

CORRESPONDENCE

OF THE NATURAL SCIENCE SECTION OF THE ANTHROPOSOPHICAL SOCIETY IN AMERICA

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Contents

Editor's Note	2
Please Support Our Work	2
Two Appreciations	
Praise for John Barnes and for Johannes Kühl	3
Heusser Cross-Country Tour	
Preliminary info: Seattle—Ann Arbor—New York	4
Video archive preview	6
"From Reductionist Science to Living Thinking in Medicine" by Peter Heusser	6
Notes and Commentary	
<i>Hearts and Minds</i> by Walter Alexander	21
Announcements	
Calendar of Events	23



April 23-May 9, 2020

Prof. Dr. med. Peter Heusser

Author of *Anthroposophy and Science*
returns to visit

Seattle—Ann Arbor—New York

See page 4

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Editor's Note

We hope to get our January/February issue out soon, having been occupied since our previous newsletter with the initiative announced herein. Thanks largely to the generosity of Ted Roszell, we are pleased to announce that Dr. Peter Heusser, who was our guest for our 2018 Section conference, will be returning to visit Seattle, Ann Arbor, and New York in late April through early May (see p. 4). And thanks to Dr. Heusser and SteinerBooks/Anthroposophic Press, we have been given permission to publish Peter's essay, "From Reductionist Science to Living Thinking in Medicine," which is the Foreword to Dr. Armin Husemann's recent book, *Form, Life & Consciousness* (see p. 6). This essay, together with the archived videos of his talks at our 2018 conference (see p. 6), may serve as a useful preparation for anyone attending his talks this time around—or anyone about to read Peter's own book, *Anthroposophy and Science*.

In this issue we also extend our gratitude and appreciation to John Barnes, who has served on the steering committee for these many years, and to Johannes Kühl, who has recently retired as Section Leader at the Goetheanum (see p. 3).

Lastly, we have an announcement of Walter Alexander's new book, *Hearts and Minds: Reclaiming the soul of science and medicine*.

The *Correspondence* welcomes pilot research reports, comments on current scientific research and news, book and article reviews, letters from readers, reports on meetings and workshops, and announcements. There will be editorial review. **For submissions**, click [here](#).

We look forward to hearing from you. Please send **feedback** [here](#).

Barry Lia, Ph.D.
Correspondence Editor

Please Support Our Work

We ask that you please consider making a financial contribution in support of our mission to bring a discerning and unique perspective on developments in science and technology into today's culture.

The epistemological foundation of anthroposophy is not only a matter of scientific method. It is important to know that there *is* a scientific basis for a monistic science of spirit/matter and to know *what* that basis is.

This is important for *all* of us working with anthroposophy to further our culture today, be we teachers, farmers, doctors, therapists, artists, entrepreneurs, or anyone seeking to heal the contemporary worldview.

**Your donation of *any amount* will help us better serve the Society.
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To donate, click [here](#) or find a PayPal button on our [website](#).

Or mail check payable to "Natural Science Section" in care of our Treasurer, Barry Lia at:
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Thank you kindly for your consideration.

For a copy of our Case for Support, contact Jennifer Greene: jgreene@waterresearch.org.

Two Appreciations

At our Natural Science Section November annual meeting in Ann Arbor November 2019, we learned that two colleagues who have been with us for many years were soon stepping back from their duties with the Section.



John Barnes

John Barnes, one of the founding members of the Natural Science Section of the Anthroposophical Society in America, was at our first meeting in Ann Arbor in the mid 1980's shepherded by Drs. Ernst Katz and Arthur Zajonc.

Since that time John had been active in work with anthroposophical sciences as a Waldorf teacher, a writer and translator, and as publisher of Adonis Science Books. John will now be stepping off the Section steering committee. Prof. Mark Riegner of Prescott College has stepped up to fill the vacancy.

Being fluent in German kept John in close contact with European scientists, especially Wolfgang Schad, author of *Understanding Mammals: Threefoldness and Diversity* (co-edited with Mark). This and other science publications which John has shepherded as editor at Adonis Press include Andreas Suchantke's *Metamorphosis: Evolution in Action*, Johannes Rohen's *Functional Morphology*, and Nigel Hoffmann's *Goethe's Science of Living Form: The Artistic Stages*, to mention a few. John's own book, *The Third Culture: Participatory Science as the Basis for a Healing Culture*, is very highly recommended. Throughout his publications and writings John's sense of language and ear for meaning were prominent and graceful. John's quiet leadership and wisdom helped us grow the Section to where it is now, and for this we are deeply indebted. As a man of kindness and culture, he has inspired us all.

Johannes Kühl



As he has over these many years, Johannes Kühl, Natural Science Section leader at the Goetheanum, once again attended our annual meeting last year in Ann Arbor, took part in all the sessions, and brought his scientific insight, great knowledge, and warmth to our deliberations and many conversations. He has crisscrossed this nation on behalf of Goethean Science, bringing us a picture of world-wide and European scientific and anthroposophical activity to enrich our work here. He was always available, always interested in what we were doing, and was so glad to come to the United States. Johannes was a Waldorf science teacher and spent many years at the Max Planck Institute in Göttingen, researching fluid dynamics, before he was called to Dornach to head the worldwide Natural Science Section. Adonis Press published Johannes's book, *Rainbows, Halos, Dawn, and Dusk: The Appearance of Color in the Atmosphere and Goethe's Theory of Colors*.

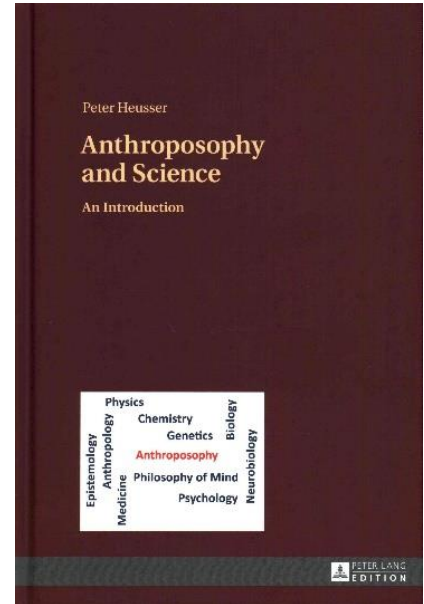
As Johannes now takes on other roles at the Goetheanum, Matthias Rang and Johannes Wirz will take on the Section leadership. We wish Johannes well in his retirement and hope that he will continue to make his way back to the United States. He will always be welcome.

