply-imbedded values of a society; civilization is whatever is visible of culture. International reference material and usage is not consistent and ever-increasingly overlooks this distinction, thus including the culture of historical peoples within the word „civilization”

peoples, nations or societies discover on their own that which is new in such a way that it results in their breaking out of their closed world. In such cases the paradigm of progress is passed from hand to hand as a virtual free gift. There is no exact explanation of how new perspectives come into being in this way and only ulterior affirmation of their existence is what can be offered. Nonetheless, the mechanism of this transformation can be said to be thus because freedom is an inseparable facet of man's very existence. This will be expanded upon later.

The question of closedness and openness, or rather its origin, can often be found in the problematics of the freedom of man as it is imbedded in the culture of religions, especially as it pertains to the recognizable historical past. Religion has always had a role as a conveyor of culture and this is no different in the twenty-first century. This role, as much as its degree of implication, varies from religion to religion. When taken in a strict sense, normally we do not include Christian theology in the category of religions, nor do we include it in the category of philosophies. General consensus, however, does view it as a religion on the grounds that Christianity uses and appears in religious forms. Academic consensus, on the other hand, in pointing to Christian theology's intellectual content, considers it to be a strain of objective, idealist philosophy.² There is little to do against this and it is perhaps more advisable to accept it for the time being, but by no means as a permanent categorization. Our objection for the time being is overridden by the fact that, as a consensual „religion“, Christianity bears a major role as a conveyor of culture. This role has

² This is one of those oft-disputed questions. The differentiation from religions originates in the fact that religions teach of a path leading from the world to a god whereas Christianity teaches the inverse. The classification of Christianity as a philosophy is most obviously understood from a Marxist perspective which places Christianity in the class of objective idealism. It does so because belief in creation presupposes the a priori existence of a spiritual being over matter.

appeared and continues to appear in markedly varied forms, but most often these have been and continue to be of a perspective-forming nature. In the first few thousand years of known social history it was the religions which played a predominant role in forming the worldviews of the time. Academic reflection as such had not yet come into its own. The first period of significance of this nature, the subsequently appearing Hellenistic school of academic thought, had undeniably strong ties to Christianity's well-defined worldview. Even though this influence lasted for only two thousand years, it can be considered to be significant. The primary purpose of our investigation is to better understand the influence of the „Christian religion's" worldview on the evolution of academic reflection during this so-called „Christian period". We would also like to cast an in-depth glance at how academic reflection and rigour was of benefit to Christian theology. To further rein in the topic and the different academic disciplines, we shall, for the most part, restrict our study to the field of mathematics and its role in this process. We shall observe that in the midst of the evolution of knowledge —extended even to mathematics— man truly did take steps forward, but at one certain point of this evolution he closeted himself without even realizing it. It is at times like this that man's attempts to break out of this closed-in condition become more visible, yet neither the means nor the direction to be taken are known to him. At times he surrenders to this seemingly hopeless situation but then along come the subsequent generations and help extricate man from this rut. This rut may at times mean a few hundred years, at times less but in certain cases even two thousand years are needed to usher in a new model. Every new paradigm is the outcome of humanity's natural longing for freedom, and this sense of liberty is mankind's innate idiosyncrasy. Meanwhile we must realize that the human spirit in itself is open. The structure of scientific thinking is "open at the top", — always towards a connection of a higher ranking.

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INDEX

A, Á

Abraham, 16, 18, 58
Alexander the Great, 17
Al-Nirizi, 73
Apollonius, 45
apostle Paul, 96, 104, 123, 124
Archimedes, 45
Aristotle, 29, 114
Árkosi Benkő, 76
Athanasius, 59

B

Barrow, 87, 88, 89, 129
Barth, 102, 104, 105, 129
Bohr, 108
Bolyai, 37, 52, 65, 73, 74, 75, 76, 77, 78,
79, 80, 81, 82, 83, 87, 90, 91, 99, 100,
107, 119, 129, 131, 132, 134, 135
Buddha, 30

C

Cantor, 88, 91, 92, 93, 95, 97, 107, 129
Chuang-ci, 31
Chu-Hsi, 31
Church (1903-1995), 88
Confucius, 31
Copernicus, 62, 130, 131
Cyros, 18

D

David, 17, 27, 80, 86, 133
Descartes, 46, 65, 92
Domokos, 114, 130

E, É

Einstein, 70, 71, 78, 80, 83, 90, 99, 104,
109, 130, 132, 135
Euclid, 45, 46, 47, 48, 49, 51, 73, 83, 90
Euler, 66, 71, 79

