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# Big History as a Scaffold for Futures Education

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**Abstract**

This paper does several things. First, it reports on some of the history of the Master of Strategic Foresight (MSF) at Swinburne (2001–2018) to provide some background information that, it is hoped, may be useful for others seeking to create or develop under- and postgraduate foresight courses in the future. Second, it also describes some observations made during the early years of the MSF regarding some of the characteristics of the students undertaking it—as compared with other nonforesight students also undertaking comparable-level postgraduate studies—which had a bearing on how we designed and revised the MSF over several iterations, and which, it is similarly hoped, may also be useful for foresight course designers of the future. Third, it notes that the introduction of "Big History" in 2015 at both undergraduate and postgraduate levels seems to have engendered a somewhat easier "uptake" of futures/foresight thinking by those students who were introduced to it, in contrast to cohorts of comparable students in previous years who were not. It is speculated that the Big History perspective was an important factor in this, and some related writings by other academics supporting this conjecture are sketched. It is then argued that, in particular, Big History seems to be especially well-suited to the framing of global-scale/civilizational futures. Finally, a number of remarks are made about how and why I believe Big History provides an ideal basis for engendering futures/foresight thinking, especially with regard to global/civilizational futures, as noted, as well as for framing The Anthropocene.

**Keywords**

Futures Studies, Futures education, Big History, civilizational futures, Big History education

## Introduction and Motivation

The motivation for this paper is to report on some general observations I have made with regard to relative changes in students' abilities to "get" Futures and futures thinking that have become apparent to me in recent years, which I believe may be plausibly attributable to their having been introduced to "Big History" (Christian 1991).

As Eric Mazur, one of the pioneers of the "flipped classroom," is fond of relating, "the plural of 'anecdote' is not 'data'" (Mazur 2011, c.19′30″, where he attributes it to Lee Shulman), so I want to confess up front that this is mostly going to be an anecdotal discussion; there will be no "hard data" or longitudinal studies to back up my claims, nor any figures, charts, or tables designed to compel you to believe me—although I will mention and describe a couple of closely related and very-suggestive studies that broadly support these claims.

Rather, these will be mostly my own "back of the envelope" observations—which admittedly may be considered questionable so far as full-blown research rigor goes—but which I

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am nonetheless making here in the hope that they may be useful for those who might wish to carry out a more detailed and systematic approach to investigating the utility of some sort of "historical" teaching as a precursor to Futures teaching. Even formal double-blind, randomized, placebo-controlled cross-over trials need *some* set of initial "merely" anecdotal observations that indicate *prima facie* that undertaking these trials might be able to reveal something useful. I would argue, therefore, that there is still potentially some preparatory value and direction-setting utility to be found in and insights to be gained from even such "merely anecdotal observations" as these before any more systematic investigations and evaluations are carried out (Smith and Pell 2003). At least, it is with that intent and in that spirit that they are offered here. Thus, the comments and remarks made herein are intended as precursor observations that, I sincerely hope, may be useful in framing or encouraging further research into how futures thinking might be more practically encouraged to emerge in students of all ages, through utilizing Big History as a "scaffold" for futures education.

But first, I would like to provide some contextual background to the observations to be made in the following—to "set the scene" for them, as it were. In addition, as this may well be the last opportunity to reflect publicly in a formal futures journal on the eighteen-year life of the Swinburne Master of Strategic Foresight (MSF) before it is shut down, I want to ensure that certain experiences gained during its run are recorded and shared with the wider readership of the futures field so that they might (hopefully) be of some benefit (and perhaps even of some interest) to members of the field—especially those who may seek to set up new foresight programs in the future, both undergraduate and postgraduate. I hope that these observations might be able to make that undertaking just that bit easier. The reader who is less interested in the history and early experiences of the MSF can simply skip ahead to the observations and findings about the characteristics of the early cohorts of students discussed in more detail in the section "What a Difference Personal and Big History Makes."

## Some Contextual Background

I have been involved with teaching into the Master of Strategic Foresight (MSF) Program at Swinburne University of Technology in Melbourne, Australia, since the program was founded by Richard Slaughter and commenced classes in 2001 (Hayward and Voros 2016; Hayward et al. 2012; Slaughter 2004). Following an internal university-wide review of postgraduate courses, the MSF's closure was formally announced in May 2016, albeit with a further up-to-two-year "teach-out" phase that ends this year, making it eighteen years in total that I will have been involved in teaching into it—which, as it turns out, happens to have been more than anyone else.

That the MSF was to be shut down did not come as any great surprise to us—we had been expecting it for quite some years by that stage. In actual fact, at the end of each teaching year (December here in the Southern Hemisphere), my foresight "co-conspirator" Peter Hayward and I would sit down, marvel that we had somehow managed to keep it going for another year, see off the latest group of happy and shiny new graduates, and remind ourselves that this, of course, was the *very point* of continuing to keep the course running—namely, that another group of magnificent foresight-enabled people was going out into the world to make their respective differences. However, we also always reminded ourselves that "this, too, shall pass." When colleagues approached us to offer condolences after the closure announcement was made and remarked that it must have come as a terrible shock, we usually said (with an almost wickedly wry enjoyment and nonchalance, I might say!), "No, not really—this is Scenario 4 out of eleven we worked out; it's hard to catch the futurists by surprise."

