

Yoga >> Science

Options for science re nonduality: Science in a non-dual frame¹

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9/21/04, rev 1/3/05

Abstract:

Yoga is defined here as including the superposition type of “union” in which individual awareness is at once “not two, not one” with Universal Awareness—a “non-dual”² that is at once the container, basis, condition, and outcome of every experience. The practice of yoga is to recognize this—a recognition that can extend from fleeting to a Total Perfection. Science, in dramatic contrast, although an enterprise aimed at “understanding,” employs a method that is a necessarily dualistic engagement of the observed by a presumed separate observer. The mathematical symbol >> (which means “is much greater than”) is used here for two reasons: nondual yoga inherently includes, but is much greater than, dualistic science; and it will be useful to think in mathematical and technical terms about this unequal relationship.

I propose that this nondual core of yoga forms the basis of an expanded framework for new kinds of scientific research to build upon and extend existing science and technology. This research could form the basis for the development of high-tech tools that serve yoga and the practice of yoga. Two key research arenas suggest themselves—bodily energetics, and attentional stabilization. It seems virtually certain at this juncture that the application of the ever-improving methods of contemporary science to the development of a robust psychoelectrobiology of yoga will yield results and even potentially open up whole new vistas for science. Imagine being able to see for the first time with our external eyes, cameras, and recorders the complex weather patterns and energy flows in the normal as well as in the accomplished body. Imagine having such as a mirror for your own practice, if only for a session now and then.

Our proposal suggests some ways in which this expanded framework may also shed new light on a host of key research areas where current scientific work appears effectively stalled. These include the fields of consciousness studies, subtle energies and energy healing,³ psychic phenomena, complexity, and development. It is our intuition that this reframing of science will open up a host of new opportunities for original studies in these areas that should be pursued via web-coordinated collaboration with existing researchers and groups around the world. We recognize the potential for commercially viable intellectual property to be generated in this process

¹ “Nondual science” & “Science of Nonduality”

² Those who find themselves objecting to this non-dual characterization of yoga may find it interesting to consider David Loy’s *Non-Duality—A Study in Comparative Philosophy*, Humanity Books, Amherst, New York, 1988. I find Loy’s presentation a most compelling argument that the non-dual experience has suffered historically from a variety of dualistic and monistic interpretations.

³ See especially the recent appeal by professor Kevin Chen in *Alt Therapies* July/Aug ’04 vol10:4, p38-50.

and we aim to pursue ways to optimize ROI for this area. We aim to do all we can to develop a self-funding, autocatalytic, and vibrantly successful new science and technology that will better serve humanity's perennial need for personal and spiritual development, both individual and collective, into the indefinite future.

Background

The term “yoga science” is generally used with two very different meanings—yoga as itself a “science,” and the “scientific study of yoga.” I here propose a third, different, and deeper meaning based on the essential difference between yoga and science. To understand that essential difference one must appreciate the classical distinction between the dual and the non-dual. On the one hand, yoga⁴ is, by classical definition, the union of these two “domains of total reality.” Science, on the other hand, is a necessarily dualistic enterprise in which various kinds of “observations” are made—observations that necessarily involve an observer over against a thing observed. Thus, in any discussion about science and yoga, we must always keep in mind this essential inequality: $yoga > science$. Further, based on the unanimous testimony of the greatest teachers of yoga throughout history down to the present time, I suggest that $yoga \gg science$.

Yoga has features that can suggest the notion that it is, in itself, a kind of science, most especially its use of rational, analytical, and practical methods based on careful observation of phenomena. The problem, however, is that in the vast majority of cases, to think of yoga in this way is to diminish yoga. In the first place, yoga is much more than these “science-like” features because of its reach beyond mere dualistic objectivity. In addition, yoga cannot point to anything like the global consensus that is contemporary science, nor has it anything to compare with its technical rigor and technological accomplishments. Thinking of “yoga

⁴ From the Indo-European root “yug” meaning yoke—picture an ox yoked to a wagon: historically understood as individual human consciousness “yoked to” (or in “union with”) divine consciousness (variously understood).

science” in this sense gets the essential inequality backwards and yoga comes out looking like a “lesser science“ at best.

