Why Consciousness? Teaching and Learning at the Leading Edge of Mind Science

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ABSTRACT

Interest in the study of consciousness is growing rapidly among the general population but it has yet to make inroads into mainstream higher education because of the long-standing taboo that has denied the subject legitimacy as a serious area of academic inquiry. In 2014, however, the University of Washington Bothell campus formally launched a transdisciplinary and integral Minor in Consciousness, the first of its kind at a public research institution in North America. A four-year study explored the intellectual and personal effects of studying consciousness from this perspective for undergraduate students who enrolled in the first course in the Minor's sequence during Autumn Quarter 2012, 2013, 2014, or 2015. Results indicated that students' beliefs about consciousness and reality changed significantly over a ten-week period, becoming markedly less materialistic and more open to information that they had previously eschewed. By the end of each year's course students reported feeling increased optimism, hope, and a desire to learn more, and a corresponding decrease in feelings of depression, anxiety, and nihilism. Introducing the study of consciousness within the context of scientific revolutions and paradigm shifts proved particularly efficacious and may be a useful strategy for those who are interested in teaching or learning about consciousness in less than supportive academic environments.

Key Words: consciousness, transdisciplinary, integral, higher education

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Introduction by the First Author

In 1975 at the age of 25, I suffered an anaphylactic reaction that precipitated three cardiac arrests and three near-death experiences that completely changed my life. Prior to these events I had studied yoga and meditation for several years and I'd had many incidences of "extraordinary knowing" and "synchronicity" as described, respectively, by Elizabeth Lloyd Mayer (2007) and Carl Jung (1952), all of which had led me to wonder about the nature, range, and scope of consciousness. But none of these incidents prepared me for the vast, sentient, multidimensional, compassionate, and purposeful reality that I encountered during my excursions into death. I described these experiences in my book *Riding the Windhorse: Spiritual Intelligence and the Growth of the Self* (2001) and won't recount them here, except to say that when I returned to what we call life, my best laid plans were laid aside. Instead of the career in law that I had been pursuing, I felt compelled to find a path that would allow me to explore, expand, and integrate my newfound appreciation for consciousness. And so I did, although the journey unfolded slowly, sometimes torturously, over the

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next many years. It led me to a doctorate and licensure in counseling and clinical psychology, a faculty position at the University of Washington, Seattle (UWS), tenure and promotion to full professorship, and a number of ancillary administrative and clinical responsibilities along the way. But finding a way to study and teach about consciousness proved more difficult than I had anticipated because of the taboo that has for decades excluded the subject from serious consideration in mainstream academia.

Finally, in 2001, I was able to offer my first undergraduate seminar for the UWS Honors Program ("The Farther Reaches of Human Nature") that introduced students to the scientific literature about consciousness in its myriad manifestations and engaged them in a far-reaching exploration of the mysteries of their own minds. Imants Baruss (2008) offers a cogent analysis of the multiple perspectives about consciousness that determine how scientists and scholars approach this body of material. These perspectives, he tells us, are "rooted in their personal beliefs about the fundamental nature of reality" (p. 280) and derive largely from their own experiences. According to Baruss, beliefs about consciousness range from the materialist to the transcendent, with materialists claiming that consciousness is "an emergent byproduct of physical or computational processes" (p. 281), whereas those holding an "extraordinarily transcendent" perspective consider consciousness to be the ultimate reality from which physical reality emerges. A middle way, the "conservatively transcendent" is characterized by "a metaphysical dualism and a belief that consciousness is evidence of a spiritual dimension within each person" (p. 282). Although my near-death experiences propelled me firmly onto the "extraordinarily transcendent" end of this continuum, I believe it is important to introduce students to the controversy surrounding ideas about consciousness so that they can evaluate the data and make up their own minds. Nonetheless, I acknowledge that my own experiences and perspective likely have a deep influence on theirs.

From the outset I designed the course from a transdisciplinary and integral point of view. The transdisciplinary perspective is important because the study of consciousness embraces many disciplines, including depth psychology, quantum physics and biology, neuroscience, health sciences, engineering, and history. The integral approach propounded by Ken Wilber (1998) is equally important because it embraces both Western and non-Western ideas and likens consciousness to the electromagnetic spectrum whereby different theories of consciousness offer valid interpretations of the same phenomena, but at different frequencies. The integral approach rejects materialist explanations of consciousness that exclude the possibility of nonphysical or spiritual dimensions and draws upon insights gleaned from contemplative practices that are grounded in direct experience. According to Wilber (1998), "…Zen and the great contemplative traditions are, in every sense of the word, a deep science of spiritual interiors and they have universally concluded that there are *levels of interior experience*" (p. 203, emphasis in original). Ed Sarath (2006) has argued that the most important benefit of an integral approach is its ability to unify a large number of disparate, yet viable, theories about consciousness. Further, it respects these theories as providing unique and valid perspectives on phenomena that defy a single, all-encompassing explanation. Yet another advantage of this approach is that it uses three pedagogical methods: first-, second-, and third-person. Whereas third-person knowledge consists of objective and analytical inquiry and second-person is dialogical, first-person is experiential and invites students to explore and take seriously their own subjective experiences.

At the conclusion of this first seminar students responded so positively that I continued to teach it annually for the next seven years, and in 2008 I completed a study that demonstrated significant and positive changes in students' beliefs about consciousness and reality over the ten weeks' of that year's course (Green and Noble, 2010). Throughout these years successive cohorts of students unfailingly asked for more opportunities to study consciousness in greater depth and I searched – to no avail - for an academic home in which to create a permanent program. Finally, after a conversation with the then-Provost in which she stated boldly that "there would never be consciousness on this campus," I decided the time had come to look elsewhere. Elsewhere turned out to be the more interdisciplinary and innovative University of Washington Bothell campus (UWB) where a new School of Science, Technology, Engineering and Math (STEM) was forming under the leadership of Professor Warren Buck, a former UWB

Chancellor, theoretical physicist, and practicing Buddhist. He believed that the addition of Consciousness to the traditional STEM curricula would help to expand the minds of both students and faculty and he invited me to do just that. Thus, to the shock and discomfiture of several materialists in the School, I joined their faculty and began the process of creating the Minor in Consciousness that formally launched in the fall of 2014 (Noble, 2015).

Teaching at the leading edge of what Alan Wallace (2006) calls "the mind sciences" at a mainstream, public research university is, I've discovered, neither for the fainthearted nor the untenured. Learning about consciousness from an integral perspective can be equally daunting for students who have been steeped in the limited and limiting mindset of scientific materialism. Yet training a new generation of scholars and scientists who are prepared to take consciousness seriously is, I believe, critical to the psychological maturation of the human species and to the health and well-being of the biosphere at a time when so many crises threaten our collective and continuing existence. In this article I want to address the challenges for both teachers and students who choose to engage this enterprise. To do that I will use the framework developed by Thomas Kuhn in *The Structure of Scientific Revolutions* (1962, 2012) because it offers a powerful lens that helps both faculty and students observe the emergence of – and resistance to - a new paradigm of mind that is slowly but surely supplanting the materialist ideology. In the second part, my undergraduate research assistants and I will present the results of a four year study that investigated the transformation of students' beliefs and their experiences while studying consciousness from a transdisciplinary and integral perspective. The former offers hope and reinforcement to those pioneers who embark upon the journey of teaching or learning about consciousness in less than supportive environments. The latter offers powerful proof that the process, though difficult, is more than worth the pain.