As the ancient Stoic philosophers remind us: we may not have control over the events that happen to us in our lives, but we do most certainly have control over *our attitude* and

how we respond to or interpret them (Pigliucci 2015). Thus, it is possible to remain in good spirits and even joyful, even in the face of adversity—and we had certainly done our fair share of the *praemeditatio malorum* that the Stoics recommended as an important part of the art of living (Irvine 2009; Pigliucci 2017).[1] Thus, given the choice of cheerfulness or despair, we naturally chose cheerfulness and, therefore, to *celebrate* the fact *that the MSF had existed at all*, rather than merely (and somewhat pointlessly) focusing on lamenting its demise. Hence, unsurprisingly, we held a "wake" for it at the end of 2016—the "MSF wake"—which has already had its "+1" anniversary reunion, with more planned. It was principally intended to be, somewhat tongue-in-cheek, something of an "*anti*-debutante Ball," since the MSF was not being *presented to* society but rather being *taken away* from it. In true futurist (or perhaps just our own twisted) logic, we sought to turn the conventional order of things on its head. *Amor fati*. It was, therefore, as you might gather a very happy celebratory affair indeed (Slaughter 2016, 2017; Voros 2017c).

In those early days of the MSF, I was working (from August 2000 to December 2002) as a Strategic Foresight Analyst for the University in the Foresight and Planning Unit (FPU), of which Maree Conway was the Director, although I had also done some contract work in March to April of 2000 for the Australian Foresight Institute (AFI), headed by Richard and also based at Swinburne, which included helping out on a pilot scenario thinking process that Maree ran for Swinburne staff. In FPU, we were attempting to scope out the lay of the educational landscape ten to twenty years out to bring some foresight into the top-level strategic planning of the University. Some of the background to this can be found in Maree's book on doing foresight (Conway 2016), where she also describes how FPU came to be set up—and indeed, recalling that "this, too shall pass," how it came to be shut down again. It was during that 2.5-year period when I was working as a foresight analyst that, at Richard's invitation, I also sat in on all of the MSF course units and gave regular guest lectures based on my emerging practice of "doing" foresight as a practitioner embedded in an organization (albeit the organization being the very university in which the course was itself being taught, which fact made Swinburne globally unique at the time). Having given seven months' notice to Maree in May 2002 of my intention to do so (we are *futurists* after all!), I then joined Richard as part of the formal full-time teaching staff of the MSF at the start of 2003; some of this early experience as an organizationally based foresight analyst can be found detailed in Voros (2003).

## Teaching Futures at Swinburne

In the MSF, for the first few years, we attracted students who had somehow heard about it usually through word-of-mouth, were intrigued enough to want to find out more about it, and had signed up (often with gusto!) when they did. They had then moved through the program units in a clearly defined order, which had the added benefit of allowing for the not-infrequent initial feelings of disorientation and overwhelm to dissipate and be mitigated by a particularly strong "cohort experience." Thus, this was a totally self-selected group of highly motivated students who were, so to speak, fellow travelers on what was at the time a frequently very stimulating and sometimes quite white-knuckle ride into thinking seriously about the future. The sense of comradery that formed in those early few years was almost palpable and helped engender in students an often-fierce loyalty to the program and to each other.

When the program was re-accredited in the late 2005 timeframe (Hayward and Voros 2016; Hayward et al. 2012)—which occurred not long after the process of the formal disestablishment of the AFI following Richard's departure in mid-2004, and in the midst of a university re-structure brought about by a change of vice-chancellor—it was opened up to other postgraduate students in the (new) Faculty into which the MSF Program was now embedded (since there was now no longer an

AFI to hold it), and without the requirement for the "earlier" prerequisites that had necessarily preceded the "later" units in the sequence. This meant that, in this "second iteration" of the MSF, nonforesight students were coming into the program—mostly from the MBA but also some from the Master of Entrepreneurship and Innovation (MEI)—and being introduced to foresight ideas and concepts in the "later" units without necessarily either a firm background in these foundational concepts that they might have attained by having taken some of the "earlier" ones or, indeed, much time to get their heads around them once they arrived. Needless to say, this led to some changes in the classroom dynamics.

The composition of the early postgrad classes tended to be primarily midcareer professionals or independent consultants from all sectors (public, private, civic, and nonprofit) most often thirty-something in age, although with some as young as their early twenties, and some up to their early-to-mid sixties. The surprising heterogeneity of the group in age and background was remarked on by many students at the time as one part of the appeal of the course—it was a chance to get access to many and varied ideas and perspectives that most found they could not easily gain access to as part of their professional (or even personal) lives. Furthermore, many students also remarked that this was the *first time* they had really felt that they "belonged" in a group discussion—the MSF was a place where their ideas and perspectives were actually *valued* and not thought of as strange or "weird" and/or written off. A not-uncommon expression used by some at the time was that they felt that they had finally "come home" to a group of people who actually understood them. This dynamic changed of course when the initial cohort-based structure was opened up as part of the second iteration of the MSF; it was, so to speak, "lost" for a few years, but was reinstated—at least in part—when Eddie Blass came onto the scene and helped remake the MSF for the third iteration of the MSF's accreditation. Here, a cohort-like structure operated across the two double-unit introductory methods subjects that became the "first" year of the MSF experience for the third, and now the fourth (current, brief, and final), iteration (Hayward and Voros 2016).

The MSF has always been taught in a "block mode" of initially three full days, with a break of a couple of weeks (sometimes only a single weekend for some of the units very early on), followed by two days (in the case of up to 2006) or three days (post-2006) to round it out. This highly compressed timeline—not unlike a "conference" experience in some ways—was something that we took some pains to soften. Of course, those who had already undergone that "block" process with more foundational material found the later curriculum easier to digest than those who had not. Therefore, from around 2006/2007 onward (i.e., after the first re-accreditation and change in course structure), we found that there was, at times, a marked "split" in the student group in some units between those who "got it" quickly and those who did not. Most often, this latter group consisted largely of MBA students taking MSF units as electives, before the later MBA/MSF dual-degree structure was formally introduced and carefully designed-for, which was done in part due to observing this earlier dynamic and attempting to make the course more accessible to more students who could potentially find it useful (Hayward and Voros 2016).

