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RETROFITTING THE FUTURE: ANTHROPOLOGY IN A TIME OF CRISIS

Barry Rodrigue

Abstract: This paper considers human development in the light of our rapidly changing world and in the context of anthropology and big-history. Summarising the common origins and goals of these two fields, the author makes a case for past human innovation serving as experiential models from which new strategies may be developed in cooperation with science. Far from being primitive, the half-million-years of human adaptation to a wide range of ecological and situational niches around the world have been extraordinarily diverse. Such adaptive abilities hold pragmatic promise for humanity. The author sees the cooperative engagement of traditional and scientific knowledge as a process in which anthropologists can serve as active social mediators, providing survival benefits to present and future global civilization. This paper considers some of these issues, approaches, and implications.

Keywords: Adaptive Technology, Anthropology, Big History, Traditional Ecological Knowledge (TEK), Future Studies, Indigenous Heritage, Adaptation.

As earlier shared in *Man in India*, there are robust links between the fields of anthropology and big-history (Rodrigue, 2019b). I continue that assessment here by considering how both studies might more consciously address changes that are needed to ensure the survival of complex humanity and its global civilization under the impact of our modern-day crises. In brief, it encourages us to think about the applications of our work, as informed by our professions.

Evolution of Scholarship

The academic study of humanity began as a component of natural-philosophy, a field of inquiry that had come together a millennia ago as a result of the vast increase of Afro-Eurasian interaction along trade routes. The natural-philosophers sought to join understandings of nature with more systematic forms of assessment to distinguish facts from opinion in their pursuit of proto-topics like botany, economics, anatomy, geology, mathematics, zoology, and physics (Megill and McCloskey, 1987; Hagen 2019; Rodrigue, 2019a).

Science, at that time, meant all knowledge. So, a natural-philosopher, or 'scientist,' as the term was first used in 1834, could focus on one of the topics in their broad curriculum or bridge across them, in what we might nowadays call *disciplinary* and *interdisciplinary* learning (Markel, 2010). For example, William and Caroline Herschel began their professional careers as accomplished musicians, but their studies in natural-philosophy led them to become renowned astronomers by the late-18th century (Hoskin, 1986; Winterburn, 2014).

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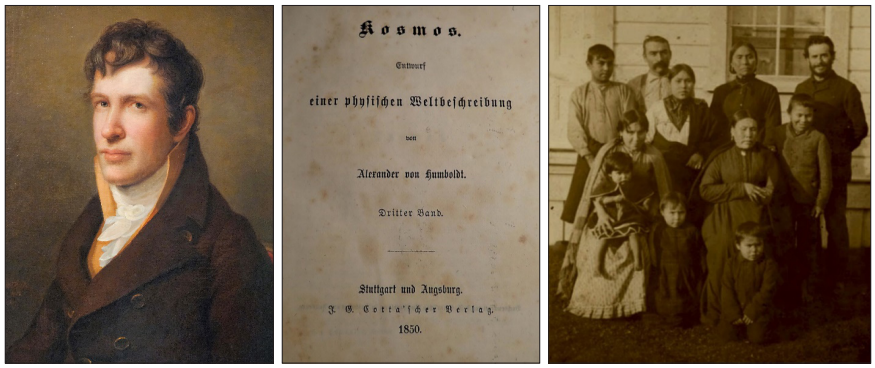
Such research often engaged with difficult abstractions, as in Isaac Newton's study of gravity, which he first laid out in his *Natural Philosophy of Mathematical Principles* (1687). This was a profound achievement, as gravity exists all around us, but it was not readily conceived without new forms of mathematics, as developed by Newton and Gottfried Leibniz. Such intangible concepts were vital for understanding science-based reality, and natural-philosophers worked to identify and distinguish them from ancient, quasi-mythical theories.

Some dubious notions were eliminated or transformed. For example, *aether* had been thought to be a fifth element of non-earthbound space and matter; it was debunked by physics, but today it is being reapplied by some to mean dark energy (Rubik and Jabs, 2018). The conceptualization of *culture* was another foundational concept. Like gravity, *examples* of culture lie all around us, but the *concept* of culture was difficult to formulate (Rodrigue, 2019a).