Meanwhile, the other meaning—the “science of yoga” as the scientific study of phenomena associated with yoga—has been in use for some 75 years since the pioneering studies in 1931 by Kovoov Behanan, a graduate student in psychology at Yale, who “was awarded a Sterling Fellowship to undertake what has since been recognized as the first empirical study of yoga and meditation.”⁵ Here yoga is diminished by the common assumption that science will eventually “conquer” any field of study since it is itself presumed to be The Way to discover truth—an assumption that has been extensively propagandized—think for example of Einstein’s famous statement, “I want to know the mind of God.”

Furthermore, serious efforts to apply the methods of science to the study of yoga have typically been subject to the heavy materialistic bias of contemporary science. Given this bias, applying the tools of science to yoga can only reveal the “gross” aspects of its operations. Any reliably observed phenomena that don’t succumb to materialist explanation must then necessarily be relegated to the realm of some kind of “subtle” effect that remains mysterious, undefined (and perhaps indefinable) and thus “off the radar screen” of “real science.” Here yoga is diminished by a kind of decapitation—inevitably fatal.

Thus, both of these historical meanings of “yoga science” miss something essential about yoga and thereby diminish it.

The Non-dual Core of Yoga vs. the Dualistic Nature of Science

As a linguistic sign, the word yoga refers to a condition of human experience in which there is a sense of union or non-separation—a sense that there is no self in any way identifiable as separate from the world of things and beings. It is this same condition of human experience that is pointed to by the linguistic sign “non-dual.” Countless other words have been used to refer to

⁵ for a detailed overview of this research, see *The Physical and Psychological Effects of Meditation* by Michael Murphy and Steve Donovan available online at <http://ions.org/research/medbiblio/index.htm>

this experience throughout the ages and across virtually all cultures. In any event, and whatever else can be said about it, I believe a strong case can be made that this experience is the quintessential spiritual experience and that it lies at the core of all religion, likely going back deep into pre-history.⁶

Science, on the other hand, is a relatively recent human enterprise—perhaps only a few centuries old—one that is reshaping the world, for sure, but arguably still to be fully integrated with the totality of our human experience—and most especially, the specific non-dual condition of human experience that is at the core of yoga. To do science, one must presume the dualistic stance of the observer. That is the essential first step—typically taken for granted, made unconsciously, or simply assumed. The work of science then seeks to unravel the relationships between various observed phenomena. This is done using “the scientific method” which can be described as the establishment of operational definitions that allow the framing of testable hypotheses as to how various “observables” are related.

Science in a Non-dual Frame

Our modern science is everywhere represented as “a quest for truth,” and yet it remains blind to the non-dual that is the very condition at the basis of all our experiencing and yet not something that can be known objectively. Conventional science proposes that all things are to be known objectively if they are to be known at all. In effect, the science I am proposing is “science IN yoga”—i.e., a science that takes place within a framework created by the non-dual awareness that is the core of yoga itself.

The essential, albeit typically hidden, first step of science—assuming the position of the observer—can just as well be taken deliberately and consciously. The yoga-scientist has no need to reject or deny the non-dual in order to take this step anymore than to perform any kind of action. The yoga-scientist can engage in science and remain established in (or “oriented toward”) the non-dual. But this science is not science as usual because the conscious taking of

⁶ For an in-depth discussion of the role of the non-dual state in the philosophy of Yoga, Buddhism, and Taoism, see Non-Duality by David Loy referred to in footnote 1.

this first step alters the doing of science that follows and, most especially, the interpretive framework of observations made. This science remains grounded in the non-dual and proceeds heuristically, as a practical enterprise, rather than as some grand and illusory “search for truth.” This science is fundamentally humbled by the deep knowing that the non-dual core cannot itself ever be “grasped” within its necessarily dualistic reach. And yet this science can be proud to serve as a practical tool for humanity in its quest for health, freedom, and happiness in “body, mind, and spirit.”

This science operates in an expanded framework that no longer insists upon a narrow materialism. Rather, the domain of potential scientific investigation is enlarged to include the entire range of human experience. In other words, any phenomenon that appears anywhere in time and space (including those that appear as “subjective”) may become “objects” of scientific study. It is useful here to think in terms of a “full-spectrum reality.” Any phenomenon can be analyzed into a complex of components each having a “characteristic frequency.” These frequencies fall somewhere along a vast spectrum that spans many orders of magnitude upwards and downwards from the time frames of our everyday experience. All the while, however, we appreciate that this spectrum is itself arising within the greater framework of the timeless non-dual.