—Jennifer Greene
for the steering committee

You can also read about Johannes's retirement in *Anthroposophy Worldwide*
https://static.goetheanum.co/assets/archiv/Weltweit/AWE/AWE2020_1-2.pdf



BRIDGING NATURAL SCIENCE AND SPIRITUAL SCIENCE



Cross-Country Tour Dr. Peter Heusser

April 23-May 9, 2020

Seattle area—Ann Arbor—New York area

As we said about Peter's visit to Spring Valley for our 2018 conference:

Working in anthroposophical activities, we naturally meet with resistance from mainstream culture. If calls for scientific evidence and validation can sometimes feel like being struck on the cheek, in order to turn the other cheek, it is important for *all* of us—not only scientists—to know that there *is actually* a scientific foundation that can support our monistic science of spirit/matter and to know *what* that foundation is.

We are now so glad that many more people—both in mainstream institutions and in our anthroposophical communities—will be able to meet with Peter as he delivers this important message bridging natural science and spiritual science.

Plans are now being finalized for Peter's cross-country tour this Spring, thanks to the initiative and generosity of Ted Roszell of Ann Arbor. Gopi Vijaya took the lead of an initiative group—Walter Alexander, Ricardo Bartelme, Frank Dauenhauer, Judith Erb, Craig Holdrege, Gary Lamb, Barry Lia, Andrew Linnell, Ray Manages—formed under the auspice of the Natural Science Section with the cooperation of The Nature Institute and the Hawthorne Valley Center for Social Renewal, and the Center for Anthroposophical Endeavors. Look for details to be announced in the following areas or email the following contact persons:

Seattle area

[contact Barry Lia: barrylia at comcast.net]

April 23: academic seminar being planned with Prof. Gordon Miller at Seattle University, inviting faculty and students from University of Washington Comparative History of Ideas Department and UW Bothell Center for Education and Research in Consciousness.

April 24: medical seminar, inviting naturopathic students and researchers at Bastyr University and with the Osher Center for Integrative Medicine at the University of Washington.

April 25-26: weekend festival, gathering folks to Seattle from Vancouver and Portland; lecture series 'from natural science to spiritual science,' panel on regional initiatives, panel on the School for Spiritual Science, eurythmy and Goethean activities, meals, and evening performances.

April 27-8: medical seminar with student anthroposophical medicine group and researchers at National University of Natural Medicine in Portland.

April 29-30: stop in Salt Lake City; talk being arranged.

Ann Arbor

[contact Judith Erb: juditherb at comcast.net]

May 1, 7:00 pm: Dr. Heusser discusses the question of how human beings go about developing accurate perceptions of reality, especially in times as complex as ours.

May 2, 8:30 am - 12:00 pm: panel, comprised of Gopi Krishna, Peter Heusser, and 2 college-age alumni of the school reviews previous evening and applies it to a discussion of how human beings might design and interact with machines and technology so as to utilize them for the progress of human development, while avoiding less desirable impacts on the human being.

May 2, 2:00 - 5:00 pm: panel comprised of Judith Erb, a high school teacher, a lower-school teacher, an early childhood teacher, and possibly experts on climate science and sustainable economics will discuss the current objective reality of our earth and its inhabitants. This will include tools to respond in age-appropriate ways to what comes from the world around us as climate reality unfolds. We will look at historical context and archetypal tales. Discussion will elucidate how our thoughts about this as parents, teachers, students and citizens of the planet will shape the attitude of soul with which we and our children meet the coming challenges and opportunities with courage, flexibility and hope rather than despair.

May 3, 9:00 am-12:00 pm: panel comprised of Dr. Heusser, Dr. Bartolome and possibly others will discuss how expansion of our present-day conception of the human being leads to an improved approach to health and healing.

May 3, 2:00-4:00: breakout sessions bringing the process of developing accurate perceptions of reality to practical work in specific areas.

May 4-6: visiting in Milwaukee.

New York area

[contact Gopi Vijaya: vgopik at gmail.com]

May 6: Evening address at the New York Branch (hosted by Walter Alexander)

May 7: Evening address at the PAAM Training Week in Spring Valley (open to the public).

May 8: Researcher gathering by invitation.

May 9: *Co-sponsored by the Nature Institute and Hawthorne Valley Center for Social Renewal.*

11:00: Conversation by invitation with Peter Heusser and Gopi Vijaya at the Nature Institute.

12:30: Lunch: As determined by TNI

1:30 to 2:30: Continue conversation: As determine by TNI

4:00-5:15: "Human Interaction with Artificial Intelligence" by Gopi in HVWS Music Room

5:30: Supper at HVWS.

7:00: Lecture at HVWS by Peter Heusser: "Human Intelligence and the Spiritual in Nature"

Video archive of Prof. Dr. Peter Heusser's Public Lectures

We have archived videos of the four lectures which Peter delivered at our 2018 conference in Spring Valley. These lectures stand as a summary of his book, *Anthroposophy and Science: An Introduction*.

We hope that these videos serve to promote your interest in attending the upcoming gathering nearest you this Spring for discussions of Rudolf Steiner's epistemology on a modern, scientific basis.

Lecture 1: *Is there a place for the spirit in physics and chemistry?*

– *On the importance of epistemology for natural science.*

Lecture 2: *Is there a chemical or genetic explanation of life?*

– *A closer look at causality and agency in modern biology.*

Lecture 3: *Does the brain cause consciousness?*

– *A way out of neurobiology's current doctrine.*

Lecture 4: *From natural science to spiritual science.*

– *Rudolf Steiner's contribution to the evolution of science.*

Click [here](#) for video access.