Increasing encounters between urban- and nature-based societies led to identification of all humans as one species, *Homo sapiens*. This was not an easy understanding, especially in a world riven by race, slavery, and other marginalizing categories. We see this process of defining culture in the fieldwork of natural-philosopher Alexander von Humboldt. He encountered many societies at the turn into the 19th century, which led him to reconsider culture in the world. (Eibach, 2023).

Along the banks of the Orinoco River in South America, Humboldt had watched tribal boys rub dry seeds together, which attracted plant fibres. This discovery of electro-magnetism led him to ponder humanity's shared quest for knowledge: 'In such remote valleys, millennia of bygone discoveries by humans are tucked away.' (Humboldt, 1845: 195; author's trans.). His work culminated in a five-volume study of all known existence, *Kosmos* (1845–1862).

This holistic masterpiece of natural-philosophy came off the presses just as university studies began to divide into more narrow, focused disciplines and departments, an academic transition that grew, in part, from the advocacy for educational reform by his brother, Wilhelm von Humboldt. (Wulf, 2015; Mattig, 2020). The deepening of studies into smaller components resulted in much new detail, while the eclectic form of natural-philosophy increasingly appeared in this new academic infrastructure as *interdisciplinarity*.



Figures 1: Left – Portrait of Alexander von Humboldt by Rembrandt Peale, c. 1810. Photograph by Penelope Markle. Centre –Jacket of vol. 3 of *Kosmos* (1850). Image from Wikimedia Commons. Right – The family of anthropologist George Hunt (back left) with Franz Boas (back right), Fort Rupert, British Columbia (Canada), 1894. From Whiteley 2008: 13. [Picture Courtesy: Author]

We see this academic realignment in the career of anthropologist Franz Boas, who was first trained as a physicist and geographer. Strongly influenced by the work of the Humboldt brothers, he became an anthropologist after his interdisciplinary study of Inuit perception and adaptation in the Canadian Arctic in 1883–1884 (Cole and Müller-Wille, 1984; Schaffer, 1994; Mattig, 2020). Boas' work spanned several disciplines, which he united in his four-field approach of archaeology, ethnology, linguistics, and physical anthropology. In this way, he continued the holistic perspective of natural-philosophy within the study of humanity.

Besides anthropology, the persistence of natural-philosophy continued in the work of interdisciplinary scholars like geographer Alfred Wallace, educator Maria Montessori, biologist Kinji Imanishi, and philosopher Jiddu Krishnamurti (Christian, 2010; Rodrigue, 2023a: 140–42). Interdisciplinarity gained new life in the World-War Era with the vast expansion of technology. As a result of this new complexity, wider connections arose between concepts, as when anthropologist Leslie White identified *energy* as a central concept in universal and human studies.

> Everything in the universe may be described in terms of energy. … Culture is a kind of behavior. And behavior, whether of man, mule, plant, comet or molecule, may be treated as a manifestation of energy. Thus, we see, on all levels of reality, that phenomena lend themselves to description and interpretation in terms of energy. (White: 1943: 335).

Thirty years later, astrophysicists George Field and Eric Chaisson also described energy as key to understanding our place in the universe. After a century's hiatus in the academy, a modern version of natural-philosophy reappeared in a form that would have been recognizable to Alexander von Humboldt. This revived framework

came to be known as *cosmic-evolution* (Field and others, 1978; Chaisson, 2001; Rodrigue, 2019a: 217–18).

In the humanities, a decade later, this new field was named by historian David Christian as *big-history*. Among Soviet scholars, it was considered a modern expression of *universal history*, while some social-scientists in East Asia called it *universal studies* (Christian, 2001; Nazaretyan, 2016; Rodrigue: 2023a: 142–43). As expressed by the International Big History Association:

> Big history seeks to understand the integrated history of the cosmos, Earth, life and humanity, using the best available empirical evidence and scholarly methods.