High-Tech Tools for Yoga

Countless forms of practice have been developed over the millennia to serve individual’s entry into the experience of yoga. Many technologies have been used throughout as well—language itself, writing, music and other forms of communication could be considered first among them. In recent centuries the development of scientific technologies has vastly expanded the range of potential tools for yoga practice. All tools can, in fact, be examined for their potential to serve yoga practice. Furthermore, we could undertake the development of new tools specifically designed for the purposes of yoga based on application of the most sophisticated science available.

Three major components of our human existence have been identified throughout history. These three have been variously described, for example, as “body, mind, and spirit,” or “thought, word, and deed.” We can therefore focus our effort to develop high-tech tools in these three areas: physical body, bodily energies, and mind. Science has already developed extensive understanding and technical expertise in psychophysiology. There seems to be every reason to believe that this development could be extended and deepened to serve the specific goal of yoga and the practices of yoga.

For example, in the realm of the body, we already have a vast wealth of health science and technology that can be turned to the goal of health promotion via optimization of diet, exercise, and sleep regimen. With a foundation of health, bodily equanimity can be deepened via the use of electro-myography biofeedback. This and related modalities of physiological monitoring can be used in a variety of settings: as an educational tool in the early phases of yoga training, as a tool for periodic objective assessment as training proceeds, and as a tool for experimental studies in the efficacy of various physically oriented yoga practices.

In the domain of bodily energy there are numerous examples around the world of bio-energy devices any number of which may represent approaches that could be developed and adapted through research to the specific aims of the various forms of yoga practice. For example, existing biofeedback tools for breath training might readily be extended for use in training the nasal cycle so central in classical pranayama practice. Looking to the future, it may be possible to develop energy imaging and training devices that will open new windows upon more subtle aspects of our bodily functioning.

In the domain of mind, we are just now seeing new first steps forward with the application of state-of-the-art functional MRI and other brain imaging technologies to the study of advanced meditators.⁷ Another key development is biofeedback and other training systems based on cardiac electro-physiology. These show great promise as tools for yogis since there is within the yoga tradition a history of opinion that mind itself is “seated in the heart.” This view may be seen as beginning to get some scientific corroboration in the new field of psychocardiology.

⁷ See http://www.mindandlife.org/initiatives_section.html

The Internet itself represents a tool of great potential for yoga. It can already provide individual practitioners with a wealth of informational resources and means for easy communication within and between groups of practitioners. Looking to the future, the efficacy of high-tech tools such as those suggested above may be further enhanced via the Internet in various ways. Some tools might be made available as Internet services using innovative input devices to connect the individual to systems for sophisticated data analysis and presentation processing performed in distant supercomputers or via distributed “grid computing.” Others might be developed to allow linking of two or more practitioners for simultaneous sessions of practice and training using techniques that extend the capabilities of currently available “videophone” systems. These sorts of developments will continue to facilitate the growth of global communities of yoga practice. Such communities could be enriched by the consensual application of tools for objective assesment.

As research continues we will probe more and more deeply into the subtler reaches of the mechanics of the body-mind. This science should therefore be capable of greater practical application than the contemporary materialistic and hubristic version of science that now predominates. Pursued rightly, this yoga science can serve the spiritual development of humanity by first taking the materialistic lid off of its aspirations, and then by providing an ever-growing suite of high-tech tools for personal and spiritual growth.

Potential “Extra Benefits”

The non-dual view of science that I’ve proposed here may shed new light in other areas less directly connected with yoga or yoga practice. For example, this science may help resolve the current debate over the “hard problem” of “the science of consciousness” by recontextualizing science within non-dual consciousness itself. The “problem” is only “hard,” really, if the non-dual is itself unknown, ignored, or denied—which is precisely the case for a majority of the scientists working in this cutting edge field.