ESSAY

From Reductionist Science to Living Thinking in Medicine

By Prof. Dr. med Peter Heusser

We are pleased to receive permission from Peter and SteinerBooks/Anthroposophic Press to publish his Foreword to Dr. Armin Husemann's new book, *Form, Life & Consciousness: An Introduction to Anthroposophic Medicine and Study of the Human Being*.

In his own recent book, *Anthroposophy and Science*, Peter presents the emergent properties of body, life, soul, and spirit as lawful organizing principles—each level equally and irreducibly real. In the light of modern evidence from the fields of physics, chemistry, biology, and neuroscience, he develops a non-reductionistic epistemology of “empirical ontological idealism,” validating a monistic science of spirit/matter that can address the reservations often held by mainstream society. This Foreword encapsulates these themes, serving as an introduction to Peter's work in building a bridge *from natural science to spiritual science*.

Dr. Heusser is currently Senior professor in Medical Anthropology and formerly Head of the Institute for Integrative Medicine at the University of Witten/Herdecke, Germany. He had also been on the Faculty of Medicine at the University of Bern as Head Lecturer for Anthroposophical Medicine in the Institute for Complementary and Integrative Medicine. He has served as expert of the Swiss Federal Office for Social Security and Health for the Evaluation of Complementary Medicine. He lectures worldwide on epistemology and philosophy of science, particularly regarding the need for activating a different caliber of thinking for handling an integrative, holistic science and medicine.

FOREWORD:
FROM REDUCTIONIST SCIENCE
TO LIVING THINKING IN MEDICINE

Professor Peter Heusser, MD

“**M**edical études” is the title Armin Husemann would have preferred for the studies published here, and rightly so. In this book, Husemann—an anthroposophic physician, Goethean researcher, teacher, and head of the Eugen Kolisko Academy at the Filder Clinic in Filderstadt (near Stuttgart)—develops a medical perspective on the human being that infuses the often highly abstract scientific foundations of medicine with artistic sensibility. The result is a new, supple form of medical thinking that might be called “medical science through art,” to use an expression previously coined by Husemann himself.¹

Far from simply using artistic witticisms or illustrations to embellish prosaic scientific insights, this approach involves artistic and imaginative ways of configuring medical thinking itself—in other words, the development of “precise imagination.” The impetus for this approach comes from Johann Wolfgang von Goethe’s scientific and artistic work and from Rudolf Steiner’s Anthroposophy. At various times, Steiner (like Goethe before him, to some extent) recommended that training for professions dealing with people—for example, physicians, educators, and priests—convey the scientific and

FORM, LIFE & CONSCIOUSNESS

anthropological fundamentals of their respective fields in the form of a “sculptural–musical–linguistic study of the human being.”² To date, especially with regard to providing an artistic form for theoretical instruction and to systematic practice in the arts themselves, the Eugen Kolisko Academy is the medical school that has developed and applied this approach most systematically to education for fostering the development of corresponding abilities in its graduates.

Medical thinking that has become supple and sensitive through art leads to recognizing connections that are simply inaccessible to any way of thinking accustomed to dealing with molecular particles and their interactions. These connections, however, are of major importance in understanding the principles that govern organisms, in resolving the body-soul dichotomy, in grasping more profound connections between humans and the natural world, and in other basic principles of human medical studies. The idea that human beings are ultimately nothing other than molecular, genetically controlled machines leads to a dead end, also with regard to morality and ethics. As far as our human understanding of our existence and ourselves is concerned, this idea extinguishes life, soul, and spirit—a devastation that cannot remain without consequences for the practice of medicine and for our moral and ethical culture.

With nearly two hundred years of practice in focusing exclusively on measure, number, weight, and their processing in mathematics and statistics, modern science has achieved unprecedented, fully justifiable mastery and success in its area of expertise, to the great benefit of civilized development. This science may look askance at Armin Husemann’s present attempt to imbue the study of the human being with artistry and may find it insufficiently “scientific” in character. We must not neglect to consider, however, that each science must be adapted to suit its object, not vice versa—a point that Goethe already made abundantly clear. Are we investigating an organism’s physical and chemical processes and substances with their primary determinants of measure, number, and weight, or are we following that same

Foreword: From Reductionist Science to Living Thinking in Medicine

organism as a living figure involved in spatial and temporal processes of metamorphosis? It makes a difference. The first approach requires an analytical method and leads to physical and chemical laws and forces; the latter requires a synthesizing—i.e., holistic and living—capacity for imagination and leads to morphological principles that manifest in the organism in supple (i.e., living) ways.

Nowadays, of course, genetic and molecular processes are said to underlie all life processes, including morphogenesis. Supposedly, therefore, the organism's configuration and its metamorphoses can be traced back to physical and chemical laws that can be formulated in mathematical terms. Life is denied any autonomous forces and principles of its own, and the same is true of our soul and spirit aspects: They are an illusion or perhaps a social construct or a product of the brain, but certainly nothing real.³

This, however, is a bias that can be traced back to habitual ways of mechanistic thinking that developed from the seventeenth to the nineteenth centuries. These ways of thinking do justice to physics and to the body's physical aspects, but not to the human being's specifically living, psychological, and spiritual aspects. And as a few examples will illustrate, this view no longer corresponds to more recent developments in science.⁴

The phenomenon of *emergence*, which is being observed increasingly in many branches of science, is

...the appearance of new properties on each higher level of complexity, properties that could not have been foreseen on the previous level. An example: The characteristic features of life cannot be deduced from lifeless matter. Regardless of the extent of our research in physics and chemistry, it will never be able to predict the specific behavior of living organisms. This seems to be a universally valid principle: The (more complex) whole cannot be derived from its (simpler) parts. No level of increased complexity is an exception to this rule.... Or, on the other end of the scale: The characteristics of consciousness cannot be extrapolated from