All Paradigms Must Change

A profoundly new orientation to consciousness has been emerging for the past 150 years that belies the materialist orientation of science to the mind (see, for example, Radin, 2006; Kelly *et al.,* 2007; Tart, 2009; Sheldrake, 2012; Dossey 2013). Because this is a paradigm shift that is Copernican in scope it is rife with contention. Thomas Kuhn first introduced the concept of scientific paradigms in 1962 in his influential book *The Structure of Scientific Revolutions* as a way to examine and explain how new insights arise and reshape our understanding of what we call "reality." According to Kuhn, revolutions in science are regularly occurring events that are invisible when they are emerging and perceptible only when they reach a critical level of acceptance among experts in any given field. As his overview of the past 400 years of the scientific enterprise clearly demonstrates, there are both small and large scientific revolutions; small ones can and do change a field but large ones have the potential to change the world. All are greeted with conflict and dissension, yet large revolutions inspire a level of vitriol and resistance that attest to the magnitude of the transformation they portend. The revolution we are currently experiencing in our understanding of consciousness falls clearly in the latter category and because it is Copernican in essence and scope, the "battle over its acceptance," as Kuhn would say, has begun.

Actually the battle began over 100 years ago with the establishment in 1882 and 1885, respectively, of the British and American Societies for Psychical Research. The British Society was created by the leading scientists of the time who included such luminaries as Nobel laureates Marie and Pierre Curé, psychologist F.W.H. Myers, physicist Sir Oliver Lodge and chemist-physicist Sir William Crookes. The American Society was organized by William James and involved several hundred of the best minds in America who hailed from major universities and professional organizations throughout the country. The purpose of both Societies, which merged in 1890 to become the Society for Psychical Research (SPR), was to explore rigorously anomalous mental capacities that "normal science" refused to acknowledge or entertain.

Normal science, Kuhn tells us, is a "ramshackle structure with little coherence among its various parts…. that represents a strong network of commitments – conceptual, theoretical, instrumental, methodological – that provides rules that tell the practitioner of a mature specialty what the world and his/her science are like" (2012, p. 49-50). Because these commitments are so entrenched and so

emotionally charged when challenged, practitioners of normal scientific specialties neither search for anomalies nor embrace them when they occur.

This is poignantly illustrated in the field of medicine where "(a)n inventor was never welcome and hardly ever treated politely" (Zilboorg, 1941, p. 351). When William Harvey produced detailed evidence for the circulation of blood in 1628 he was accused of both scientific *and* religious heresy. Although he continued to argue from his data he lived in peril of his life and never thereafter approached his colleagues unarmed. In the late 18th century the French Academy of Science discarded its collection of meteorites because "they smacked of heavenly intervention" (Mayer, 2007, p. 103) and compromised the new scientific worldview that was just emerging from centuries of religious dogma, intellectual hegemony, and warfare. The Academy's action was soon emulated by museum curators throughout Western Europe who were loath to appear backward in comparison with their Parisian colleagues. Around this same time Leopold Auenbrugger invented the art of percussion to determine the density and size of the body's underlying tissues and organs, but his discovery (which is now a standard medical procedure) was derided as superstitious nonsense by his colleagues and dismissed. Then, in 1816, Rene Laennec, inspired by Auenbrugger's discovery, invented the stethoscope, but that too was rejected by many of his peers as witchcraft. A few decades later when John Elliotson, a professor of medicine at the University of London, became the first physician in England to use a stethoscope he was ridiculed by his colleagues and attacked in *The Lancet*, Britain's leading medical journal, as a "professional pariah" whose use and advocacy of the instrument would "strike a vital blow at legitimate medicine" (Zilboorg, 1941, p. 352). And then there was Ignaz Semmelweiss, a Viennese physician, who, in 1848, argued for the effectiveness of handwashing to reduce maternal and infant mortality in childbirth. Notwithstanding the overwhelming evidence he produced for the efficacy of this procedure, his fellow obstetricians refused to believe him, and after being disgraced and expelled from Vienna he committed suicide.

Lest we think such reactions are a remnant of the distant past we have only to view the derisive response of the materialist community to lucid dreaming, neuroplasticity, or Sheldrake's ground-breaking research about scientific dogmas to understand just how contemporaneous these attitudes can be. For example, the idea that the adult human brain exhibits neuroplasticity, now widely accepted and studied, was anathema until the 1990s, and the debate over the existence of any form of neuroplasticity damaged the careers of scientists as recently as the 1980s (Begley, 2007). My own experience in creating and promoting a minor in consciousness is all too similar. After a five-year battle to develop the coursework and achieve institutional approval, the minor finally launched in autumn of 2014 becoming the first of its kind at a public research university. By then student interest had skyrocketed, and I requested additional faculty lines to meet the demand. The chair of my division, however, vowed that he would "never vote for a faculty member who wasn't a materialist." Another junior colleague opined that "she went to church and believed in god but didn't believe that religion should be taught as science." ("Neither do I," I replied…. "that's not what consciousness is about.") Still another snidely dismissed the study of consciousness in general and Sheldrake's work in particular as "pseudoscience," although when asked which of Sheldrake's experiments or books he found objectionable, he admitted, not surprisingly, that he had read none. And then there was the colleague who offered me the unsolicited advice that if I wanted his – and STEM's-- support, I would teach consciousness from a purely materialist perspective. "But that would be intellectually dishonest," I responded. He shrugged.

The history of science is replete with such stories and it's useful for those of us who venture into the minefield of consciousness to know about them. It is also useful to know that despite the resistance to change in any given field, anomalies are inevitable and when they occur normal science enters into and eventually emerges from a predictable state of crisis. Sometimes, Kuhn tells us, a field can absorb the anomaly into its existing paradigm and the crisis is temporarily averted. Sometimes the anomaly resists all attempts to integrate it into the present state of a field, at which point "[t]he problem is labeled and set aside for a future generation with more developed tools" (2012, p. 81). In the field of consciousness this is often referred to as promissory materialism. But sometimes a new

paradigm emerges that defies all attempts to integrate or dismiss it and then all hell breaks loose. Such is the current state in which consciousness finds itself because anomalies to the materialist mindset are the normalcies of an integral one. And these anomalies or normalcies, depending upon one's point of view, are everywhere.

In 1886 the SPR published a 13,000-page volume entitled *Phantasms of the Living* which documented and verified the myriad ways in which the mind perceives and influences physical reality through means that defy materialist explanations and conventional rules of time, space, and distance. These included direct mind-to-mind communication, precognition, distant healing, and "veridical crisis hallucinations" or distinct perceptions of individuals who either were not physically present or who were dead. Since then, a wealth of rigorously gathered and robust scientific data has been steadily accumulating that attests to the reality that reality itself is a strange and mysterious place, made increasingly perceptible to humans by the openness and readiness of the mind that seeks to apprehend it.