I propose that this science may resolve the current confusion over “what is subtle energy.” Could it be that the entire array of otherwise mysterious phenomena that go under the rubric ‘subtle energy’ are themselves manifestations of non-dual consciousness? Might this recognition speed the emergence of a technically elaborated field of “energy healing” that seems destined to be the “health care of the future?”

I propose that this science is open to the full range of reliably observed phenomena including those we label as “psychic.” We may come to an understanding of all such phenomena as manifestations of the non-dual in everyday life. If the non-dual is the container, basis, or condition of every experience, should we be surprised that it might manifest in countless and even ordinary ways?

I propose that this science allows an integration of all the complexities of all the contemporary sciences within the greater framework of the non-dual. Mathematical comparison of the Conditional and Un-conditional generate open spectra along which all phenomena can be arrayed and their inter-relationships examined in new and productive ways. The sciences of complexity may be greatly served by having the simplicity of the non-dual become a sort of centerless center-pole around which all things are understood to be “self-organizing.”

I propose that this science will fully embrace the quantum mechanics along with its various extensions and interpretations. These represent useful tools for technical understanding, not only of the properties of matter and energy, but also of the paradoxical relationship between the dual and the non-dual. All the while, however, this science will remain fully cognizant of the fact that no “grand unified theory” of any kind can possibly do full justice to the non-dual—it can only serve, to one degree or another, the practical matters of our human living.

I propose that this science will develop a rich understanding of the full range of human development. Yoga understands that every stage of human unfolding can be served toward deeper levels. This science will be built upon that understanding and afford a new and expanded context to all existing efforts to support human growth. Psychology is currently undergoing an “integral” reform—this science will support that undertaking and look to serve

its extension even further into the “radical” domain of the non-dual. Might it turn out that what now seems to be a mass of conflicting theories in psychology and human development will gradually coalesce into a coherent whole around the recognition of the non-dual as the container of all experience?

This science could impact and serve to clarify any number of areas in contemporary science. Ultimately, no matter how varied the methods and objects of study, science is a human enterprise aimed at understanding. This yoga science only aims to deepen and coordinate that understanding by the paradoxical reframing of science in the non-dual domain where science itself cannot go.

Potential Research Collaborations

Based on the above proposal, research collaborations seem essential—the scope of this “Yoga Science” is far too vast for any one research facility or institution. We might even imagine a “Global Institute of Total Health” that would eventually eclipse such huge existing institutions as the NIH and the WHO. In the age of the Internet, however, a more decentralized and flexible “open source” sort of approach seems preferable. There likely already exist any number of researchers and teams sympathetic to the Yoga Science I’ve outlined here with whom we might collaborate. Likely others will be discovered who are already pursuing something along the lines of the science I’ve proposed. To begin, however, a few existing efforts that I’m already aware of come to mind as outstanding:

The International Association of Yoga Therapists (<http://www.iayt.org>) has the goal of being “the interface between yoga and medicine.” There is reason to believe that the “radical wellness” orientation of yoga could help to coordinate the confusing array of complementary and alternative therapies currently jostling for position in the “health care marketplace.” We see a rich potential for collaborations here devoted to clinical applications of Yoga Science to furthering the development of a genuine “health care system.”

The Institute for Functional Medicine (<http://www.functionalmedicine.org/>), founded by biochemist Jeffrey Bland PhD, is pioneering an applied science of nutritional disease prevention and health promotion. The IFM makes full use of our most sophisticated biological understanding of the human body. Collaboration here could be directed to developing new tools for nutritional health focused on the needs of the yoga practitioners.

LifeWaves (<http://www.lifewaves.com>) is a beginning practical expression of the remarkable theoretical work on “heart waves” of Irving Dardik, MD.⁸ This pioneering approach to physiological integration via behavioral patterning has attracted great attention for nearly two decades. Collaboration here could be research to adapt Dardik’s methods to the needs of yoga practitioners.

The Association of Applied Psychophysiology and Biofeedback (<http://www.aapb.org/>) is the principle professional organization in the United States devoted to potential practical applications of physiological monitoring. Although most research efforts reported by AAPB members are devoted to serving the disease management industry out of economic necessity, many researchers are deeply sympathetic to health, wellness, and higher human development. Collaboration here would aim to harness these sympathies in the service of our Yoga Science.