FORM, LIFE & CONSCIOUSNESS

behavior [or from the brain—P. H.]... Emergence leads to the important conclusion that reductionism is a fallacious doctrine.”⁵

To put it differently, matter, life, soul, and spirit are emergent levels of existence. No emergent level can be derived from the one before it. Each level has its own, new—*emergent*—properties and is governed by its own laws. In addition, no level is epistemologically or existentially more “justified” than the others. This is why we must attribute no less “existence,” or reality, to life, soul, and spirit than to the material-physical aspect, although these levels of existence all involve *different modes of existence*.⁶

This is clear even to neurophysiologist Wolf Singer, author of the above quote, as long as he is reflecting on actual *experience(!)*: “The subdivision of the world into levels of *lifeless matter*, *living organisms*, and *psychological* and *cognitive* processes reflects...the *coexistence* of systems that describe *experiences that can be differentiated*.”⁷ When we look more closely at experiences on the cognitive or psychological levels:

We experience these immaterial phenomena as being *equally real* as the phenomena of the material world that surrounds us.... We experience the phenomena that we characterize as cognitive or psychological or emotional as *realities of an immaterial world whose existence is as unquestioned by our own experience as the existence of the material world is by our sensory perception*.... Our own experience feeds the conviction...that we are participating in a *spiritual dimension* that is *independent of and ontologically different from the phenomena of the material world*.⁸

Singer does not accept in *theory* what he does admit with regard to *experience*, but this is only because he (like many other scientists) has been trapped by reductionism’s hypnotic suggestion. And so, in contradiction to his own experience and the emergent organization of nature, his theory attributes reality only to matter and physical energy.

This also becomes obvious when we consider emergence from the perspective of *causality*. The reductionist interpretation of phenomena

Foreword: From Reductionist Science to Living Thinking in Medicine

assumes “bottom up” causality—i.e., that each subordinate level causes or determines the one above it. As even physicists realize, however, emergence includes not only “bottom up” but also “top down” causality: “The point is that higher properties themselves...are key variables in the causal chain. Paradoxically, although the higher properties emerge from the lower processes, they have a degree of causal independence from them: Higher processes operate according to their own higher logic. Physics makes possible, but does not causally determine, the higher-order layers.... Moreover, causes at those higher levels in the hierarchy of complexity have real effects at lower levels, not just the reverse as [is] often thought.”⁹

Thus the higher level works down on the one below it, and only in this sense is it justified to speak of a “hierarchy” or system of “subordination” or “superordination.” However, if a higher level is to work downward on the one below, it must have access to *active forces of its own*—not those of the subordinate level. *Thus each emergent level bears its own effective causes within itself.* Consequently, the subordinate level cannot be the *cause* of the higher one, but only the *condition* for its appearance. Accordingly, we are justified in ascribing level-specific *effective forces of their own* to each of the primary emergent levels of *matter, life, soul, and spirit*. This is a point made as early as 1925 by Rudolf Steiner and Ita Wegman, who also made it a key element in their anthroposophically expanded medical study of the human being.¹⁰ It also forms the basis of Armin Husemann’s studies and—as a result of recent insights into the organization of complex natural processes—is also becoming a central postulate of mainstream science, as we will now illustrate using the example of biology, the emergent level of life.

In biology—and especially in morphogenesis—increased attention is being paid to the “concertation,” or orchestration, of molecular biological processes. For example, during gastrulation in the early zebra fish embryo, thousands(!) of future mesoderm cells undergo a “single synchronized internalization wave around the entire circumference.”¹¹

FORM, LIFE & CONSCIOUSNESS

Synchronization of this sort is possible only when coordination of the necessary gene regulation and gene expression cascades in those thousands of disparate cells is both *simultaneous and purposeful*—i.e., it occurs *as a unit or as a whole*. However, *simultaneity* in the regulation of disparate local processes within a whole cannot be achieved *exclusively through exchange of messenger substances* among these local processes, because communication via messenger substances (e.g., ribonucleic acids, regulator proteins, etc.) takes time and can therefore function only in succession. In morphogenesis, however, many different regulatory and gene expression cascades that are mediated by messenger substances must be “orchestrated.”¹²

In an orchestral concert as in biology, orchestration, or “*concertation*,” is possible only through *synchronization*. A conductor achieves this by *simultaneously* beating time *for all of the locally disparate players*, whose cascades of tone (melodies) are interwoven or follow each other *in time* and so on to bring about the symphonic (“sounding together”) aspect of the music. Only this directorial synchronization, which constitutes a *hierarchically superordinate* “top-down” activity relative to the disparate players, pulls them together into a symphonic unity and reveals the piece of music as a spatial, temporal, and purposeful whole. This active synchronization is what directs the overall progression, with all its changes in tempo, from the first measure through the entire landscape of the concert to the confident conclusion of the final chord.

Synchronization in an organism is an analogous process. Spatially intertwined regulatory molecular–biological process cascades linked through feedback loops provide the material basis for orchestration, but due to the sequential character they impose, analyzing them does not suffice to explain the synchronization.¹³ To describe individual regulatory substances as “factors [that] act in concert,”¹⁴ makes sense only if the concert analogy is logically correct. The decisive factor here is the *active* and (to put it redundantly for the sake of clarity) *simultaneous synchronization of local cells and factors as a*

Foreword: From Reductionist Science to Living Thinking in Medicine

whole with a common goal. This is made possible only by a consistent, *spatially non-localized*, causative principle that actively determines *spatial* causation from a *hierarchically superordinate level*.¹⁵ More recently, therefore, there has been renewed discussion in biology of the principle of a *morphogenetic field* that works from a causally superordinate level to coordinate individual factors, arranging them in time and space. Thus in his article *Morphogenetic fields in embryogenesis, regeneration, and cancer*, Leven writes: “The quintessential property of a field model is *non-locality*—the idea that the influences coming to bear on any point in the system are *not localized to that point* and that an understanding of those *forces* must include information existing at other, distant regions in the system.”¹⁶