For example, Richard Davidson (2012), Jeffrey Schwartz (2002), and Andrew Newberg (2009), among others, working with trained practitioners of meditation and contemplative prayer, have documented the profound effects that intention and introspective training have on the anatomy, physiology, and functioning of the brain, enabling one to enter, explore, and utilize non-ordinary states of consciousness as well as enhance psychological well-being. Bruce Lipton (2005) and Emily Williams Kelly (2007) have explored the irrefutable power of the mind to affect the health of the body for good or for ill through psychophysiological influences such as placebos and nocebos, and Robert Jahn and Brenda Dunne demonstrated in over fifty million experimental trials that "operator consciousness is capable of inserting information, in its most rudimentary "objective" form, namely binary bits, into random physical systems, by some anomalous means" (quoted in Mayer, 2007, p. 243). Robert Van de Castle (1994) and Robert Waggoner (2009) have each shown that dreams are unique states of consciousness through which one can access sources of creativity, generate solutions to problems, and engage in wide-ranging explorations of different states of consciousness that cannot be perceived within the confines of the rational waking mind. And there is abundant clinical evidence from the near-death studies of Raymond Moody (1975), Holden, Greyson, and James (2009) , Peter Fenwick and Elizabeth Fenwick (2008), Pim Van Lommel (2006, 2010), and Sam Parnia (2013) that consciousness appears to be more vigorous and unfettered after death than it is in life. This list is far from complete but it gives readers a glimpse of how extensive, compelling, and transdisciplinary this literature is.

So, students invariably ask, if these data are so robust, why haven't they heard about them? Why are they shrouded in secrecy and shame? Why aren't they taught this literature in mainstream academia? Why haven't they been exposed to any epistemology other than scientific materialism or to ideas that stretch the boundaries of that paradigm? Why is this collective body of credible and well-researched evidence for ideas espoused by non-Western wisdom traditions routinely rejected by the scientific mainstream? For answers to their questions we must return to Kuhn (1962, 2012), because as he would say, it all depends on what one considers to be real.

According to Kuhn, paradigms are world views that determine what is and isn't believed to be "real." What is real, according to the materialist paradigm, is that consciousness is created by the brain, that it appears at birth and disappears at death, and that the sort of anomalies and experiences that attest to its nonlocality aren't real because they can't be real and they can't be real because they don't fit within that paradigm. And even if in private the majority of scientists have themselves experienced some of these phenomena, in public they're quick to deny, ignore, or dismiss them because they challenge that paradigm to its core. Like their 18th century counterparts who destroyed their collections of meteorites, they have no wish to appear crazy, gullible, or stupid in front of their reductionist peers – or to jeopardize their livelihoods. But the data amassing since SPR opened its doors show us in no uncertain terms that the old world view is wrong and that a new, integrative paradigm that recognizes the multidimensional, nonmaterial, and fundamental nature of consciousness is needed to understand and integrate them into our waking lives. This is a very big revolution indeed. And so the stakes are high, especially in mainstream academia which is dominated by

scholars and scientists who have made their careers by adhering to the old paradigm and are loath to abandon it.

A great deal of time and energy has been devoted by many reputable scientists to refuting the contentions of materialist skeptics but Kuhn (1962, 2012) tells us that this effort will likely prove fruitless because of what he calls "the incommensurability of old and new paradigms."

> The most fundamental aspect of the incommensurability (is that) proponents of competing paradigms practice their trade in different worlds. Practicing in different worlds they see different things when they look from some point in the same direction… This is why a law that seems intuitively obvious to one group of scientists can't even be demonstrated to another (Kuhn, 2012, p. 149).

Promissory materialism, the current stance toward consciousness taken by scientific materialists, is a perspective that is highly resistant to change. Whether this is due to intellectual, emotional, or psychological distaste depends on the individual and the cultural climate in which she or he operates. As Mayer (2007) said, "It's difficult to parse how much our fear of the unknown has affected our ability to study it, even to conceive of it" (p. 270).

Fortunately, paradigms do change. The stethoscope has become the icon of modern medicine and all obstetricians, midwives, and nurses routinely wash their hands before and after delivering babies. The process begins when a few highly trained experts recognize that the old paradigm cannot accommodate the anomalies that led them to question it in the first place. These pioneers have invariably had what Kuhn calls a "conversion experience," a kind of gestalt switch that once thrown propels the percipient into a completely new understanding of reality. William James, to whom this occurred more than once, reported that:

> Our normal waking consciousness, rational consciousness, as we call it (is)
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> but a special type of consciousness, whilst all about it, separated from it by
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> the filmiest of screens, there lie potential forms of consciousness entirely
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> different. We may go through life without suspecting their existence; but apply the requisite stimulus and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question – for they are so discontinuous with ordinary consciousness. Yet they may determine attitudes though they cannot furnish formulas, and open a region though they fail to give a map (James, 1902, pp. 378-379).

Many of the greatest scientific minds, including Carl Jung, Max Planck, Erwin Schrodinger, and Wolfgang Pauli, as well as many current leaders in the field of consciousness, have had experiences as powerful as James' and all emerged from them profoundly changed. But promissory materialism is a hard nut to crack and even the collective genius of these luminaries has proven insufficient to bridge the paradigmatic divide in higher education. Part of the problem, of course, is the ideological dominance of scientific materialism, but equally confounding is the fact that these experiences are triggered in a variety of ways, from reveries, lucid dreams, and psychoactive drugs to near death events and everything in between. None is predictable or replicable, all are idiosyncratic, and if we relied on conversion experiences alone, they would remain fascinating but quirky anomalies. That is why the second phase of a paradigm shift is equally important – educating a new generation about these phenomena and their implications, one that is less committed to the old paradigm, more receptive to new ways of thinking, and a willing wellspring from which advanced knowledge and praxis can grow. For as Max Planck said toward the end of his career, "a new scientific truth does not triumph by convincing its opponents and making them see the light but rather because its opponents eventually die and a new generation grows up that is familiar with it" (quoted in Kuhn, 2012, p. 150).

I believe that educating a new generation of scientists and scholars who take consciousness seriously is the most important task before us. Certainly the general public is increasingly aware of the primacy of consciousness thanks to the work of the many scholars cited above, but this collective body of scholarship has yet to make significant inroads into mainstream academia

where scientists and scholars are born. This dearth is not for lack of trying, yet pioneering programs like William James' at Harvard, J.B. and Louisa Rhine's at Duke, Robert Jahn's and Brenda Dunne's at Princeton, and Charles Tart's at the University of California Davis did not outlast the death or retirement of their founders. No one should underestimate the power of the old paradigm and its death grip on higher education. But given that so many among the current leadership in the field are aging, retiring, or reincarnating, the training of the next generation is a matter of great urgency. We are at a pivotal juncture in human history. At no other time have we collectively been faced with so many intractable problems that threaten the existence of the entire biosphere. Finding solutions is a daunting challenge and beyond the reach of scientific materialism. For as Einstein observed, "The world we have made as a result of the level of the thinking we have done thus far creates problems that we cannot solve at the same level at which we have created them…We shall require a substantially new manner of thinking if humankind is to survive" (quoted in Highfield and Carter, 1994, p. 79). I believe that consciousness is the key that will unlock the door to this new manner of thinking and propel us toward a new level of sanity and well-being, both individually and collectively. And training a new generation of scientists and scholars who are prepared to use this key will redound to the benefit of us all.