Thus, there developed in the MSF classroom of the second iteration an evident microcosm of the futurist-manager dichotomy that can be found in the "real world" beyond the classroom. This dichotomy was something that Rowena Morrow (2005) had observed and reported on based on a small-scale study of personality types of MSF students as compared with the wider population, done in the first iteration prior to the "opening up" of the MSF in the second iteration (see the following). As a matter of interest, Peter's own doctoral work (Hayward 2005, 2008) on the development of foresight capacity had also actually used MBA students (again, the data were gathered prior to 2006) as the "control" against which to assess the changes in cognition, pre and post, of the MSF students following their introduction to futures materials (see

the following). This new dynamic of the second iteration naturally forced us to re-think the way we taught foresight, which, although occasionally more-than-a-bit difficult at the time, on reflection ended up being a most worthwhile experience, as it allowed us to learn to "frame" foresight for audiences that were not so familiar with it, and thereby to learn to position it more skillfully into organizational interventions. As Virgil has it in the *Aeneid: forsan et haec olim meminisse iuvabit*.[2]

When we added four undergraduate units as part of expanding the Foresight program into the undergraduate space around 2010, we encountered a similar difficulty. *Foresight Theory and Practice*, a 200-level prerequisite-free introductory foresight unit that was made compulsory as part of the major sequence in the Bachelor of Business (Entrepreneurship and Innovation) tagged degree, not surprisingly had students who had never encountered Futures thinking before, and struggled with it. Peter designed and taught it initially, whereupon it and the other three undergrad units were taught by several of our MSF graduates for a couple of years. Thereafter, I also taught into it for another year or two before it was eventually shut down in late 2015 as part of a University-wide review of undergraduate programs, and due to which the entire four-unit undergrad foresight structure was canceled.

It was into this four-unit undergraduate structure that two of the units had been replaced for the 2015 academic year with a similarly prerequisite-free 200-level unit *Big History: From the Big Bang to Global Civilization*, together with a planned follow-on 300-level unit *World Futures: Where to Now for Globalization?* the latter of which never even got a chance to run. Thus, in the latter half of the very year in which it started, *Big History*—along with the other undergrad foresight units—was slated for cancelation but was subsequently saved, in part by arguing for its uniqueness and importance globally as a highly distinctive course offering, and in part by finding a place for it in the Bachelor of Arts History major, through a heartening example of cross-faculty co-operation (Voros and Bertone 2015). It remains the only surviving undergrad "foresight"-coded unit to this day—although the possibility that *World Futures* might be re-introduced at some later stage was left open at the time of the undergrad cancelation announcements. And it is the only foresight unit at Swinburne that has, in principle, a possible life beyond the end of the formal teach-out of the MSF,[3] with the important exception of (MSF graduate and Swinburne Design School academic) Bridgette Engeler's postgrad *Designing for Change* unit, which we managed to have taken over by the School of Design as part of Bridgette's Master of Design program.

It was, in part, reading these "'not-so-weak' signals" in late 2015 that indicated to Peter and I that the postgrad foresight program was similarly very highly likely to be canceled in the 2016 University-wide review of postgrad programs. And, so it was. As I said above, "it's hard to catch the futurists by surprise," the more so in this case since these signals seemed, to us at least, to be written across the sky in skywriting with thousand-foot high letters!

## What a Difference Personal and Big History Makes

Rowena's small-scale study, mentioned previously, had been based on students filling in a pre-class Myers-Briggs Type Indicator (MBTI) to gauge their preferences along the four indices that the MBTI assesses—Introversion versus Extraversion (I/E), Judgment versus Perception (J/P), Thinking judgment versus Feeling judgment (T/F), and iNtuitive perception versus Sensing perception (N/S). The main result was that iNtuitives were significantly over-represented in the MSF classroom as compared with the broader Australian population: ~90 percent as against ~25 percent. Hence, with Sensates making up around 75 percent of the Australian population and—as Rowena noted—tending also to be well represented in management ranks both in Australia and around the world, it is not surprising that there is the potential for futurists and managers to quite literally "talk past" each other. The MSF class in Rowena's study (the 2002 cohort)

also tended to be slightly more oriented toward Perception, slightly more Introverted, and slightly more Thinking-oriented than the larger population as a whole (Morrow 2005).

I continued to use similar MBTI profiles for a few more years to inform the "overall style" of my teaching with respect to the "overall preferences" of the group/cohort. My recollection of the later cohorts is that the I/E, T/F, and J/P indices tended in aggregate to balance out over the next few years to no particular bias overall for the MSF classes compared with the wider population, even as some groups were slightly lopsided in one or other index in different years. However, the N/S split remained quite marked for all of those years, and appears to have been an enduring feature of the (self-selected) MSF cohorts of the first iteration (although the data from that time is now long lost, so I cannot be completely certain, and am admittedly now relying on my subjective recollections). The futurist-manager split in the second iteration of the MSF mentioned above was not a great surprise to us, therefore, since it had already been foreshadowed by Rowena's earlier work. If this effect holds more widely, then it might be legitimately possible to use insights like these to better "pitch" foresight to organizations. However, that remains to be investigated further, given the small sample sizes involved to this point.

Thus, this may be one reason why, as almost anyone who has ever tried to teach Futures (or to undertake Futures work in or for organizations) knows from first-hand experience, some people do not initially "get" Futures/Foresight very easily and may baulk at the frankly outlandish idea of basing *real* strategy development or policy planning on such a nebulous conception. The hallmarks of this effect have tended to be manifested, in my experience, as puzzled frowns, not-fully-present glazed-eye looks, fidgeting during presentations or workshops, argumentative counter-opinions and even open hostility, sometimes even to the point of shouting at the speaker. Maree and I certainly experienced some of this in FPU (Conway 2016). Perhaps this was simply the fundamental N/S split revealing itself, of which we were wholly unaware at that time, although we had suspected that differing forms of cognition might be involved and implicated in people "talking past" each other (e.g., Voros 2001). At any rate, this represents a possible avenue of more detailed future investigation for interested researchers to follow up.