We are confronted here with “non-local control of pattern formation”¹⁷ and “the hypothesis that many diverse examples of pattern formation are best understood not as cell-level behaviors around any one locale but rather at higher levels of organization.”¹⁸ This is possible only as a result of “*a deep principle not inextricably tied to any specific signaling pathway*”¹⁹ through an active principle that is superordinate to all of these pathways, determining them in the sense of active, purposeful, top-down causality, whether working toward the definitive form in embryogenesis or actively maintaining that form throughout life. Not genes and molecular biological process cascades, but rather a super-spatial force organization working from a super-material level must therefore be responsible for “the dynamic nature of *morphostasis*, in which shape must be maintained actively throughout life.”²⁰ From this perspective, a dynamically operating force principle is what makes an organism an organism, that is, a living being. This force principle corresponds to what Goethe called the *type*, whose formative forces generate and maintain the inner and outer form and its metamorphoses.²¹ Suspension of the necessary unfolding of forces is identical to death. That is why a corpse breaks down into its components—ultimately, those it has in common with the mineral world—and all emergent properties of life dissolve.

FORM, LIFE & CONSCIOUSNESS

Obviously, the term “morphogenetic field” can be used only comparatively, as an analogy to the familiar “force fields” of physics. That is, we must not overlook the difference between “morphogenetic” and physical force fields. The latter, active *in space*, are *more or less static, internally undifferentiated* force fields that emanate from a *spatially localized material energy source*, whereas the “morphogenetic fields” of life manifest for a lifetime in *living, internally differentiated, organizing activity*. In addition, they *do not emanate from a material source*; rather, they are super-spatial and *non-local* in character; they organize the spatially localized element as a self-contained whole (which may, however, be selectively open to the surroundings). From this perspective, morphogenetic fields are not central but rather *peripheral or spherical* in character. Moreover, they are always *oriented toward a goal* to be achieved,²² and as such they follow a *temporal dynamic*. They *react* to external disturbances with a flexibility that is not predetermined, as is possible only in the realm of the living but never in a machine.

For these reasons, it would be more accurate to use the term “energy organization” or “force organism” in place of the force field concept borrowed from physics, because “organizing the organism” is what the force organization that makes the type a reality accomplishes. In other words, as an organizing process, it is already an organismic process. To designate this force organization, Rudolf Steiner usually used the term “life body,” or, to differentiate it from the material body, the “ether body.”²³ From this perspective, the human physical or material body is pervaded by an active, immaterial ether body that is responsible for the fact that the former achieves life.²⁴

Thus we are pointed to the cause of the first primary level of emergence beyond the physical body—the level of life. Life pervades matter and elevates it to the more highly organized *organismic* level. This level is already typical of plants. In animals, the organization of the living body is imbued with soul and raised to a third level of emergence; humans are raised to a fourth level, that of spirit. Hence

Foreword: From Reductionist Science to Living Thinking in Medicine

the typically animal configuration of animal bodies in comparison to mere plant forms and the elevation of the animal form to the specifically human in a body that is constructed for upright walking and for free and intelligent use of arms, hands and fingers and endowed with the capacity for speaking and thinking, thus accomplishing the transition from a being of nature to a being of culture. In this book, Armin Husemann includes all of these elements in his discussion of concrete topics relevant to the theory and practice of medicine.

Body, life, soul, and spirit, however, should not be imagined schematically like a series of shelves, but rather as principles that *work into each other*. No human structure or function should be seen as “just” body, or “just” life, soul, or spirit but rather always in the context of the connection and interdependency of these qualities.²⁵ Moreover, the soul element in animals or the soul-spiritual aspect of human beings is not anchored exclusively in the central nervous system, as if often believed, but rather in the *whole being*—and in two respects. On the one hand, the soul and spirit elements, as mentioned earlier, are active in configuring the organism, leading to the typically animal or human character of the resulting body.

This *body-configuring activity of soul and spirit*, occurring as it does in the natural process of development, growth, and regeneration (especially during sleep) remains unconscious. For example, we are familiar with neuroplasticity, the regeneration of the brain in accordance with the functions carried out by soul and spirit in the conscious state. This *consciousness function* represents *the other side of soul-spirit activity*. The effect of consciousness on the body is to break it down rather than to regenerate it—a circumstance that Karl Fortlage²⁶ first brought to our attention, followed by Rudolf Steiner and Ita Wegman.²⁷ The result was new insights into the connections between body and soul or body and spirit, insights that lead materialistic reductionism only to insoluble problems and absurd theorizing about spirit as a product of the brain.²⁸

FORM, LIFE & CONSCIOUSNESS

In summary, we have pointed to a scientific and practical view of body, life, soul, and spirit that no longer sees them through the mechanistic thought forms of the nineteenth century—that is, not as mere products of physical and chemical processes—but instead acknowledges their unique, emergent, autonomous identity and causal interrelationships. Since current science remains focused on physics and (bio)chemistry even in the fields of biology and psychology, this new view requires an *expansion* of science through fields of scientific study that deal with the specific attributes of life, soul, and spirit. The foundations have already been laid in the lifework of Johann Wolfgang von Goethe, Franz Brentano, and Rudolf Steiner, to name only the most important. The result will be a new scientific starting point for an *expanded understanding of human beings and our connection with nature and the cosmos*. That understanding, in turn, will yield new concepts, approaches to research, and practical consequences for understanding health, illness, therapy, and prophylaxis, as well as for the development of *human-worthy moral and ethical principles in medicine*.

The studies by Armin Husemann published in this book deal with just such an expanded understanding and enhanced principles. They are the fruit of attentive observation and of a way of thinking, made supple through art, that does not depend on “model conceptions” and reductionist habits of thought but allows itself to be guided by the *actual phenomena* of the organism’s configuration, by processes of life, soul, and spirit. They are also the fruit of in-depth involvement with the work of Goethe and Steiner. Husemann tackles their suggestions completely independently, drawing on a variety of scientific fields to develop their indications into a broadly differentiated and inwardly deepened overall understanding of human beings and our connection to nature and the cosmos.