Experimental Section

In 2008 the first author and an undergraduate research assistant conducted a study that investigated the experiences of UWS undergraduate students as they were introduced to the study of consciousness from a transdisciplinary and integral perspective during a ten week Honors seminar (Green and Noble, 2010). We learned from these students that they experienced powerful and meaningful changes in their world views after being exposed to the material. Their underlying beliefs about consciousness and reality, as measured by their scores on the Beliefs about Consciousness and Reality Questionnaire (BACARQ, described in detail below), had become significantly less materialist and more transcendent. They said they had opened their minds to ideas that most had never previously considered because did so in a safe environment that was also intellectually rigorous. Most had never had an opportunity prior to this course to examine their basic assumptions about reality or to explore the limitations of the materialist mindset in light of the evidence to the contrary. As they grew more aware of the extent to which these unexamined assumptions influenced their lives they were more willing to engage with controversial and often contradictory theories about consciousness, and they brought a greater depth and breadth—both intellectually and emotionally—to this conversation. By the end of the course they were excited about the possibilities of an expanded mindset, more tolerant of ambiguity and uncertainty, and more confident about challenging their own beliefs as well as each other's.

Students engaged not only in an intellectual exploration of the controversies and paradoxes of consciousness, but also—and just as importantly—an experiential one. The period of meditation with which each class session began gave them first-hand experience with contemplative practice. Although many initially voiced misgivings because none had previously practiced meditation, the in-class meditation became important to students for a number of reasons. They began to pay more attention to their subjective experiences, which many said they had previously ignored. After they had spent several weeks familiarizing themselves with the practice they were more willing to entertain the viability of contemplation as a legitimate way of knowing. Many said that having their fundamental beliefs about reality challenged was a destabilizing experience and that doing so in such a short time period was very stressful. Thus, meditation became an important tool for dealing with the discomfort and fear that arose in association with course material. It helped them to grapple with and integrate difficult ideas and to maintain a sense of being grounded both inside and outside the classroom. Further, meditation provided them with a time for quiet introspection, an experience many found relaxing and all too rare in the face of rigorous demands made by their undergraduate education.

Although these findings were intriguing, the number of respondents in this study was small (n=19) with correspondingly limited generalizability. Therefore, we wanted to see whether similar patterns could be discerned among a new and larger cohort of students. This

study, conducted over a period of four years (2012-2015), had three distinct phases. The first phase sought to understand retrospectively the intellectual and personal experiences of students as they were introduced to the transdisciplinary and integral study of consciousness. A randomly selected group of final reflection essays submitted by 30 students at the conclusion of the course in Autumn Quarter, 2012 was analyzed by John J. Crotty, Aarshin Karande, and Andrzej Montaño who comprised the first undergraduate research team that categorized students' reactions using grounded theory methodology. The number of essays was ultimately limited to 15 because this was the point at which the qualitative data were saturated. This study yielded seven distinct categories of experience that are discussed below, and that guided the third phase of the study.

The second phase entailed the administration of the BACARQ as a pre- and post-test measure of students' beliefs at the beginning and conclusion of the course in 2013, 2014, and 2015. These data were collected anonymously without any identifying demographic information from a total of 86 students and the results were analyzed both by year and collectively. This phase sought to discern whether students' beliefs about consciousness and reality changed in the direction exhibited by students in the 2008 study, and, if so, whether these changes were consistent across three distinct cohorts.

The third and final phase was conducted by Alexa Lavides, the second undergraduate research team member. She performed an ethnographic analysis of students' real time experiences during Autumn Quarter 2015 to determine whether their experiences were congruent with the research categories derived in the earlier retrospective phase.

The Course

The title of the course, BCONSC 321: The Farther Reaches of Human Nature, is a tribute to the ground-breaking work of Abraham Maslow and his 1993 book of the same title. BCONSC 321 has changed somewhat since its 2008 iteration. Originally students read Mayer's *Extraordinary Knowing: Science, Skepticism, and the Inexplicable Powers of the Human Mind* (2007), as well as three other books (Narby, 1998; Wilber, 1998; Sheldrake, 1999) that addressed the central questions of the course: "What is consciousness? Is it dependent on, independent of, or interdependent with physical reality? Why do non-Western wisdom traditions and Western scientific perspectives disagree so completely in their ideas about it?" Since 2010, however, with the luxury of stretching these topics over 5 courses rather than compressing them into one, students were introduced more slowly and systematically to the literature of consciousness. Mayer's text remains primary, but we now begin with an overview of Kuhn's (1962, 2012) theory of scientific revolutions so that students have a framework for understanding the paradigmatic implications of the data they will be studying for the next 10 weeks. They also read Moody's book, *Life after Life* (1975, 2001), an article by Van Lommel (2006) summarizing his prospective near-death research, and two chapters by Van de Castle (1994) about the relevance of dreams to understanding and exploring consciousness. In addition, they watch a variety of films and talks by Ken Wilber, Dean Radin, Rupert Sheldrake, and others that extend and amplify the topics discussed in the texts. At the completion of the course students write a 3-5-page reflection essay about how their ideas about consciousness changed over the ten weeks and any insights or challenges that they experienced.

The course continues to be organized in a lecture/discussion format that meets twice per week for two-hour periods. As in the first iteration, we use 1st, 2nd and 3rd person teaching strategies and begin each class with a 5-minute period of breath-based meditation, which is taught on the first day. The goals of the course remain the same: to expose students to the transdisciplinary and integral study of consciousness; to increase their ability to think, write, and converse about these ideas; to help them better understand and reflect on their personal beliefs about consciousness; and to teach them skills of self-reflection, introspection, and contemplation. At the outset and throughout the course students are actively encouraged to maintain a "Beginner's Mind" approach to the material, a stance that helps them to respect themselves as learners and to acknowledge that the more one knows the less one knows, especially when it comes to consciousness and the mind. They are also asked to maintain an attitude of constructive versus compulsive skepticism as they encounter ideas and

information that challenge the materialist mindset that dominates academic discourse.

Participants

116 students enrolled in an Autumn Quarter BCONSC 321 during the period comprised by this study. All were in the 2nd, 3rd, or 4th year of their undergraduate careers at the time they participated in the course. Those who had declared majors had chosen a wide range of programs including psychology, media studies, computer science, traditional STEM disciplines, and health sciences; others were undecided. When asked by the instructor on the first day why they had chosen this course the majority said they needed science credits for graduation; only a few said they based their decision on the course's reputation and/or their interest in the content.