Peter's research had found that the growth of "foresight" as a capacity of consciousness is strongly associated with certain stages of development of the "Self" as studied by Jane Loevinger and other researchers (such as Susanne Cook-Greuter), stages that have at least some basis in chronological age (Hayward 2008, chap. 4). The postgraduate students who had so "taken" to foresight seemed, from his data, to be centered around a certain "later" stage of Self-development compared with those who had not—essentially, starting to make or having already made the transition from a "conventional" to a "post-conventional" Self. Indeed, subsequent to Peter's work, it was actually possible to "spot" people in other Masters units (e.g., in my MBA Corporate Strategy classes) who, so to speak, did not seem to properly "belong" there—by which I mean that these students were rather more like MSF students in terms of their Self-development and associated cognition, and seemed (to me, at least) to be as out of place in the MBA classes as some MBA students had seemed to be in the MSF classes—in both cases, metaphorically, almost like fish out of water. A few even mentioned to me that this was how they felt and came across to do the MSF, even before the dual MBA/MSF was created later on. In fact, during the eighteen-year run of the MSF, we did have quite a number of students who decided to take an MSF unit as an elective toward or at the end of their MBA or MEI, with a few of whom ending up staying to do the whole MSF (i.e., they stayed, on the strength of their experience with us, for *another* Masters!), with the first of these occurring as early as 2003/2004. It is fair to say that they usually tended to display aspects of Self-development and cognition more closely aligned to what Peter found in the initial MSF students than in the (MBA) controls.

In brief (as Peter reported), research into human self-development has shown that the Self-stages over the lifespan can move through three or

four main bands—each comprising several substages—known generally as Preconventional, Conventional, and Postconventional (with a further *Post*-postconventional also beginning to emerge in the relevant research literature). For our purposes here, the two main bands of interest are the Conventional and the Postconventional, comprising substages usually rendered as Conformist, Self-Aware, and Conscientious for the Conventional band, with Individualistic as the transition to the Postconventional, and with Autonomous and Construct-Aware in the Postconventional band proper.[4] Peter also remarked (pers. comm.) that the language used by students exiting Conventional (i.e., leaving behind Conscientious) and entering Postconventional (i.e., moving into Individualistic) was typically marked by what these students stated they were *not*. Although they were now aware of their prior Conventional selves as a construction (which is one hallmark of the Postconventional Self), they still tended to use the language of their prior selves to indicate that they were now in effect consciously *dis*-identifying with that prior self. As a result, we very often heard people say that, even as they were interested in doing some sort of postgraduate study, they were *most certainly not* interested in doing an MBA—often with an exclamation mark or two attached to this statement.

Peter found that most of the MSF students then entering the course assessed at Individualistic or above, with a few at no lower than Conscientious (i.e., very-uppermost Conventional), by contrast with MBA students who tended to assess as mostly Conscientious, with some Self-Aware, and a few Individualistic. By year's end for each cohort, the center of gravity of each group had effectively moved up by a half-to-one stage or so—more solidly Postconventional for the MSF students (almost all now Individualistic, with a significant number at Autonomous and a couple at Construct-Aware)—and predominantly centered around Conscientious for the MBAs (i.e., still predominantly Conventional). See Peter's work for much more detail, both theoretical and empirical (Hayward 2008).

The primary upshot of all this for foresight as a capacity, though, seems to be the effect of the correlation between the Self-stage and the degree of complexity of cognition as well as the timeframe that the cognizing Self "inhabits." Concrete operational thinking and linear time appear at Self-Aware, with the emergence of formal operational thinking and a longer time span of linear time—past, present, and future—emerging at Conscientious. The transition to Postconventional Individualistic appears to mark a shift to early postformal modes of thinking (i.e., systematic, metasystematic) and the emergence of a sense of the Self's whole life situated in historical time, this sense further expanding to encompass the entire space-time continuum at the Construct-Aware stage, where paradigmatic and cross-paradigmatic cognition are often active. Thus, while a rudimentary strongly linear form of foresight turns on in the later Conventional stages, it appears that really "big-picture" systemic/global foresight requires at least an early postconventional Self-stage to be present. Since the MSF was initially designed to teach this big-picture systemic/global flavor of foresight—the descriptions of which had in part prompted the cohorts of self-selected students to sign up—it is in this sense that we were able to "spot" people whose dominant mode of cognition seemed to be incommensurate with respect to the dominant "average" mode of cognition in a classroom, whether in the MSF or not, as noted above.

From these observations, one might speculate that exposing students to considering their whole life embedded in historical time—not to mention historical time embedded in the totality of all of time itself over the entire history of the universe (i.e., Big History)—might thereby in some sense "prime" them to activate aspects of cognition that might help them grasp "future time" and "futures" just a bit more fluidly and easily than without such a priming. The later Self-stages tend to emerge later in life, which of course has obvious implications for the types of foresight and futures thinking that may be prevalent in an age-based cohort, and therefore, for the type of foresight teaching that may be well-matched to any such age-based cohort. Given the chronological aspect that may be present in stage-related development, this may explain why

undergraduates as a cohort were so much more challenged by foresight thinking than were postgraduate/MSF students—they typically tended to be a decade or two younger—even though, informed by Peter's research findings, we stepped back from doing anything like "full-blown" postgrad-style futures for the undergrads and, instead, sought to present material more concomitant with their inferred "average" cognitive/Self-development. These observations about stages of the Self provide one possible avenue of further investigation, as do Rowena's observations on the personality profiles of foresight students, including their being overwhelmingly iNtuitive versus Sensate, as noted earlier (Morrow 2005).