Chaisson adopted the metric formula of energy-rate density (the amount of energy in a unit-of-time passing through a given mass) as a way to compare the complexity of all entities in the universe. His resulting *complexity-ratio* then identified human society as the most complex object in the known universe (Chaisson, 2010; Rodrigue: 2019b: 217–18).

Strategies of Human Survival

The slow steps to locate humanity in the context of nature had long preceded the relatively recent scholarly fields of natural-philosophy, anthropology, and big-history. These understandings incrementally grew, once social-cognition arose among hominins a half-million years ago. Migration and climate shifts led to further adaptation, complexity, and networking among humans. The quest to comprehend the world around us merged with magico-religious beliefs to varying degrees (Rodrigue, 2022a; Shavit and Sharon, 2023; Chandrankunnel, 2022).

Historical-psychologist Akop Nazaretyan noted some key factors in this path of human development. *Techno-humanitarian balance* allowed our ancestors to adjust their behaviours in response to new technology. This social restraint promoted survival. In addition, different ways to accomplish the same results – *redundant variety*, provided diversity of choice, while collective learning allowed humanity to share these lessons through time and space (Nazaretyan, 2017; Baker, 2016).

Those who did not develop these abilities perished, and so, today, we are the only surviving species in our lineage. This mortality – individual and collective as well as biological and social – is important to remember … amid today's global problems. A significant shift in the last two millennia has been in humanity's worldwide interaction, a synergy that led to the start of a global civilization. It arose in an unplanned way, spinning off from exchange networks and, lately, enhanced by communication technology, especially computer and IT systems.

So, when we consider the technological wonders of the modern world, we need to think back to our ancestors – to our forefathers and foremothers who took their living from the land, sea, rivers and hillsides of the ancient world. We also should

think about many of today's indigenous and rural peoples who are custodians of these traditions, as well as mediators between old and new ways. Such reflection should not be a focus of just antiquarian interest but should also reflect a concern for our sustainable adaptation to life on a rapidly changing planet.

Glittering Crumbs

I began to think about this connection between the old and the new as a boy in the eastern borderlands of Canada and the United States. On low alpine peaks along the coast of Maine, small, overgrown trenches are seen cut into granite ledges. 'What had miners been prospecting for – gold, diamonds, silver!?' we wondered. It turned out that these quarries had been dug a century before to extract mica, a volcanic form of silicon. The word translates from Latin as 'glittering crumb,' and, as you walk up abandoned tote roads, the ground still sparkles with thousands of mica fragments that fell off horse-drawn carts.

Mica is inert, flexible, lightweight, non-conducting, and opaque. In India, 2500 years ago, it was added to pottery to strengthen it. An ingredient in paints and ayurvedic medicine, it was used in the 19th century to make windows in carriages and stoves, to shield lampshade fabric from a candle flame, and as insulation for electrical sockets and even bread-toasters. Today, mica is used in atomic-force microscopy for high-resolution, three-dimensional micro-imaging (Singh and others, 2021; Siddall, 2018; Wijenayake and others, 2014; Margolin, 2000; Wang and others, 2001).

This is an example of how older uses of materials and artefacts have migrated into more modern applications. In anthropology, atomic-force microscopy is being used in a variety of ways. It helps to diagnose wear marks on Palaeolithic tools, assess techniques of ceramic manufacture, and diagnose the health of ancient bodies (Kimball and others, 1995; Mishmastnehi and Holakooei, 2015; Bianucci and others, 2012). Human ingenuity has allowed such long-known materials to be adapted to more modern needs over and over again in the course of many generations.

This paradigm of transferrable technology is the backbone of material sciences. Pigments that our ancestors developed for use on the walls of caves, like Lascaux and Duogate and Blombos, have been developed for use on the walls of the international space station and even sent to Mars (Faber and others, 2021; NASA, 2012).

This process came into focus with my academic research on Euramerican migration into the northern Appalachian Mountains. In 1995, I discovered the remains of a half-dozen farms on a wooded hillside in Concord Township, many kilometres from any existing dwelling. This hamlet lay on a primitive road system that linked Canada to the United States, so it had been an important rural crossroads 200 years ago (Rodrigue, 2021).