Measures

As in the 2008 study, the BACARQ was used as a pre- and post-test measure of students' beliefs about consciousness and reality, and administered on the first and last day of each course in 2013, 2014, and 2015. Eighty-six students completed the pre- and post-test BACARQ (n2013=30, n2014=27, n2015=29), which was developed by Imants Baruss, a professor of psychology at King's College, University of Western Ontario, and Robert Moore, a professor of psychology at Campion College, University of Regina, to explore the relationship between personal beliefs about reality and ideas about consciousness and spirituality (1992). After reviewing more than 150 academic books and articles about consciousness in the sciences and philosophy, Baruss and Moore (1992) created the BACARQ, which situates these beliefs on a philosophical continuum that ranges from materialism (the belief that the physical universe is the sum total of reality) to conservative transcendence (the belief that there are both physical and spiritual dimensions to reality), to extreme transcendence (the belief that there is a universal, non-physical consciousness that precedes physical reality). The BACARQ consists of 38 items that ask respondents whether they agree or disagree with statements such as "I think about the ultimate meaning of life," "Personal consciousness continues after physical death," and "The accepted methods of science are the only proper way in which to investigate consciousness." Answers to these questions are given in 4-point and 7-point Likert format. All but five items are scored in the direction of the transcendent dimension. An increase in the mean score for each of these items indicates that a person is more likely to agree—and to agree more strongly—with the statement. For example, the response "Strongly Agree" corresponds to a score of 3 whereas "Strongly Disagree" corresponds to -3. The remaining five items are scored in reverse; an increase in mean score indicates the strength of a person's disagreement with the statement.

The BACARQ yields seven scales that measure specific psychological constructs, which were determined by extensive statistical analysis based upon the original studies that mapped the relationship between ideas of consciousness and beliefs about reality. These scales have high reliability, with Cronbach's alpha values ranging from .77 to .95. The *Global Beliefs* Scale is comprised of all 38 items and measures the extent to which a person endorses statements along the material-transcendent dimension. Six additional subscales are comprised of seven to 12 items each and provide a more detailed interpretation of the *Global Beliefs* Scale. The *Antiphysicalism* subscale gauges a person's belief that reality is not entirely physical. The *Meaning* subscale measures the extent to which a person believes that meaning and spirituality must be a part of reality. The *Religiosity* subscale assesses beliefs that are connected to religion, especially the belief in a specific God and absolute truth. The *Extraordinary Experiences* subscale gauges whether a person has had transcendent, out-of-body, and/or anomalous experiences, whereas the *Extraordinary Beliefs* subscale measures beliefs in ideas such as reincarnation and a universal consciousness. The last subscale, *Inner Growth*, measures whether a person believes that contemplation and inner exploration are necessary to change him- or herself.

In addition to the BACARQ qualitative data were collected at two different points by two separate teams of undergraduate researchers. The first team (Crotty, Karande, and Montaño) conducted a retrospective grounded theory analysis of an anonymous and randomly selected group of 15 final reflection papers submitted by 30 students at the conclusion of the course in Autumn 2012. The second team (Lavides) attended each class session in 2015 and

conducted a real time ethnographic analysis of students' discussions and questions to determine whether their experiences were congruent with the seven categories identified by the previous team.

Results are presented in response to two principle questions: 1) Do students' beliefs about consciousness and reality change as a result of taking BCONSC 321 and, if so, in what direction? 2) What subjective experiences do students report as they encounter and reflect on their exposure to the material?

Principle Question 1: Do students' beliefs about consciousness and reality change as a result of taking BCONSC 321 and, if so, in what direction?

In the 2008 pilot study, participants' pre- and post-test mean scores on the Global Beliefs Scale as well as their scores on all subscales with the exception of Extraordinary Experiences and Religiosity showed significant differences, indicating that their beliefs about consciousness and reality shifted towards the transcendent end of the material-transcendent continuum. Data for each of the three cohorts in the present study as measured by t-tests were remarkably consistent, both in comparison with the 2008 data and with each other. Like the 2008 group, however, the 2015 cohort showed no significant differences in their pre- and post-test scores on the Extraordinary Experiences and Religiosity subscales.

Table 1. 2013 BACARQ Scores

Scales	*Pre Mean*	*SD*	*Post Mean*	*SD*	*P-Value*
Antiphysicalism	2.90	4.06	7.84	3.98	***0.000
Religiosity	7.33	4.83	10.94	4.22	**0.004
Meaning	12.12	5.14	17.18	3.70	***0.000
Extraordinary Experiences	12.11	11.14	21.66	7.12	***0.000
Extraordinary Beliefs	13.00	8.03	23.2	6.04	***0.000
Inner Growth	13.06	6.89	22.04	5.09	***0.000
Global Beliefs	38.45	21.81	65.24	14.88	***0.000

**p<.01 ***p<.001

Table 2.b 2014 BACARQ Scores

Scales	*Pre Mean*	*SD*	*Post Mean*	*SD*	*P-Value*
Antiphysicalism	0.34	4.97	6.0	4.63	***0.000
Religiosity	4.64	6.49	9.67	6.07	**0.008
Meaning	8.0	6.35	13.56	6.87	**0.0028
Extraordinary Experiences	10.36	13.9	17.05	13.41	***0.0002
Extraordinary Beliefs	9.93	8.77	20.6	11.48	***0.0002
Inner Growth	10.39	7.86	18.96	9.64	***0.0006
Global Beliefs	27.89	24.67	54.25	30.36	***0.0007

**p<.01 ***p<.001

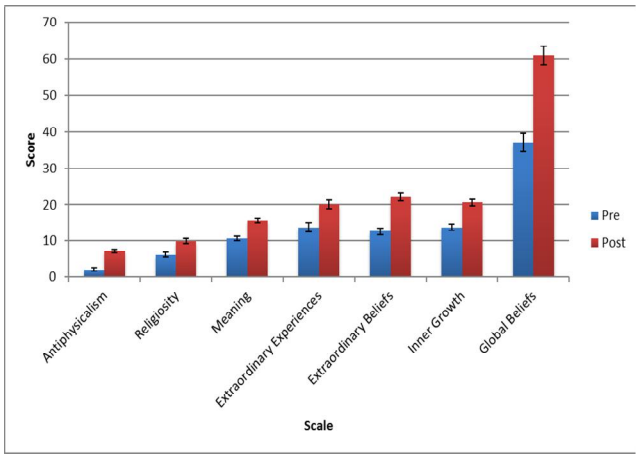
Table 3. 2015 BACARQ Scores

Scales	*Pre Mean*	*SD*	*Post Mean*	*SD*	*P-Value*
Antiphysicalism	3.03	4.96	7.84	4.49	***0.0004
Religiosity	6.21	8.08	9.69	6.25	0.0777
Meaning	11.6	5.75	15.94	5.26	**0.0051
Extraordinary Experiences	18.7	9.79	22.61	6.94	0.0914
Extraordinary Beliefs	14.89	7.25	23.11	7.77	***0.001
Inner Growth	17.37	7.49	21.42	6.89	*0.0418
Global Beliefs	44.71	23.11	64.94	17.77	***0.0005

*p<.05 **p<.01 ***p≤.001

One-way ANOVA showed equivalence between these three groups with only minor differences observed in some pre-test scores which disappeared at post-test. Thus, data were combined to produce the following graph.