Some readers accustomed to scientific specialization may be surprised if not disconcerted by the scope of some of the connections Armin Husemann presents in his “études.” Here as always, however,

Foreword: From Reductionist Science to Living Thinking in Medicine

Husemann has internalized, in the fundamental style that characterizes all of his research activity, the approach that Schiller, in his famous letter to Goethe, describes as a key attribute of Goethe's spirit. This approach can definitely point the way for a comprehensive scientific ethos: "You take all of Nature together to shed light on individual details; in the totality of her phenomena you seek to explain the individual. From simple levels of organization you ascend to the more complex, ultimately assembling the most complex of all—the human being—from all of the materials in Nature's edifice."²⁹

Armin Husemann's Goethean methods of research and instruction have a great deal to teach us about how to develop such a comprehensive scientific ethos. These methods also underlie the studies published here. For example, when he develops the "type" (vital principle) of the human being as a whole from the structure and functioning of the small intestinal mucosa, the subject is explored from four or five different perspectives, until the activity of the whole within the part, as a living idea, becomes evident. Also important for aspiring anthroposophic physicians are his investigations of *systematic connections between the human being and nature* (e.g., the comparative functional anatomy, or physiology, of human and animal, the human and the mineral worlds, human and plant, humanity and Earth).

As mentioned, the Eugen Kolisko Academy uses artistic activity to enhance the effect of theoretical instruction presented in this way. Practice in shaping and transforming three-dimensional sculptural images and consciously dwelling on relationships among tones and rhythms and on the inherent meaningfulness of spoken poetry all foster the capacity to understand the configurations, metamorphoses, and proportions of organisms and to grasp the intrinsic essence of formed phenomena.

That Husemann has spent years developing such faculties in himself can be experienced directly in his theoretical classes. For more than twenty years I have been privileged to have this experience, supplementing his medical studies classes at the introductory

FORM, LIFE & CONSCIOUSNESS

anthroposophic medicine seminar in Stuttgart and at the Eugen Kolisko Academy with my own presentations on the epistemological foundations of anthroposophic medicine. Each time, the students and I are enthused by his lively, eminently artistic presentation style, his ability to convey the material through concrete illustrations, and his thinking, which is so clearly schooled in artistic sensibility and combined with an obvious love for the subject of his teaching and ongoing research. Each time I see him, he reports enthusiastically on some new discovery he has made in the meantime, whether observed in nature or in a report in recent scientific literature that complements, confirms, or corrects his own discoveries (often in surprising ways), or reveals them in a new light.

Armin Husemann's art-imbued study of the human being and the natural world is constantly growing, differentiating, metamorphosing, and developing, as this book also testifies. His "human science" has assumed something of an organismic form itself; it is not a schematic system that can ever be "finalized." In Dr. Husemann, we experience an exemplary *enlivening and humanizing of science and teaching*. In my view, science and education need to be adapted to conform to the human and natural worlds on a deeper level. The need for evolution in this direction is all too obvious in undesirable developments of the present day. It is my hope that this new book will inspire many readers, especially the younger ones, to participate actively in this urgently needed shift toward living thinking in medicine.

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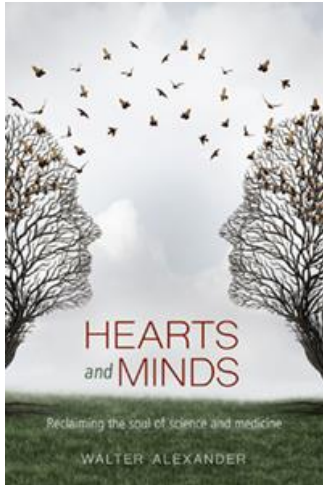
NOTES

- 1 A. J. Husemann, *Menschenwissenschaft durch Kunst: Die plastisch-musikalisch-sprachliche Menschenkunde*. Stuttgart, 2007.
- 2 Ibid.
- 3 W. Singer: «Vom Gehirn zum Bewusstsein» in G. Lür / N. Elsner (eds.): *Das Gehirn und sein Geist*, Göttingen 2001, pp. 189–204; G. Roth: «Die neurobiologischen Grundlagen von Geist und Bewusstsein» in M. Pauen / G. Roth (eds.): *Neurowissenschaften und Philosophie. Eine Einführung*, Munich 2001, pp. 155–209; M. Gazzaniga: *Die Ich-Illusion. Wie Bewusstsein und freier Wille entstehen*, Munich 2012.
- 4 P. Heusser: *Anthroposophische Medizin und Wissenschaft. Beiträge zu einer integrativen medizinischen Anthropologie*, Stuttgart 2011.
- 5 B. Kiefer: «Das Prinzip der Emergenz» in *Horizonte* 12, 33, 2007.
- 6 P. Heusser: «Emergenz und Kausalität: Systemische Interaktion von Körper, Leben, Seele, und Geist des Menschen» in P. Heusser, / J. Weinzirl (eds.): *Medizin und die Frage nach dem Menschen*, Würzburg 2013, pp. 35–50.
- 7 W. Singer: «Gekränkte Freiheit. Interview with Wolf Singer» in G. Roth / K. J. Grün (eds.): *Das Gehirn und seine Freiheit. Beiträge zur neurowissenschaftlichen Grundlegung der Philosophie*, Göttingen 2005, p. 86. [Italics added by P. H.]
- 8 W. Singer: «Verschaltungen legen uns fest: Wir sollen aufhören, von Freiheit zu sprechen» in C. Geyer (ed.): *Hirnforschung und Willensfreiheit*, Frankfurt am Main 2004, pp. 33 and 36. [Italics added by P. H.]
- 9 G. F. R. Ellis: «Physics and the Real World», in *Physics Today* 6, 2005, pp. 49–54.
- 10 R. Steiner / I. Wegman: *Grundlegendes zu einer Erweiterung der Heilkunst nach geisteswissenschaftlichen Erkenntnissen*, CW 27, 7th ed., Dornach 1991 [English: *Extending Practical Medicine Fundamental Principles Based on the Science of the Spirit*].
- 11 P. J. Keller / A. D. Schmidt / J. Wittbrodt / E. H. K. Steltzer: «Reconstruction of Zebrafish Early Embryonic Development by Scanned Light Microscopy», in *Science* 322, 2008, pp. 1065–1069.
- 12 T. Lecuit/L. Le Goff: «Orchestrating Size and Shape during Morphogenesis», in *Nature* 450 (7167), 2007, pp. 189–192.
- 13 Ibid.
- 14 J. Rehwinkel et al. «Nonsense-mediated mRNA Decay Factors Act in Concert to Regulate Common mRNA Targets», in *RNA* 11, 2005, pp. 1539–1544.
- 15 Note that this also applies to “non-local correlations” of spatially disparate photons that are moving in opposite directions at the speed of light but are so entangled with one another that experimentally influencing *one* photon simultaneously also affects the *other* without impacting it directly and with no possibility for “communication” in spacetime between the photons: “All of today’s experimental evidence points to the conclusion that nature is non-local.... No story in space–time can tell us how non-local quantum correlations can happen; hence, non-local quantum correlations seem to emerge, somehow, from outside spacetime” (N. Gisin:

FORM, LIFE & CONSCIOUSNESS

- Quantum Non-locality: How does it happen? In: *Science* 326, 2009, pp. 1357-1358).
- 16 M. Levin: "Morphogenetic Fields in Embryogenesis, Regeneration, and Cancer: Non-Local Control of Complex Patterning," in *Biosystems* 109 (3), 2012, pp. 243-261.
 - 17 Ibid.
 - 18 Ibid.
 - 19 Ibid.
 - 20 Ibid.
 - 21 Goethe: «Die Metamorphose der Pflanze» in *Sämtliche Werke*, E. Beutler, ed., Zurich 1950, vol. 17, pp. 22-58 [English: The Metamorphosis of Plants, MIT, 2009]; Goethe, «Erster Entwurf einer allgemeinen Einleitung in die vergleichende Anatomie, ausgehend von der Osteologie» in *Sämtliche Werke*, E. Beutler, ed., Zurich 1950, vol. 17, pp. 231-269.
 - 22 In contrast to physical processes, living, organic processes always work *teleonomically*. E. Mayr: *The Science of the Living World*, 7th ed., Cambridge 1999.
 - 23 R. Steiner / I. Wegman: op. cit.
 - 24 Ibid.
 - 25 P. Heusser: «Emergenz und Kausalität: systemische Interaktion von Körper, Leben, Seele und Geist des Menschen» in P. Heusser / J. Winzirl (eds.), op. cit.
 - 26 K. Fortlage: *Acht physiologische Vorträge*, Leipzig 1869.
 - 27 R. Steiner / I. Wegman: op. cit.
 - 28 P. Heusser: «Der wissenschaftstheoretische Ansatz der Antroposophischen Medizin und das Leib-Seele-Problem» in *Das Leib-Seele-Problem. Zur Entwicklung eines geistgemäßen Menschenbildes in der Medizin des 20. Jahrhunderts*, Arlesheim 2011, pp. 11-33.
 - 29 F. Schiller: letter to Goethe, Aug. 23, 1794 [English: *Correspondence between Schiller and Goethe, 1794 to 1804*. New York: Wiley, 1845].
 - 30 R. Steiner / I. Wegman: *Grundlegendes zu einer Erweiterung der Heilkunst nach geisteswissenschaftlichen Erkenntnissen*, CW 27, 7th ed., Dornach 1991, page 1 [English: *Extending Practical Medicine: Fundamental Principles Based on the Science of the Spirit*].
 - 31 Steiner: *Grundlinien einer Erkenntnistheorie der Goetheschen Weltanschauung mit besonderer Rücksicht auf Schiller*, CW 2, 8th ed., Dornach 2003 [English: *Goethe's Theory of Knowledge: An Outline of the Epistemology of His Worldview*]; Steiner: *Wahrheit und Wissenschaft. Vorspiel zu einer Philosophie der Freiheit*, CW 3, Dornach 1958 [English: *Truth and Knowledge Introduction to the Philosophy of Spiritual Activity*]; Steiner: *Die Philosophie der Freiheit*, CW 4, 14th ed., Dornach 1978. [English: *Intuitive Thinking as a Spiritual Path: A Philosophy of Freedom*].
 - 32 As a continuing education establishment for anthroposophic medicine, the EKA has been collaborating since 1987 with the Filder Clinic in Filderstadt (near Stuttgart), the Association of Anthroposophical Clinics (Klinikverband Anthroposophischer Kliniken) in Germany, and the Society of Anthroposophic Physicians in Germany (Gesellschaft Anthroposophischer Ärzte in Deutschland, GAÄD), as well as with the Medical Section of the Goetheanum in Dornach, Switzerland.
 - 33 A. Husemann: *Human Hearing and the Reality of Music*, SteinerBooks 2015; A. Husemann: *Der*

Book Announcement



Hearts and Minds:

Reclaiming the soul of science and medicine

By Walter Alexander

Lindesfarne Press | Paperback | 328 pages | 6 x 9 in. | 978-1584209195 | 2019

<https://steiner.presswarehouse.com/Books/BookDetail.aspx?productID=703012>

From promotional materials:

Walter Alexander's career path has been varied, with beginnings as a fiction writer (Wallace Stegner Fiction Fellow at Stanford) and nearly twenty years as a teacher (Public and Waldorf high schools). As a freelance medical journalist for the last decades, his "beat" has been largely reporting on clinical research for practitioners in the trenches. In this latter capacity, he recently published peer-reviewed articles on Branko Furst's work on the heart and circulation, on intriguing placebo effect research, and on Peter Heusser's book, *Anthroposophy and Science*.

Aside from his professional activities, Walter has been a participant and guiding member of the long-standing Barfield Group in NYC, where he was introduced to the work of Georg Kuhlewind—whose meditative approach to cognition and epistemology not only enriched the Barfield study of the evolution of consciousness, but also paved the way toward a deepened look at scientific thinking's descent toward pure reductionism.