I surveyed the farms and roadways with photos, measurements and sketches, then hiked back through the forest at the end of the day to my campsite. In my tent that night, reviewing my fieldnotes, I realized I'd neglected to measure the causeway that ran through the hamlet! I got up at 5 o'clock the next morning. It was raining. I ate breakfast, as the rain got worse. I crossed the Kennebec River and began hiking through the forest. The rain came down even harder.

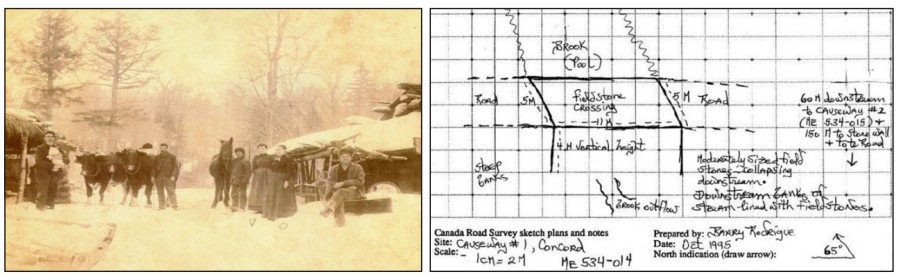


Figure 2: Left – Woods camp near the village of Caratunk, Maine (USA) in the late 19th century. Courtesy of Howard Mitchell. Right – Field sketch of Causeway No. 1, Concord, Maine USA. [By Author 1995.]

This torrential downpour was fortunate, as I got to see the causeway in action. A causeway is a stone bridge for humans and livestock to cross a stream, while allowing the water to pass beneath and minimize erosion. This causeway still worked brilliantly, almost 200-years after its construction. The water pooled upstream and drained through the stonework, leaving the bridge-crossing dry and the stream-bed intact.

I described this experience and showed my field-plan (Fig. 2) to the owner of a hunting lodge, who said the design would solve a problem for them, since their modern causeways washed out each year in spring floods. This began my professional thinking about using old methods to solve modern problems, a specialty that could be called 'futures archaeology' or 'retrofitting the future.' The simple adoption of old techniques, however, is not enough, as not grasping the use-details can cause big problems.

An infamous example lies in the story of the sailing-vessel, *John F. Leavitt*. In the wake of the oil shortage of 1973–1974, people began to search for alternatives to petrocarbon products. One of these initiatives was a well-designed adaptation of a traditional coastal-schooner that was developed in Maine. The vessel was 30-metres long and had two masts rigged with fore-and-aft sails. In December 1979, it set sail down the eastern seaboard of the United States with a cargo of lumber bound for Haiti in the West Indies.

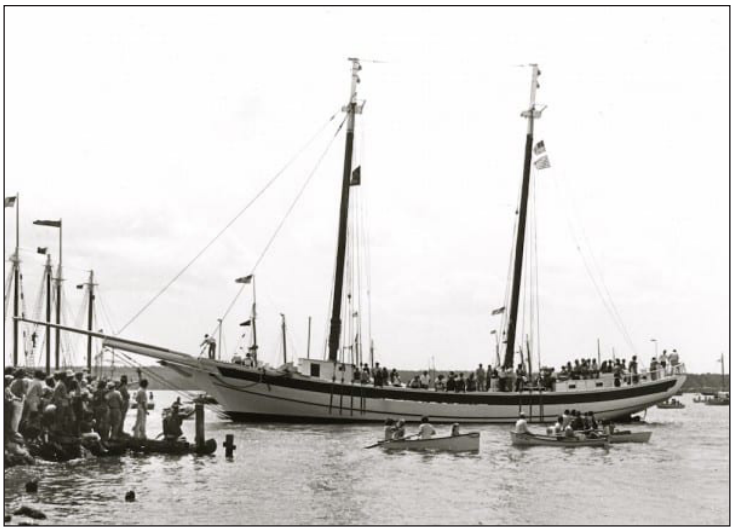


Figure 3: Launching of the coastal schooner, *John F. Leavitt*, Thomaston, Maine, c. 1979. From: Off Center Harbor, Brooklin, Maine.