Figure 1. Combined BACARQ Scores 2013-2015



These data indicate that changes in beliefs about consciousness and reality in the direction of a more transcendent mindset were not limited to the small sample of students who participated in the 2008 study. On the contrary, three successive cohorts of students showed similar and highly significant changes in their underlying beliefs about consciousness and reality over a ten-week period of time. This suggests that students were much less likely to believe that consciousness and reality could be explained in purely physical terms at the end of the course than they were at the beginning. In addition, they were more likely to think about the ultimate meaning of life, to feel more of a need to find meaning and purpose in their lives, and to believe that introspection was necessary to the investigation of consciousness. They were more aware that their beliefs influenced their approach to life and they were more likely to believe that consciousness was evidence of a spiritual dimension within each person. They were also more open to the possibility that consciousness was not dependent on the brain for its existence and that individual consciousness continues after death.

Principle Question #2: What subjective experiences do students report as they encounter and reflect on their exposure to the material?

Positive and negative reactions to the material: Initially students' attitudes toward the course content were very mixed. Although at the outset a few were excited about learning the material, most were only mildly curious while some were negative and resistant when they realized what the subject matter would entail. A few later said they had wanted to drop the course after the first day because they found it difficult to take the content seriously, although by the end of the course they were glad they hadn't. Many said they didn't know or hadn't thought about what "consciousness" was, or they assumed it merely involved information processing in the waking state. Students' interest was captured initially by Mayer's opening discussion of the anomalous experiences of highly intelligent and credentialed professionals working in a variety of fields who were reluctant to acknowledge their anomalous experiences publically because of the stigmatization of those experiences. They were comforted to know that their own skepticism and discomfort were shared even by those whose personal experiences had propelled them into an alternate world view. At various points throughout the course some students attempted to explain away data they found particularly disturbing (e.g., remote viewing, presentiment and precognition, nonlocal communication) using standard materialist arguments, but they were increasingly challenged by peers who found their arguments limited and implausible. As the discussion turned toward near death experiences, students' reactions became overwhelmingly positive and by the end of the course the vast majority said they found the experimental evidence for anomalous phenomena and nonlocal explanations of consciousness compelling and convincing.

Positive and negative feelings about the material: From the outset students expressed a wide variety of feelings about the material. Some were extremely excited to be studying phenomena that they had experienced or wanted to experience firsthand and they enthusiastically entered into the spirit of inquiry that underlay the course. Others were fearful about the substance and implications of the material in general and toward the practice of meditation in particular. During the first few weeks some students reacted to the material with anger while others responded with apathy or passivity. A powerful turning point for many occurred when they read about the decision of the French Academy of Science and European museum curators in the 18th century to discard their collections of meteorites because they smacked of "heavenly intervention" and threatened the credibility of science. Students were shocked by the speciousness of that decision and understood themselves to be engaging in similar behavior when they automatically rejected data that conflicted with their materialist presuppositions. Another powerful turning point transpired when they encountered the evidence for near death experiences, which students invariably found comforting and profound. By the end of the course virtually all students agreed that Van Lommel's (2006) theory of the brain as a receiver rather than a producer of consciousness felt closer to the truth, even though it contradicted what many had previously believed to be true.

Students' responses to meditation were similarly transformed. Although at the outset a few in each class were experienced meditators, most had never been exposed to meditation and didn't understand what it was. As the course progressed, however, students not only became

more comfortable with the practice but looked forward to it and asked to practice for longer periods of time. When the course turned toward a discussion of healing and the intentional state of consciousness in which this occurred, a brief period of "wellness intention" was added to the end of each meditation session. Although skeptical at first, students increasingly began to request "wellness" for themselves and for others and many later remarked that this had proved very helpful to them.

By the end of the course students said that the content was extremely relevant to their own lives. Not only did the material and the practice of meditation help them to develop a deeper and more holistic understanding of themselves, but they also recaptured an excitement about learning that many had not felt for many years. As students began to share personal experiences that mirrored the concepts being taught in class, a noticeable sense of community evolved. Many spontaneously said that this had become their favorite course despite the demanding work load and their initial misgivings because they had begun to feel more optimistic and empowered about their lives, and markedly less anxious, depressed, or nihilistic.

Problems encountered throughout the course: Three distinct areas consistently proved problematic for students: their confrontation with their own unexamined beliefs and assumptions about consciousness and reality; the inadequacy of language to explain and express the concepts and experiences in question; and the external resistance many encountered when they attempted to discuss the subject with others outside the class.

Because the course challenged the materialist worldview from the outset, students displayed mixed reactions. Although some immediately and enthusiastically embraced a "nonlocal" paradigm, others resisted, resorting to logical analyses and attempts to explain away the data using materialist constructs. This became more difficult to do as the empirical evidence mounted, particularly when the research under discussion involved placebos, CIA funded studies of remote viewing, the findings of the Princeton Engineering Anomalies Research Lab, and the universality of near-death phenomena. Students said that frequent encouragement to remember and practice Beginner's Mind as well as constructive skepticism proved extremely helpful in keeping open minds that cognitive dissonance might otherwise have slammed shut.

A common complaint of students was the fact that consciousness could not be captured by the language we currently use to understand or explain it. Students had to grapple continuously with the inadequacy of words to describe, discuss, and clarify the phenomena they were studying and with the realization that the field had not yet advanced to the point where precise terminology had been coined. Although this was extremely frustrating for students it also reinforced for them the importance of meditation and contemplative practices in bypassing language and engaging in direct experience.

Another issue that proved even more challenging for students was the reaction of people outside the class. Many students said that they left class each day eager to discuss what they were learning with family, friends, other professors, and/or members of their religious communities only to run headlong into a wall of materialist resistance. Although they had read about these reactions in Mayer's text, it wasn't until they were confronted with them personally that they realized how powerful, pervasive, and unfounded they could be. Students were shocked by the conflict between the experimental evidence and the close-minded reactions of many members of the scientific community and they appreciated the opportunity to discuss both the phenomena and the resistance in a non-dogmatic and scholarly way.

Desire for more information: By the end of each course the tenor of the classroom had changed considerably. With few exceptions students had become genuinely engaged, both intellectually and emotionally, and they were eager to learn more both in and outside the classroom. The majority said in class and in their final essays that they were deeply disappointed that the class was ending. Those who were continuing in the consciousness sequence the following quarter were excited about delving deeper into the mysteries of consciousness; those who weren't generally said it was because they were graduating or couldn't fit the course into their crowded academic schedules. Several had become so captivated by consciousness that they had decided to change their majors and seek avenues for graduate or professional study

through which they could contribute to the field as scientists, scholars, or health practitioners.