F

Faraday, 69, 108

G

Gábos, 74, 75, 78, 82, 90, 131
Galileo, 68, 105, 130
Gauss, 69, 75, 77, 80, 82, 135
Godel, 89
Gödel, 87, 106, 126

H

Halasy-Nagy, 33, 34, 131
Halsted, 83
Hammurabi, 18, 22
Hardy, 87
Harnack, 101
Hegel, 60, 132
Hilbert, 80, 86

I, Í

Isaac, 58, 133

J

Jacob, 16, 58

K

Kalmár, 87, 88, 132
Kant, 68, 82, 93, 100, 101, 107, 132

Kepler, 68
Kérdő, 82, 114
Kierkegaard, 102

L

Lambert, 75
Legendre, 75
Leibniz, 66, 71, 92
Lobachevsky, 73, 76, 79, 81, 83, 87, 99,
100
Lord Kelvin, 107
Lovász, 112, 113, 133

M

Mandelbrot, 113
Maxwell, 16, 17, 22, 56, 70, 71, 108, 131,
133
Moses, 16, 23, 34, 55

N

Naszir Eddin, 73
Nebuchadnezzar, 18
Neumann (1832-1925), 69
Neumann (1903-1957), 109
Newton, 66, 67, 69, 70, 71, 101, 105,
110, 133

P

Peano, 85
Pythagoras, 111
Planck, 107
Polányi, 126
Prékopa, 73, 76, 77, 80, 82, 83, 134
Proklos, 47, 49, 73
PTOLEMY, 61

Pythagoras, 36, 45

R

Riemann, 69, 77, 80, 81, 135
Ritschl, 101
Russell, 86, 87

S

Saccheri, 75
Sain, 22, 36, 44, 45, 53, 61, 65, 89, 90,
92, 134
Saul, 16
Schleiermacher, 101
Schrödinger, 109
Schweikart, 75
Solomon, 17, 19, 24, 25, 56
Spinoza, 50, 92

T

Tankó, 33
Taurinus, 75
Thales, 35, 45
Theon, 47, 49, 73
Toró, 90, 99, 135
Torrance, 71, 89, 101, 104, 105, 129,
133, 135
Tröltzsch, 102
Tung Chung, 31
Turing, 88

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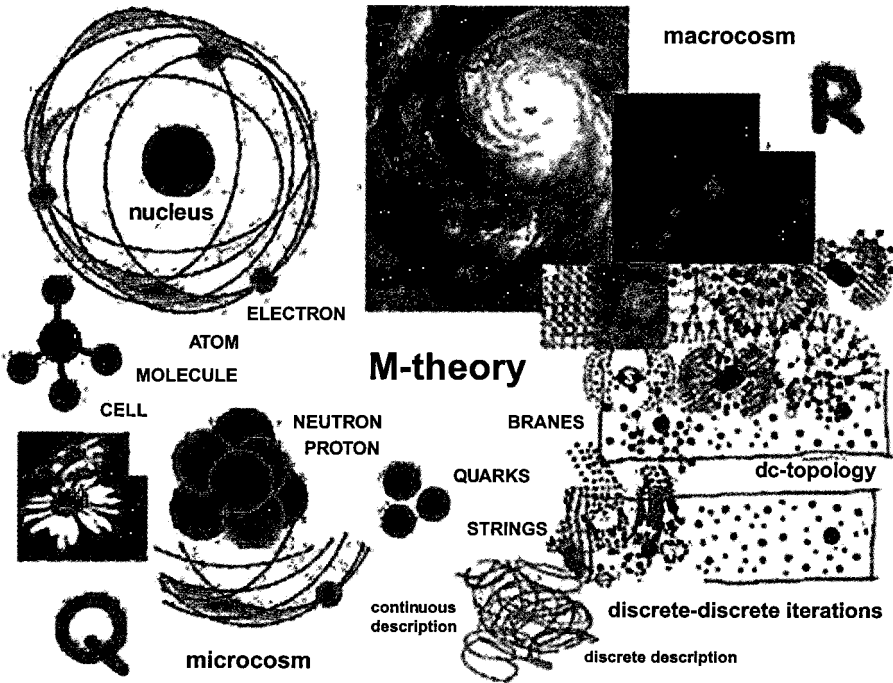
Weber, 69
Weizsäcker, 103, 135
Whitehead, 86