The International Society for the Study of Subtle Energy and Energy Medicine (<http://www.issseem.org>) is the principle association devoted to the study of bodily energies in the US. The membership is said to be composed of about equal parts healers and scientists. Their quarterly journal “Subtle Energy” carries work by the leading researchers in the field. Collaboration here would aim to draw upon the expertise in bodily energy research to expand the boundaries of our understanding of yoga and explore the potential for the development of new tools for yoga.

The Institute of Noetic Sciences (<http://www.ions.org>) has been on the forefront of scientific research in a number of areas relevant to Yoga Science—meditation perhaps central among

⁸ For an introduction to the technical background of this work interested readers can find one of Dr. Dardik’s articles on-line at <http://www.heartbeat2000.com/dardik.htm>.

them (see FN #3 above). The potentials for collaboration here many include research devoted to the development of tools to serve meditation—a central element of yoga practice.

The Institute of Heart Math (<http://www.heartmath.org>) has developed an original training program based on the extensive research literature that shows heart rate variability to be a key indicator of health. “The Institute of HeartMath's research forms the foundation for the development of practical, scientifically-validated tools and technologies that enable people to improve their health, performance, and quality of life.” Collaboration here would focus on the application of these tools to the practical needs of yoga practitioners.

The Heart Coherence Team in Holland (<http://www.heartcoherence.com>) is pursuing this line of research as well and has developed an innovative analytical methodology that may prove very useful as the basis for biofeedback protocols that would serve the practice of yoga. Collaboration here would focus on “clinical” research with this tool in the yoga setting.

The Integral Institute (<http://www.integralinstitute.org>) is in the initial stages of an ambitious program to create a diverse virtual community devoted to research and education in “integral studies.” Collaboration here could focus on the development of a fully-articulated philosophy of science for our Yoga Science building on the ideas outlined here.

Traditional Yoga Studies (<http://www.yrec.info>) is the new home of the founder of the Yoga Research and Education Center, Georg Feuerstein. Collaboration here would focus on articulating the Yoga Science with the vast wealth of the Yoga Tradition of which Dr. Feuerstein is a renowned scholar.

Many other relevant possibilities for collaboration will certainly come to light as we move forward.

Acknowledgments

My yoga teachers have had an indelible and primary impact on my life and thinking. However, none of these individuals were formally trained in science, nor has any of my writing on this subject been reviewed by them. Thus, any and all errors here are strictly my own.

Swami Satchidananda introduced me to the yoga tradition in a most direct and practical way. I was deeply impressed by his ecumenism and his heart-felt efforts to serve his students with a genuine “Integral Yoga.” Adi Da Samraj introduced me to the ineffable non-dual dimension of experience. I was beyond “deeply impressed” by his ceaseless efforts to communicate his radical understanding in the language of our time. Namkhai Norbu Rimpoche has introduced me to the wealth of practical non-dual yoga methods kept alive to the present day over the centuries in Tibet.

Georg Feuerstein introduced me to the great historical depth, philosophic breadth, and psychological subtlety of the yoga tradition through his friendship and any number of his many books, articles, and reviews. He also introduced me to the work of Gene Gebser, his most favorite big-picture historian whose work has played a large role in the current movements toward integralism.

My wife Susan Pottish has been my life partner for 15 years. She has been my most valued colleague in the slow incubation of the ideas here outlined, and has offered countless suggestions to improve the clarity and content of this proposal.

About the Author

Dr. Anderson is a retired physician living in Mendocino County, California with his wife Susan Pottish. He completed his undergraduate work in biology at Harvard and his Master’s in Genetics at the University of Connecticut. During these years he was certified as an instructor of hatha and raja yogas by Swami Satchidananda’s Integral Yoga Institute. He became a proud father of two girls. His medical career was first in General Practice and then in nutritional medicine. During this time, he was a student of Adi Da Samraj and focused on practical and clinical aspects of Ishta Guru Bhakti Yoga. Many of the ideas in this article were developed during these years of study and practice and Dr. Anderson credits Adi Da as a principle inspiration. Since his retirement from both medicine and Adidam in 2002, Dr. Anderson has focused his study on the Ati Yoga of Namkhai Norbu Rimpoche. He is currently serving the board of the Yoga Research and Education Center as chairman and acting director.