Insights gleaned during the course: On the last day of class students were invited to discuss individually and collectively the insights they gleaned from writing their final reflection essays. The majority said they had experienced profound personal change and transformation from course material and from related ideas exchanged with peers and others both within and beyond the academic setting. For these students, the reality of consciousness had become significant to their world views and positively changed their ways of interacting with their own lives and with others. Many said that their friends and families had been as eager to learn from them as they had been in class, and that their conversations had become deeper and more intimate as a result. Some, however, found themselves unable to communicate with people in their lives who were close to them but who held determinedly materialist views, an experience that was both painful and isolating. The majority expressed a number of powerful insights, including gratitude, appreciation, empowerment, mindfulness, a newfound sense of peace about life, and a desire to engage more deeply with every aspect of their lives. Of course not all students were equally sanguine. A few maintained an attitude of deep skepticism and said they would be unlikely to change their opinions unless and until they had their own direct experiences. Occasionally a student was determined to fit the material into traditional scientific or religious paradigms, but this was a rare response. Regardless of whether and to what degree they embraced the subject, however, all students said they were leaving the course with a greater appreciation for the mystery that is their own mind.

Personal Journey: The majority of students said that studying consciousness was a transformational experience. They became reengaged with and excited about learning, more curious about the nature and scope of their own minds, and reinvigorated with a sense of meaning and purpose. Many said that they left other courses feeling a sense of pessimism or futility in the face of the enormous challenges confronting humankind, but that studying consciousness enabled them to see these challenges within a larger and more optimistic framework. After being systematically and rigorously introduced to the vast nature and scope of the mind over a period of ten weeks, Einstein's dictum - that "no problem can be solved at the level of consciousness that created it"- achieved a relevance and immediacy that it hadn't enjoyed at the beginning. Students felt themselves newly equipped with critical thinking skills and the ability to call upon scientific data that legitimized their discussions about consciousness outside the classroom. They understood how scientific, social, and personal biases had prevented the discussion from being fully engaged within mainstream academia and the wider world and they were eager to help to reverse that trend.

So What? At the end of each class session and for their final reflection essay, students are asked to consider the question "So What?" The purpose of this non-graded question is to encourage them to think deeply about what they learned and to decide for themselves what relevance the information will have in their lives. Here in their own words is what some had to say:

> "In almost all of my classes there is the overarching question "so what?" How do we integrate this into other studies and our lives? Anomalous phenomena happen all the time, yet we don't ask why. We throw out the meteorites because we can't explain it. To me, the dismissal of something that may test what we have been taught betrays what science is."
>
> "So what? What an interesting question. A question that I have never thought could mean so much in such a short sentence. It refers to so many aspects about life, that one cannot comprehend the question. So what, your life actually has a whole other meaning? So what, all that you believe to know is in fact, false. So what, there is a whole new dimension of consciousness out there. So what? Well, let's be truthful here, we all deep down inside know there is more to life than what is presented to us. We all know that there is something we might not know what it is, but something out there. Something that is awaiting our acknowledgement, our awareness, our approval. There is this world of consciousness around us and yet we decide to ignore it. Which leads to this class and

how it has taught me to be aware of said consciousness."

"This was my very first time studying consciousness and how powerful the mind can be. I had chosen to take the course simply because I needed a natural world, not realizing what powerful knowledge I will gain after the quarter is over… My big so what after taking this course would definitely revolve around acceptance. I realize that the more we know the more we realize we don't know. All of the research we have read about including meditation, remote viewing, subliminal priming, and more has been nothing but incredible. What has moved me so much is that I had not heard of this research prior to taking this course. There has been so much incredible work done by many talented individuals…that has not been spoken of other than in consciousness classes. This is how we will grow and create acceptance – by teaching it, talking about it, and spreading knowledge to those who are not knowledgeable. This is what needs to happen."

"On the first day of the quarter you had asked us to complete an exercise involving our fingers, a partner, and a positive and negative thought. I thought to myself "what in the world have I gotten myself into? The professor is standing on a chair, we are doing strange activities, and I hear we have to meditate. Ugh." However – my mother always told me to keep an open mind, so I did what you asked of us and participated in the activity…and I couldn't believe the results. When I focused on positive affirmations, the grip of my fingers was impermeable. When I focused on the negative, my fingers broke apart like an over-ripe banana. I couldn't believe it; I had controlled physical action of my body with my mind for the very first time. Since that day I have never looked back. This course was the most intellectually challenging, thought provoking, stimulating, frustrating and rewarding class I have ever taken. The content of the course…has permanently changed the way I view the world and I am so eager to see where consciousness takes me next. So what? I get it now."

"Ultimately I think the most important thing I got from this course is that it raised questions that I wouldn't have thought to question before. If consciousness isn't in the brain, then where is it? Why do we experience a world based on locality if our consciousness is non-local? Does every person have their own consciousness or is it one shared consciousness that only appears separate? I wouldn't be asking myself these questions if not for this course."

"Consciousness has shown me that everything I thought I knew about the world really is wrong, that the supernatural is natural, that *beginner's mind* is a gift and that there are universes and universes of mysteries waiting to be explored. I do not know exactly what the future will hold for me but I do know that consciousness studies is where I want to focus my career and lifestyle. To me, this class has fed a gnawing and desperate search for "what is really going on" that I had hoped to learn in other classes but that, until now, has just left me feeling frustrated and –to be honest- a little bit crazy. I am so grateful to be learning about and openly discussing the "thing" that so many of us sense but so few of us discuss..."

Discussion and Conclusions

In *One Mind*, a sweeping journey through the landscapes of consciousness, Larry Dossey (2013) says "I know a way out of hell." Hell, of course, is the mess we humans have created for ourselves and for all the inhabitants of this fragile biosphere as a direct result of the limited and limiting materialist mindset that has dominated science since the 17th century. It may or may not be too late for humans to pull back from the brink, but one thing is clear: without the widespread recognition that consciousness is a vast, multidimensional, and primary force of existence we cannot hope to begin the journey back to a sane and healthy future. This would entail a paradigm shift of epic proportion, one that exceeds the revolution in thought that brought humankind into the scientific age 400 years ago. But instead of looking outward, as Galileo did when he pointed his telescope toward the moons of Jupiter and shattered the geocentric view of the world forever, we would begin to look

inward and bring an expanded level of consciousness to bear on the problems we have created using a reductionist mindset.

Fortunately, this shift is underway thanks to the great work of the scientists and scholars cited earlier in this paper who are actively engaging the awareness and enthusiasm of the general public. But it has yet to make significant inroads into mainstream academia, where scientists and scholars are born. Educating a new generation who are prepared to take consciousness seriously is a task of great urgency. It is they who, in the words of Kuhn, are "less committed…to the world view and rules determined by the old paradigm" (2012, p. 143) and it is they who, properly trained, can propel the study of consciousness into the next century and beyond.

This is the mission we embarked upon at the University of Washington Bothell in 2010, where a Minor in Consciousness was created and formally launched in the School of STEM four years later. We chose to create a minor rather than a major at this time for two primary reasons. First, a minor reaches the largest number of students without their having to compromise their vocational plans by majoring in something that isn't yet recognized as either a legitimate area of academic inquiry or a career path. Second, a minor brings together students from many different disciplines – e.g., business, nursing, biology, psychology, education, and computer science – and encourages them to recognize the ways that consciousness can inform and transform the ideas and issues they care about most. Since 2010 approximately 250 students have completed what is now the first course in the minor's sequence. Of these, 116 participated directly or indirectly in this current study, which explored their beliefs, reactions, and experiences while studying consciousness from a transdisciplinary and integral perspective.