The main take-away point for me, though, is that when I started to teach undergraduate *Big History: From the Big Bang to Global Civilisation* in early 2015,[5] it was quite clear from the very first group that the extremely long view of Big History seemed to markedly defray this difficulty with undergraduate-aged students getting their heads around *the future*. The final lecture in the 12-week *Big History* curriculum is, of course, about The Future, and the materials I chose to introduce were a selection of the materials from the old *Foresight Theory & Practice* unit, which were themselves drawn from the introductory unit(s) of the MSF, the *Knowledge Base*, and *Methods 1* in particular (Hayward and Voros 2016). I did not observe anywhere near the same degree of difficulty in the majority of students being able to "grok" the thinking or content that the original *Foresight Theory and Practice* undergrads had had, even though they were arriving at this material at pretty much the same time—namely, a 200-level introductory course with no formal prerequisites. I even remarked to Peter about this at the time, and we had quite a few discussions trying to work out why this may be the case. In the end, I put it down as most likely due to the diachronic perspective and thinking instilled into students who are confronted so forcefully with *really* "deep time." As I wrote at the end of the report on the (then) sixteen years of the MSF, which Richard had asked Peter and I to write (Hayward and Voros 2016, 10),

> The main observation we have, though, is that students simply *love* Big History—even students not taking a history major come to it on the strength of what it tries to do—it provides a way for them to understand the whole of the past, literally, and their place in the grand scheme of things. But we also observe that students really, and I mean *really*, "get" 'civilisational futures' as a result of being introduced to the Big History perspective. After a 14-billion-year run-up, their thinking does not, and cannot, stop in the present. In contrast to our experiences over the years, by introducing Big History it is not necessary to have to 'bash' the future into the thinking of present-moment focussed students, something that had always been a source of frustration to us. We have thus discovered that one of the best ways to teach an openness to *futures* thinking is to introduce students to *the whole of the past!*

I might add that this somewhat ironic effect was even true for postgraduate students as well. We had introduced a new "energy transition" unit in 2015 at postgraduate level called *Powering 21st Century Innovation?* with the question mark put there deliberately as a form of subtle provocation (Hayward and Voros 2016). The early part of "P21" undertakes a whirlwind tour of Big History as a precursor to preparing to examine deeply the energy basis of our present-day information-based technological civilization, by also trying to understand the energy bases of *all* human societies that we are currently aware of by way of paleoanthropology, archeology, and history "proper" (i.e., conventional history based on written sources). Even for non-foresight students taking P21 "cold," as it were (i.e., without any prior foresight study), the long "run-up" provided by the Big History perspective did seem to tend to make "switching on" foresight cognition just that bit easier for them. That is, while it has always been true that having other students in the class with foresight experience has helped provide nonforesight students with both a "pacer" and support for their (fairly accelerated!) learning, it does very much seem to have become just that much easier for the nonforesight students with a basis in Big History than it had been for those students before Big History

had become part of such a "panoramic-view" unit as P21.

The temptation to attribute this effect to the introduction of the Big History perspective is intense, which is perhaps why it needs such careful further investigation. In this regard, Richard Blundell's doctoral work investigated empirically the claims of "transformation" brought about by Big History education that many Big History educators have made over a number of years (Blundell 2016). This appears to have been the first such attempt to submit these claims to a formal empirical test—and the results do seem to suggest that these claims are not without a reasonably firm foundation in fact. He found that, among several other aspects, what emerged from the "Big History transformative learning" experience of undergraduates who had taken a Big History course were "narrative awareness and disruption, . . . causal thinking, . . . and emergent-future thinking" (Blundell 2016, 6). All of these are of course relevant for Futures thinking, as well as for any attempts to teach it. One hopes that Blundell will eventually publish these findings in the open archival literature to enable easier access for interested researchers to both follow up and to extend this work. For now (pers. comm., email 14/3/2018), it appears that his dissertation is the only source available to gain access to this work, which is, fortunately, freely downloadable in full from Macquarie University's research repository.

Another very valuable related resource is the book edited by academics at Dominican University of California, a small liberal-arts college north of San Francisco, where Big History forms the core of the first-year student experience and is an essential foundation for subsequent study in later years (Simon et al. 2014). In a similar vein, those authors suggested that,

> Because the Big History framework illuminates the structures that underlie the universe, it is a powerful analytic tool. Because its structure binds together content from all human disciplines, it is a powerful pedagogical tool. Finally, because the structure of the Big History narrative parallels the structures of the physical universe, *even as it tells the story of those structures*, Big History is at once narrative and meta-narrative. All this makes Big History an intuitive vehicle for critical thinking, and for rich, innovative intellectual exploration within students' and teachers' home disciplines, as well as within Big History itself. Perhaps most importantly, a Big History understanding, in reframing all of human knowledge in a way that makes intuitive, logical sense, prepares us to consider possible futures, premised on the patterns we see in the past, and empowers us intellectually to act to shape the future. (p.12)

They then note that,

> Four years later, our assessment shows that it's working. Our students report that they understand the world differently. They perceive the connections among their various courses and the larger context in which their studies in their majors make sense. They are bringing their Big History understanding into their other classes—so that discussions and academic work throughout the university are informed by this larger context. And they are attuned to the future and to their own agency in shaping it. (p.344)

Hence, both Blundell as well as Simon, Behmand, and Burke note that, in addition to many other benefits stemming from a Big History perspective, students of Big History are opened up to emergent-future thinking and become more open and attuned to the future, while also deriving some of the key thinking skills we ourselves as futurists seek to instill in students during our foresight teaching. Their observations are entirely consonant with many of my own over the last few years, and so I firmly believe we would do well to incorporate their many insights into our teaching of Futures.