APPENDIX

Kalman Kerdo

Nature, nature description, mathematics

An outline



Debrecen, 2007

CONTENTS

1. INTRODUCTION	3
2. PROBLEMS OF APPROACH TO NATURE AND NATURE DESCRIPTION ...	5
2.1 Measurement in not possible everywhere. Geometry differs from physics....	5
2.2 What changes? Natural elements, space, structures	6
2.3 Position and distance. Problems with space-time. Marble and straw	7
2.4 Without position and distance. The power of topology	8
2.5 Topology is a continuous world. Mystically, nature is discontinuous	8
3. DISCRETE-DISCRETE ITERATIONS. DC-TOPOLOGY. STRING APPROACH	9
3.1 The '3x+1' problem.....	10
3.2 Iterative sequences, iterative graphs, iterative cycles	10
3.3 Minimax properties, iterative fields, iterative tissues.....	12
3.4 Numerative architectures, structure transformations, dc-topology	18
3.5 String approach	19
4. THE OUTLINE OF A NEW SCENARIO. FURTHER SUGGESTIONS.....	19
4.1 Scenario made with computers and softwares	19
4.2 Discrete-discrete iterations, resurgent properties. Morphomatics	20
4.3 Continuous tools, invariants. Gauge physics	21
4.4. The dimension. The levels of complexity. Multilinear time	22
4.5 Causality, coincidence, prognoses.....	23
4.6 Space and time in the Synthesis	24
5. PRESENT AND FUTURE	25
5.1 Unification in the microscopic world. The Standard Model	25
5.2 Special natural elements. Stephen Hawking's Universe	26
5.3 Strings, branes, M-theory. Edward Witten and three revolutions.	27
5.4 The world of iterations. Stephen Wolfram's project	29
5.5 The mathematics of the future. Confessions of Ian Stewart.	30

1. INTRODUCTION

The mathematician Cornelius Lanczos, who worked as an assistant for Albert Einstein for a while, reminded us that the words 'cosmos' and 'cosmetics' have a common root: the Greek word for 'beauty' that also symbolized harmony for Pythagoras.¹

There is no doubt that the Cosmos, the Universe – or whatever name we call it – has always impressed us with the sensation of order and beauty. Meanwhile, researchers might be troubled by the fact alone that the natural philosophies inherited from the twentieth century do not reflect this uniform, deeply inherent order and this beautiful essence entirely.

Instead of a single demonstrative Complete View, the Synthesis, we have distinct descriptions of the microcosm (among them, the Q quantum theories) and of the macrocosm (among them, the R relativity theories). But these two special sets of problems, Q and R, differ from each other so considerably (regarding both their perspectives and mathematical tools) that one may wonder how they can be successful separately.

Fortunately, we can shortly find a synthesizing train of thoughts that warns and also encourages us to review its message thoroughly: *"Einstein discovered ... that nature can be framed into a general picture ... which integrates space, time, and matter into a single unity in the way that everything will be embedded into geometry at last."*²

One wonders whether this overloads geometry. The geometry of that time did not seem to be overburdened and also Einstein suggested that *"by a suitable extension of the geometrical frame, we should find those morphological features of the space which can be identified as the parameters of the electromagnetic interaction."*³ But taking into consideration the newly discovered fundamental interactions, we can be almost sure that such a direct project would have worn off shortly, despite the fact that the investigation of the morphological features, called morphomatics by a recently suggested new name, was a clear and good direction.

In this study I would like to present an approach to nature which is independent of any geometrical concepts and which can provide the outline of a scenario for the description of nature.

I am grateful to Professor Botond Gaal for his encouragement and for his generous offer that my ideas can be presented as an appendix in his book. My view has been unceasingly strengthened by the following remark of his:

¹ Gyorgy Marx, Cornelius Lánzos (1893-1974) {in 8 p 51}

² Cornelius Lanczos, A tudomány, mint a művészet egyik formája {in 8 p 26}

³ Ivan Abony, Lánzos Kornél eredményei a relativitáselmélet területén {in 8 p 89}

"We will go the right way in the cognitive process when we study the world corresponding to its own inherent nature and in harmony with its immanent perceptibility that is so often emphasised by the Christians: kata physin!"⁴

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⁴ Botond Gaal, Az ész igazsága és a világ valósága. *Az egzakt tudományok történelmi fejlődése keresztyén nézőpontból*, Hatvani István Teológiai Kutatóközpont, DRHE, Debrecen, 2003, p 81