The results clearly indicate that the experience was transformational for most students. Like their counterparts in the 2008 study, their beliefs about consciousness and reality changed dramatically and significantly over ten weeks, moving away from a materialist mindset and toward a more transcendent orientation. This means that by the end of the course they recognized that there is much more to consciousness and to reality than the materialist mindset admits. For most this was an earth shaking realization. Yet as their core beliefs began to change, students reported an accompanying sense of excitement and curiosity that most said they rarely experienced in their academic or personal lives. Studying consciousness enabled them to explore aspects of themselves and of life that were otherwise neglected in higher education and elsewhere. It illuminated the biases of the materialist scientific paradigm which many had held unconsciously and whose influence they hadn't previously thought to examine. As the course progressed students began to realize that their initial reactions to the material were uncomfortably similar to those of the 18th century European scientists and museum curators who had discarded their collections of meteorites so as not to be seen as superstitious or stupid, and they were embarrassed by the comparison. "Don't throw out the meteorites" became a mantra that they frequently used to keep their minds open in the face of ever more mystifying data. Many students began to share what they were learning in class with friends, family, partners, and professors – and many returned to class shocked by the negative and ill-informed reactions that they encountered. They expressed a great deal of frustration with the lack of conversation about consciousness in higher education and they acknowledged the importance of approaching this controversial subject with the humility of Beginner's Mind, rather than with a cursory and compulsive skepticism. Most students left the course deeply disappointed that it was ending and they wanted to continue the exploration in greater depth. Many hoped to find ways to engage with and contribute to the field professionally but were concerned about whether they would be able to do so. Most said they were profoundly grateful to have learned about consciousness.

It is important to recognize that very few of these students entered the classroom having had the kinds of conversion experiences that thrust William James, Carl Jung, or Max Planck into a new understanding of reality; indeed, most entered not having the faintest idea of what the word "consciousness" meant, let alone what it entailed. Some acknowledged on the first day that they had experienced what Sheldrake calls "telephone telepathy" or had a friend or family member who had experienced an anomalous event, but for the most part students had neither studied nor explored these experiences in any

depth. Indeed, the majority had firmly embraced the materialist mindset of their family, friends, academic environments, and/or religious institutions and saw no reason to change. They took the course not because they were "true believers" but because they needed science credits for graduation and consciousness was an interesting alternative to traditional STEM offerings. This fact alone makes these findings particularly compelling.

It is also important to recognize that this course was not an easy "A." Students had to read and analyze rigorous scientific data every day the class met and come prepared to discuss not only the credentials of and protocols used by the relevant scientists, but also the meaning and implications of the studies in question. This meant, in the words of one student, that they had to think about the material outside of class, a requirement that markedly enhanced its impact. If students came unprepared their grade suffered accordingly and few wanted to risk this. Indeed, most said they worked harder in this course than they had in any other in their undergraduate career, which was not something that they universally enjoyed. Students were repeatedly encouraged to cultivate "Beginner's Mind" and to make up their own minds about the material but not to dismiss it out of hand because of ingrained, unconscious preconceptions. They were reminded that they were exploring the possibilities and permutations of their own minds and that the extent to which they opened or closed those minds was their own decision. They were introduced to contemplative practice through a brief period of meditation at the beginning of each class session and they were encouraged to practice this outside of class, although the extent to which they did so is beyond the scope of this study. They were also asked to be mindful about the events of their daily lives and to observe connections between their thoughts, feelings, dreams, and daily experiences. In short, they were asked to take consciousness seriously. And they did.

Undergraduates who had largely and unconsciously absorbed contemporary materialist biases toward consciousness were able, in a short period of time, to open their minds to a wealth of information that reveals these assumptions to be wrong. They left the course feeling more empowered, optimistic, and hopeful about their individual lives because they saw new possibilities for helping to create a healthier and saner world. Since these students are the future scientists, scholars, health practitioners, inventors, parents, teachers, and citizens, their excitement has implications not only for themselves but also for the larger world they will enter as adults. We can only hope that they will succeed.

Whether these profound changes in students' attitudes and beliefs persist over time remains to be seen. This would require additional studies, which we hope to undertake in the future. There are a number of possibilities that would be exciting to explore. Many students longed to have direct experiences of anomalous phenomena but this didn't occur for them during the ten weeks of the course. More sustained practice in meditation as well as the ability to experiment with the kinds of transformational technologies that are currently being tested might prove beneficial in enabling them to expand their awareness. Opportunities for students to participate in consciousness-related research projects would involve them directly in the creation of new knowledge and prepare them for the possibility of research careers in the field. We currently lack the laboratory facilities to do this at UWB but are exploring possible partnerships with other institutes to accomplish this goal. Increased exposure to alternative and complementary healing methodologies would encourage those entering health professions to draw upon those traditions in their future work with clients and patients, as would understanding more deeply the contribution of meditative practices to neuroplasticity and well-being.

At the end of every consciousness course since the first author offered the first seminar in 2001, the majority of students have asked for more opportunities to explore this field in greater depth and breadth. One of the most pressing challenges we face is creating undergraduate and graduate programs in consciousness throughout higher education and preparing future faculty to take the field forward. The long-standing hostility of mainstream academia toward consciousness makes this challenge particularly daunting. It is impossible to say when its tightly closed doors will finally and fully open, but the positive response of the scholarly community to Rupert Sheldrake's Manifesto for Open Sciences (2015) suggests that there are those already in place in colleges and universities who could help to bring this about. We hope they will rise to the challenge.

The importance of student participation in this endeavor cannot be overstated. Although the Minor in Consciousness met with faculty and administrative resistance at every step along its five-year formation, it is a reality in the School of STEM at UWB. This would never have occurred had it not been for the burgeoning and unwavering enthusiasm of the students who flocked to the courses from Day One. A particularly dedicated group of five (among whom were Crotty, Karande, and Montaño) formed an officially sanctioned UWB Consciousness Club in 2012, and when the minor first went to the academic council for its review in 2013 they wrote a powerful letter of support that articulated their personal experiences of transformation as a result of exposure to the material. Unfortunately, neither the council nor the administration was swayed by their eloquence and the proposal languished on a Vice-Chancellor's desk for almost a year before the students decided to act. This time a group of about 50, led by Consciousness Club officers and alumni, petitioned the student government for a resolution that the administration approve the minor based on student demand. After all, students said, they were paying the tuition. To everyone's surprise the next day the paperwork was signed and sent off on the last leg of the approval process. Four months later, in March 2014, the Minor was authorized by the president of the university and formally launched the following September.

This program is a very modest step toward a future in which Consciousness will be widely recognized and respected as a critical area of academic inquiry, but we have to start somewhere. We hope that the results of this study will encourage others to infuse consciousness into their institutions of higher education. If the human species is to survive let alone thrive, training a new generation of teachers and learners who take consciousness seriously is a necessary first step. The question before us, as the students might say, isn't "Why Consciousness?" but, rather, "What If?"

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