## The Use of (Big) History in Futures

Of course, history and historical thinking play a very strong role in Futures thinking. Ossip Flechtheim saw very early on in the development of the Futures field that both history and a "future-oriented analogue of history" would share many elements in common (Flechtheim

1966). More recently, "macrohistory" has been used as a framework for developing insights into large-scale social change (Galtung and Inayatullah 1997; Inayatullah 1998), which is part of a broader systematic approach to using social change and social change theories as a way to frame the present as a moving (synchronic) instant in (diachronic) processes of change viewed from narrower or wider lenses (Bishop and Hines 2012, chap. 4; Galtung 1997; Voros 2006). It is as part of this schema of ever-widening nested contexts that Big History finds its natural home as one of the widest contexts it is currently possible to use (Voros 2015b, 2017a).

The easiest way to frame Big History as such is to discuss how and where it fits into the Generic Foresight Process (GFP) framework (Voros 2003). A full exposition of the place and role of Big History in the GFP schema can be found in Voros (2017a), to which the interested reader is directed, as it is the most up-to-date and complete formulation yet given of it. Here, given space considerations, I will only sketch this relationship very briefly.

In essence, the GFP conceives of "foresight" as a process of information-gathering and -processing, where each "phase" takes as its input the output of the previous "phase" to generate or refine futures-relevant information directed towards the focus of the overall foresight engagement (I write "phase" in double quotes because these are not rigidly separate "stages" but rather overlapping "waves" of activity that do have certain conceptual boundaries, albeit actually quite porous; picture overlapping sinusoidal patterns offset from each other). The main phases are as follows: Inputs, Analysis, Interpretation, Prospection, and Outputs, which latter can then lead/feed into further processes of Strategy/Policy development and planning (Voros 2017a). Each phase has associated with it certain types of method that depend on and pertain to both the main activity of that phase and to the particular context in which it is being carried out. Inputs gather information from a variety of relevant, critically examined, and carefully chosen sources. Analysis tries to categorize these inputs and data into either predefined categories based on some already-assumed model (often a framework chosen and to be used in the Interpretation phase), or to allow the categories to simply "emerge" from the data and inputs so gathered. In the Interpretation phase, a conscious choice is made regarding the framework of understanding that is to be used to make sense of and (indeed) interpret the gathered information. This can be carried out at various levels of "depth." A generalized layered schema was also developed within the GFP, based on the work of Slaughter, Inayatullah, Graves, Beck and Cowan, Wilber, Meadows, Checkland, and various other systems thinkers and investigators of the workings of human consciousness (see Voros 2017a, Sections 3, 4 and 5 in particular). Useful here also is Slaughter's framework for conceiving of foresight practice operating at various levels of scope/depth: pragmatic, progressive, and civilizational (e.g., Slaughter 2002b, 232).

Prospection uses the framework of understanding chosen in the Interpretation phase to define the context and scope in which the "prospecting" of the future will take place. Clearly, a scope confined to examining trends occurring within a single industry sector to try to increase sales without changing business practice (a solidly "pragmatic" approach) yields a quite different set of forward views than a scope looking to the future of human civilization or even humanity itself over the long term (a clearly "civilizational" one). Thus, the appropriate choice of frame is crucial to the potential usefulness of any prospection being undertaken. Within one of the formulations of the layering schema of the GFP, there are five main layers of "depth" at which prospection may be conducted—Event (the shallowest), Trend, System, Worldview, and Historical (the deepest), although these last two are conceptually very closely intertwined. It is here that historical, macro-historical, and indeed *Big*-Historical change find their natural home, in sublayers of the Historical level. At the deepest part of the Historical level, below ("ordinary") historical and even macro-historical change, one finds Big History, encompassed by SETI (the Search for Extra-Terrestrial Intelligence), encompassed by Astrobiology

(the study of the possibilities for all life in the Universe, not just intelligent), encompassed finally by Cosmic Evolution itself (Voros 2017a, Figure 6). At this stage in our knowledge, no further enfoldment is supported by the scientific evidence, although "multiverse" theories are being entertained, possible empirical observations are being considered, and potential experimental observations are being devised. It will be fun to watch whether the enfoldment possibility space enlarges in the coming years.

Big History, therefore, represents a scope of investigation that is commensurate to framing examination of large-scale social change on a macro- or global level, as well as framing our thinking about our planetary civilization itself and how it has come to be. I claim, therefore, that Big History also represents the ideal framework for considering the *future* of human civilization at the macro- and global level—and especially as it pertains to the energy basis of our societies and planetary civilization—given Big History's fundamental use of an "energy flows through matter" systems-based approach (this claim is discussed and demonstrated more fully in Voros 2017a, Section 6). But it also—by dint of the intellectual journey it undertakes as well as by dint of the content of the curriculum that it covers—ideally prepares students (of any age[6]) to "situate" themselves in the present moment informed by a much vaster social, biological, geological, and even cosmological context, as well as by a much deeper understanding of the many forces and processes that have brought us here through all of time, than most other even deliberately "broad" survey courses can manage to do. It, therefore, also invites students to not only consider the deep past that lies behind and gave rise to us but also consider the possible futures that may lie ahead, which the momentum contained in the long trajectory leading from the Big Bang to our global civilization implies. I cannot prove this, but I strongly believe it to be the case, based on what I have observed in my teaching of Big History, at under- and postgraduate levels, as well as in other public outreach and professional activities over the last several years.