The schooner foundered in moderate seas off Long Island, New York. It was determined that the captain and crew did not have enough familiarity with off-shore commercial sailing, the understanding of which had been lost since the 19th century era of 'wind, water and wood.' As a result, the ship sank unnecessarily (Koltz: 1980: 40–42). An entire knowledge-based system needs to inform the adoption of materials and technology.[1]

Bridges to the Present

In 1994, the Alaska Native Science Commission was formed for academic-based and tribal-based communities to better engage with each other on projects of mutual concern. One of these was the Alaska Traditional Knowledge and Native Foods Database, in which the U.S. Environmental Protection Agency and the U.S. National Science Foundation participated with members of the 231 tribal entities in the state. Such efforts serve to promote the deep knowledge of tribal communities with scientific methods and needs (Alaska Native Science Commission, 2024).

In Southeast Alaska, indigenous peoples, anthropologists and field biologists began to more actively come together in the 1990s to discuss significant fluctuations in commercial fisheries. A result of over-fishing and habitat destruction, the problem was then exacerbated by pollution and climate change. The question raised was how *traditional ecological knowledge* could help fisheries science engage with today's problems (Ratner and Holen, 2007).

Among other strategies, it was learned that the Tlingit community had fashioned halibut hooks to avoid capture of immature fish and large breeding females, while intertidal weirs had been built to capture salmon only at ebb tide. Such traditional designs had allowed for sustainable harvests to be balanced. In 2005, the World Wilderness Congress in Anchorage assembled presentations about traditional sustainability and the use of wild resources (Ratner and Holen, 2007).

As a result of this kind of interaction, architectural studies of traditional housing among the indigenous peoples of Alaska led to construction of new housing forms in Anaktuvuk Pass, a Nunamiut Eskimo community in the Brooks Mountain Range. A remote village on hilly tundra in a subarctic climate, life is arduous for its 300 hardy residents. Not the least of its challenges has been to maintain warm, healthy homes, given the cost of shipping supplies from hundreds of kilometres away (Cold Climate Housing Research Center, 2024).

Figure 4 : The Anaktuvuk Pass Prototype Home, which incorporated traditional indigenous design with new sustainable systems. It was built in 2009 as a collaboration with the Tagiugmiullu Nunamiullu Housing Authority, village of Anaktuvuk Pass, Cold Climate Housing Research Center, and students from Iḷisaġvik College. From the Cold Climate Housing Research Center: <http://cchrc.org/anaktuvuk-pass-prototype/>.

In 2009, a prototype home was built by merging traditional design (berm embankments / sod roof) with high-tech design (wind / solar power and aerobic sewage treatment). It resulted in a cut in the cost of house construction and a reduction in annual heating fuel use by a factor of ten (Cold Climate Housing Research Center, 2024).

On the other side of the Bering Straits, in Siberia, anthropologist Anatoly Shtyrbul at Omsk State Pedagogical University noted that so-called 'primitive' societies possess the knowledge needed to adapt to future conditions (Shtyrbul, 2006). Echoed by archaeologist Stephen Scharoun in Maine, who studies 18th and

19th century farm technology and management, these techniques are seen as a way to mitigate costs for local food production (Scharoun, c2004).

In such a spirit of farm revitalization, Alexander Petroff developed a model of sustainable regionalism that was adopted in the Ruzizi Valley Project of eastern Congo. Residents of surrounding urban slums resettled plantations abandoned by Belgians during decolonization in the last century. Their success not only fed the settlers but also the surrounding region (Petroff, 2010; idem, 2011; Working Villages International, 2023).