Hearts and Minds (Reclaiming the soul of science and medicine) has had a long gestation. Gradually, Walter's interest in consciousness studies and integrative healing inched toward his "real-world" immersion in writings about conventional medicine. Then, Peter Heusser's *Anthroposophy and Science* provided two key stimuli—first, it showed *open systems biology to offer an alternative to reductionism*. It showed that layers of organization in living systems each exhibit primary qualities and unique laws. While lower-level substrates must be present and available for the higher level to emerge, the higher level is not predictable from the lower. And with that, the myth of completely bottom-up, DNA-directed assemblage of the organism could be countered.

The second essential stimulus was Walter's emerging conviction, starting with the publication of the aforementioned articles, but growing ever more strongly while reading and writing about the Heusser book, that with his own background of translating research level work for practitioners, his school-teaching and group-guiding experience, and even his origins as a fiction writer, he was perhaps uniquely positioned to take up a critical challenge: *to bring to a wider public ideas that, while seemingly arcane, have nonetheless profound impacts on the conduct and experience of ordinary life.*

Hearts and Minds then unfolded with the grand design of showing how *self and experience* have been by degrees turned into orphans at the altar of well-intended scientific "progress."

The great scientific revolution of the last five hundred years, with its technological glories and medical miracles, has landed upon a set of summary conclusions—or some slightly tweaked variations—depicting a random, indifferent, and wholly impersonal cosmos.

The world, we are told, is made up of particles and forces. Evolution, impelled by the single purpose of survival, is guided by chance through natural selection. DNA directs the chemical–mechanical unfolding of life. Consciousness and self, artifacts of the brain's firing neurons, are essentially inconsequential.

This is a picture that has been fraying at the edges for some time. Progress in medicine, quantum physics, open-systems biology, consciousness studies, epistemology, the arts and philosophy all point in a radically different direction. But fresh, coherent narratives have not yet fully emerged out of this progress, and so the old model stubbornly endures.

Hearts and Minds tells a tale of emerging discoveries—discoveries that restore our own self and consciousness as integral to the workings of the world.

Some reviewer comments on *Hearts and Minds*:

"*Hearts and Minds* champions novel research revealing the importance of consciousness in the elaboration of health and illness. It also exposes pernicious resistance to these findings from conventional science and medicine—and offers solutions. No medical approach can be complete if it does not incorporate these vital trends. Highly recommended!" —**Larry Dossey**, MD, author of *One Mind*

"A rollicking ride through the philosophical and conceptual quandaries that quantum mechanics has brought to modern science...fresh, conversational, and peppered with penetrating and homely insights, while clearly bringing out the need for going beyond the reductionist paradigm in science." —**Gopi Krishna Vijaya**, PhD, Physicist–researcher, Reciprocal System Research Society, Salt Lake City

"I thoroughly enjoyed and admire this compelling book. By thinking and writing with heart and mind, Alexander restores our stereopsis, the depth of field that medical science neither practices nor admits. Here, Alexander brilliantly does both." —**Robert McDermott**, Ph.D., President Emeritus, California Institute of Integral Studies (CIIS) and author of *Steiner and Kindred Spirits*

"In his engaging, user-friendly and penetrating study of the thinking that underlies orthodox science and medicine, Alexander invites, coaxes, and finally persuades his readers to come to their own awareness of the clear and present danger of [scientific] reductionism.... Reductionism is dangerous because at best it makes no room for, and at worst it outright denies, the willed activity of thinking. If we lose the understanding of the place of our own thinking, we have lost ourselves. Without a tenable experience of that self, an authentic questioning of our place in the social, political, economic, or communal world is meaningless. *Hearts and Minds* is a book about the possibility of *restoration*—restoration of the soul that orthodox science has estranged from us as well as from itself.

"Ours is an age of general distrust of expertise and...a particular distrust of medical expertise. For that reason, Alexander's dispatches from the front lines of today's medical research and pharmacological trials will be of close interest to every reader." —**Fred Dennehy**, associate editor of *Being Human* (from a review the book in #23 summer/fall 2019)

"A remarkable book that takes us directly into an exploration of a central question of our time: Is everything—most important, consciousness (including thinking, feeling, meaning, and values)—produced ultimately by dead matter in motion, by neurons, molecules, DNA, hormones, etc.? [Or] is consciousness a reality in its own being, capable, in fact, of having causal effects on the material itself, most especially on the material human body? This is a rich offering—always exciting, well told. Alexander's own light touch of humor and irony are a delight, and more than that, serve as a kind of surgical scalpel, which he deftly wields to cut clearly to the most important issues of heart and mind." —**Douglas Sloan**, PhD, Professor of History and Education Emeritus at Teachers College, Columbia University, and former Adjunct Professor of Religion and Education at Union Theological Seminary and The Jewish Theological Seminary in New York City. Among his books are *Insight–Imagination: The Emancipation of Thought and the Modern World* and *The Redemption of the Animals: Their Evolution, Their Inner Life, and Our Future Together*

Visit the author's website: heartsmindsoul.com

Upcoming Appearance

March 26, 2020
7:30pm - 9:30pm

The Nature Institute

20 May Hill Rd.
Ghent, NY 12075

Calendar of Events

March 11, 2020: **Hints for a healthy diet and balanced digestion.** For Your Health: Free Webinar for practitioners, patients and the public, cosponsored by AAMTA and Friends of PAAM

<https://anthroposophicmedicine.org/Patient-Resources>

March 26, 2020: **Hearts and Minds: Reclaiming the Soul of Science and Medicine** *A talk by Walter Alexander* (Ghent, NY)

<https://natureinstitute.org/calendar/index.htm>

April 23-May 9, 2020: **Dr. Peter Heusser's Cross-Country Tour** (Seattle area, Ann Arbor, New York area)
(See p. 4)

November 11-15, 2020: **2020 Biodynamic Association Conference** (Westminster, CO)

<https://www.biodynamics.com/conference>



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