## Why a Grounding in Big History Can Help Futures Pedagogy

So let me finish by detailing some varied collected thoughts about how I think Big History can aid the teaching of Futures thinking and contemporary Futures work. As noted earlier, these are based largely on my personal (anecdotal) observations and ruminations over the past several years, from a time before I taught Big History, as compared with afterward. I hope they can act as useful testable starting points or provocations for further more rigorous research by those who may seek to confirm, to refine, to challenge, or even to refute them, all of which are thoroughly necessary and sincerely welcome. This list is not exhaustive, and I am sure more will occur to me once this paper is sent off to the journal for final publication, but in short and among other things:

**Big History helps engender a *diachronic* perspective**—a view that can more easily see "through time" rather than being embedded or stuck at one, usually *this*, moment. With a nearly fourteen-billion-year run-up through the past "behind" us (at least in Western cultural thinking), it is almost impossible to stop still here in the present without also considering the deep time that by implication and symmetry lies "ahead" of us (although Dator's 2002 observations about other cultures' views of the future would be an interesting contrast to this view). Students who have been confronted with the deep time of Big History seem to have little difficulty applying this "through time" perspective to our present circumstances, and to ask deeper questions about where we may be headed and what we may wish to accomplish during our comparatively brief tenure on this planet, whether as a species or as an individual. If we genuinely aspire to our (rather arrogant) taxonomic designation as *sapiens*, Big History can help tame and frame consideration of the question of how we can truly act with any semblance of wisdom, because:

**Big History introduces the most important current scientific theories and their evidence base,** which helps engender a critical

and evidence-based view of truth claims. In the words of the International Big History Association (2016), "Big History seeks to understand the integrated history of the Cosmos, Earth, Life, and Humanity, using the best available empirical evidence and scholarly methods." Because Big History always discloses the evidence base upon which the truth claims of science and historical scholarship lie, it thereby promotes an engagement with carefully examining and critically contemplating that evidence, as well as with the development over time of our knowledge about the universe and our place within it. Thus, it promotes evidence-based thinking through a deeper critical engagement with how our thinking is based upon and influenced *by* evidence, as well as demonstrating how our then-current knowledge is always contingent *upon* what evidence we have at any specific time—and that that knowledge can change in an instant with the emergence of *new* observations or evidence. At the same time,

**Big History provides an overview of many of the basic scientific concepts underpinning much of what is important in modern futures thinking**, such as climate change, to name one of the most pressing, or genetic modification of organisms, to name another that has a high potential impact. Because Big History deals with the key ideas, rather than the detailed (often mathematical) mechanics, of science and scientific thinking, it provides an accessible foundation of important scientific concepts that can be used to understand—at least intuitively—some of the most important challenges currently facing humanity. Climate change is seen in million-to-billion-year increments, as it swept over the Earth multiple times, together with the likely causes of such changes and their effects. Genetic modification of organisms is seen on similar timescales, together with the mechanism of that change and the responses, often rapid, of organisms attempting to adapt to climatic change. Geological processes, such as those giving rise to fossil fuels, are seen to take ten-to-hundred-million-year timescales, showing most clearly how the availability of fossil fuels is but a "blip" in the long history of the Earth, and that our easy access to them is very much, as Joshua Floyd (2012) has it, "a brief anomaly." Through confronting us with these stupefying expanses of time and scale,

**Big History shows how human history is inextricably linked to the history of life on Earth** and to the history of the Earth itself. Students who have taken a Big History course do not need exhortations to understand how our destiny as a species is intimately tied to the destiny of other species, or to the very integrity of the biosphere. We can see, therefore, from a Big History perspective how waging a conventional all-out war against the microbes is an ill-advised fool's game we are almost certainly destined to lose. A Big History viewpoint operates mercilessly to humble the hubris of humans who might imagine themselves as somehow apart from other animals and from Nature. We see when and how we came to acquire our one great attribute—our large brains and our ability to share collectively the knowledge contained in those large brains; although we do not yet seem to have learned how to appropriately direct those large brains toward the most pressing task and highest responsibility we face, namely, our stewardship of Planet Earth.

**Big History primes thinking about contingencies.** The various mass extinctions over the 3.8+ billion-year history of life—and in particular, the end-Cretaceous extinction of the dinosaurs that gave rise ultimately to us, for which the most widely accepted hypothesis currently is that of an asteroid impact—show how events, history, and change processes can take any of a number of multiple possible pathways in an eye blink (Alvarez 1997, 2016).[7] If the end-Cretaceous impactor had been a few minutes either side of its fateful appointment with the proto-Gulf of Mexico, we might not even be here. Thus, students of Big History, armed now with their diachronic view of "this place/moment in moving time," can stand in the present and see the fan or cone of the many possibilities that lie ahead, knowing that none are fixed and nothing is guaranteed or fated. This ability to imagine a "contingency space" of possible options from which to choose is the very foundation for scenario- and emergent-future thinking (Blundell 2016), as

well as being the ultimate epicenter of hope for judicious human agency. Furthermore,

**Big History provides a deeper understanding of the energy basis of human civilization** by tracing the development of humans from hunter-gathering through the familiar "three Waves" of Toffler ([1980] 1981) as the techno-economic bases of human societies have changed over historical time (Smil 2017). One of the most pressing choices we currently face, as a now planetary-scale civilization, is how to transition from a techno-economic base founded on (exceedingly temporary, on Big History timeframe) fossil fuels, which has dangerous climatic and strategic geopolitical implications, to another that does not. Students of Big History can clearly grasp, informed by an increasing ability to see in terms of more numerous contingencies and a growing capacity for diachronic thinking, that certain choices of technology and energy basis do not necessarily have a very long futurity. Civilizational collapses of the past make this abundantly clear and provide important lessons for contemporary humanity (Diamond 2005; Tainter [1988] 1990). *This expanded capacity for "diachronic-contingent cognition" could well be the single most important factor in the continued survival of our species* over the longer term. However, if we now wish to consider what our more immediate future may be as a planetary civilization, we can also do this the more wisely, since,