These are not unique views, since many have advocated the same for years. In the United States, *Foxfire* magazine was begun in 1966, the *Whole Earth Catalog* in 1968, and the *Small Farmer's Journal* in 1976. These are the kinds of technological compilation begun by encyclopaedists in 15th century China and 18th century France. Victor Papanek devoted his life to such issues, as in his book, *Design for the Real World* (1971). The University of Applied Arts Vienna (Austria) continues his legacy of social responsibility, as design anthropology began to emerge in the 1990s (Papanek Foundation, 2023; Ventura and Bichard, 2016).

Since the 1980s, agricultural-scientist Anil Gupta of the Indian Institute of Management in Ahmedabad has researched grassroots innovation by farmers throughout South Asia and disseminates his information through his NGO, the Honey Bee Network (Gupta, 2023). Similarly, physicist Priyadarshini Karve transitioned her PhD research at Pune University via collaborative NGOs, such as OrjaBox to promote healthy, sustainable cooking for rural and urban families, and Samuchit Enviro Tech, a public communication network for sustainability. (Karve, 2023).

Figure 5: Left – Group discussion with a tribal farming community in Andhra Pradesh (India) to learn about their cooking-energy needs in 2018. Right – An improved clay *chulha* [cookstove] with chimney in a rural kitchen in Assam (India) in 2017. Photographs courtesy of Priyadarshini Karve and Samuchit Enviro Tech.

These kinds of efforts had largely grown out of global concerns in the 1960s and 1970s, during the Cold War, when movements to prevent nuclear war expanded across the globe to address additional concerns about environmental degradation, minority rights, human well-being, and many others. It was also in this milieu that

big-history and participatory anthropology arose (Hemment, 2007; Sumathi and Pandiaraj, 2020).

Such activities continue today, but they have a new urgency – since the calamities that earlier activists predicted are now becoming a reality. We live on a planet confounded by costly energy, pollution, and too many people. We are trying to adapt to collapsing infrastructures, as disparities in wealth and resources widen. The climate crisis has bloomed with a host of related problems, from war to famine and inequity (Minocha and others, 2023; Rodrigue, 2023b). Many efforts to remedy these crises do not require complex international treaties or crores of rupees. They can begin with individuals, families, and communities.

For example, architecture student Kyohei Sakaguchi wondered why there were 6 million empty homes in Japan, but new construction was always underway … and why there was so much homelessness. He envisioned a new kind of sustainable design and began to work with the urban poor on the Tokyo streets to learn about their homes and lifestyle, which he shared in the *Zero-Yen House* (2004). His book, *Build Your Own Independent Nation* (2013), questioned the illogical status quo in our times of crisis, and its proposals made it into a national best-seller.

He also refurbished an abandoned house in his hometown of Kumamoto to accommodate dozens of refugees from the 2011 Fukushima Tsunami and nuclear disaster. In his work, Sakaguchi met many vulnerable people and became concerned about rising suicides, and the inability of public systems to help them. So, he established his own personal hotline on a mobile phone – with remarkable success. He has engaged with more than 20,000 in a decade with an almost 100% success rate. For him, life matters and everything is connected (Margolis, 2021; Sakaguchi, 2019).

Eight billion humans are now crowded on a planet with dwindling resources and in the bull's eye of a climate crisis. Low-lying seaboards are flooding, which results in the dislocation of coastal people (Kulp and Strauss, 2019). In India, tens of millions of people will move up the coastal mountains and onto the Deccan Plateau or to the upland areas of north India. And this isn't even considering refugees from neighbouring places like Bangladesh and the Maldives who will be even more affected (Singh and others, 2020; Krishnan, 2023; Sawant, 2022).