**Big History provides the most natural framework for considering (present-day) "civilizational futures.**" Our present planetary civilization has grown, like those that came before it, out of the past; but it differs in scale, if not also in kind, from all past civilizations. Every person alive at any particular time always stands at the very end of history-up-to-that-moment, facing the coming future equipped with the cognitive tools of their epoch. Richard Slaughter (2002a) hoped that Futures could become a "civilizational catalyst," leading the way to "help create the foundations of a new civilization." As one of the strategies he identified to enable that catalysis, he suggested that "the recovery of the capacity for grand narratives brings with [it] the possibility of recovering panoramic accounts of futures" (p. 361). It is difficult to imagine a grander narrative than the 13.8-billion-year story told by Big History—from quarks to consciousness; from hydrogen to humanity; from the Big Bang to global civilization. We have now become, and are increasingly aware that we have become, a planet-changing species. We have become as powerful as a force of nature, literally geological in scale. However, at the same time, we now also have an emerging cognitive framework for understanding our place in the scheme of things, which is wider, grander, deeper, and better founded on evidence and fact than any who have gone before us. And, perhaps, this is not before time . . . . Hence,

**Big History frames The Anthropocene** as the place where human agency over historical time has (finally) bumped up against the limits of the biosphere, as the authors of the *Limits to Growth* first told us was so nearly half a century ago (Meadows et al. 1972). We find ourselves here in the Anthropocene where, as it were, Big History and the Big Future meet (Voros 2015b, 2017b). There can be little doubt that the fate of the Earth is now very clearly, as astrobiologist David Grinspoon (2016) has it, "in human hands." Let us hope with him, therefore, that the Anthropocene is not merely an event, like the end-Cretaceous extinction event (although the strong analogy of the iridium signature at the K-T/K-Pg boundary with the radio-nuclide signature of nuclear testing in the mid-twentieth century CE is chillingly compelling), or even an Epoch, like the recently departed (in some views) Holocene. But, rather, let us hope that it is the first stirrings of an evolution to a *new Eon* in Earth's geological record—the Sapiezoic Eon—when an expanded and ever-expanding cognition becomes the primary guiding force of the planet's history, when the Earth may finally make the full transition to a planet governed by well-utilized intelligence and compassionately applied wisdom, to become, as Grinspoon (2015) has it, *Terra Sapiens*: Wise Earth.

## Concluding Remarks

Big History appears to provide a way to equip students of all ages with many of the skills needed to grasp key aspects of futures

thinking, not only cognitively but perhaps also at even deeper emotional and intuitive levels. Moreover, Futures thinking seems to emerge as an almost unimpeded natural follow-on from the very long view of the whole of the past that Big History provides. And so perhaps it may be possible to use the popularity and utility of Big History—at primary, secondary, and tertiary levels of education—to provide a solid grounding, basis, and scaffolding for the equally (if not even more) important and increasingly urgent task of teaching futures thinking to the generations who are to come after us and govern this 4.6-billion-year-old planet.

This is why in recent years, in both public outreach and professional talks, I have come to regard and portray Big History and Futures Studies as a "cosmic perfect match"—a "multidisciplinary marriage of timely moment" between multidisciplines perfectly suited to the sense making and action that we humans need to undertake at this critical time in the history of our civilization, our species, and our planet (Voros 2015a, 2017b). Therefore, may the children of the (hopefully fecund!) marriage of Big History and Futures Studies be engendered with all of the virtue, wisdom, and foresight that our species now desperately needs so much, so urgently and in such measure.

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## Notes

1. Indeed, I would argue that a modern form of Stoicism updated to the twenty-first century (cf. Becker [1998] 2017) would be an ideal "philosophy of life" to adopt for futurists in/of the Anthropocene, because of the sanity mechanism and pressure-release valve it can introduce into one's life, both of which can help tremendously to prevent the mental burn-out and emotional desolation that is becoming ever more prevalent in these increasingly trying times. However, this is something for another time and place . . . .
2. There are many translations of this famous phrase to be found on the Internet, together with various commentaries on it. My favorite rendering goes something like, "There may one day be pleasure in recalling even this (i.e., these events)."
3. Although, at the time of writing, a new review of the BA History major is being conducted, and so *BH* may soon once again find itself in the dreaded "course review cross-hairs."
4. These academic research terms derive mainly from the work of Jane Loevinger as expanded upon by Susanne Cook-Greuter (2000, 2005). Torbert and associates (2004) and Rooke and Torbert (2005) use the somewhat more "business-friendly" terms: Diplomat (Conformist), Expert (Self-Aware), Achiever (Conscientious), Individualist is retained, Strategist (Autonomous), and Alchemist (Construct-Aware).
5. This was made *much* easier because there was by then a purpose-written undergraduate textbook, whose authors I knew personally and who had so generously shared with me their insights, advice, and even course materials (Christian et al. 2013).
6. While Big History was initially developed for tertiary-level education (e.g., Christian 2004; Christian et al. 2013), it has also been formulated for preschool (e.g., Gronek 2010), primary-school, and secondary-school levels; the Big History Project funded by Bill Gates (www.bighistoryproject.com), for example, is aimed at both secondary-school students and life-long learners.
7. As a matter of interest, Walter Alvarez, the geologist on the team that proposed the asteroid impact hypothesis in 1980, has been teaching Big History for well over a decade, and was a catalyst for the founding of the International Big History Association in 2010.

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