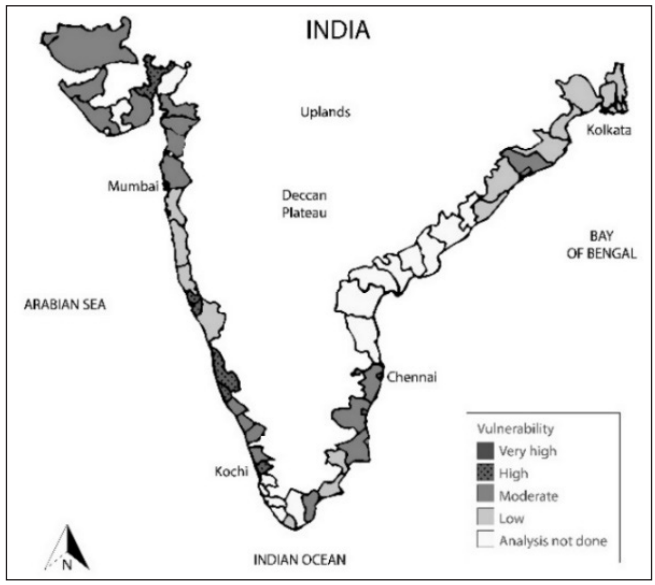


Figure 6: Above – Flooded streets in south Mumbai, 23 September 2021. Image from Asian News International. Below – Coastal floodplain data of India. Map derived from The Energy and Resources Institute, New Delhi and redesigned by Midori Batten.

Large parts of the Deccan Plateau are semi-arid with the good topsoil already under cultivation. North India's cities are facing their own problems, as global warming melts Himalayan glaciers, the main source of their water. In all areas, groundwater is being drained (Raizada and others, 2018; Roy, 2019; Aslekar and others, 2022).

India's problem is a global problem. There is no natural solution and little national or international preparation to remedy the crisis. An overall challenge we face today is to develop a new form of interacting global / regional / local civilization. Global civilization is fragile (Ehrlich and Ehrlich, 2013; Kothari and

Joy, 2017; Rodrigue, 2015). Anthropology and big-history could be important components of this process.

Anthropology, Big History and Adaptive Technology

Anthropologists and big-historians have done well in recovering past narratives. Arising out of natural-philosophy, both fields generated concepts that have benefitted lives worldwide. It was not a linear progression but a dialectic of action and reaction … with its synthesis still underway. First, scholars identified social constructs and dynamics, which they then configured into deeper contexts for society to again reconfigure as new cultural expressions and policies.

Anthropology's identification of culture, coupled with study of its global manifestations, led to the understanding of humanity as a single, unified species. We then entered a long process of globally applying this knowledge, such as eliminating racialist, gender and class barriers – from slavery and eugenics to colonialism. It was not easy, and it is a social action still going on (for an example, on caste issues, see Mosse, 2018).

Big-history underwent similar transformations. Its adoption of complexity metrics initially led to reductionist scientism, which was especially dominant in western academia. In contrast, Asian scholars, along with others globally, advocated for the application of big-history knowledge to everyday life, notably for policy changes regarding ecology and the climate crisis (Wong and Lau, 2023; Rodrigue, 2023a, 2023b).

Now, we have entered a time when new applications of our studies are urgent for the survival of large numbers of the world's people and our global civilization. It is imperative for anthropologists and big-historians to be more intentional and active advocates for social change. This kind of engagement certainly is not new, especially for heritage sites vulnerable to natural disasters, as in the well-publicised concern for the inundation of the UNESCO World Heritage Site in Venice. In India, similar concerns have been raised (Ferrarin and others, 2022; Menon, 2014).

But what of the lesser-discussed, more profound disasters – ones that will directly affect the well-being of millions of individuals and families? Twenty years ago, India was listed third among the world's nations for number of disaster events, second for disaster victims, and fifth for disaster costs. This was a decade before the climate crisis began to seriously manifest itself around the world. (Jha 2019: 4). What now of India's coastal floods and the impending migration of millions?

The basis for our work on this one concern has already been laid. India has a rich history of urban development and water conservation on which to draw, from Harappan times to the present. Considering how these venerable traditions might be merged with modern technology and social planning might help ameliorate the Deccan migrations (Rajabi, 2023; Subodh, 2019; Vijayshankar and others, 2011).

Much of this information is already available, if not published.

For example, Talakad was a city that rose at a bend in the Kaveri River, on the south-west Deccan Plateau. Beginning over 1500 years ago, it was linked to earlier sites and societies, both indigenous and in-migrating. Its people confronted conflict and ecological crisis by the time it was finally overwhelmed by sand-dunes 500 years ago. Among its survival strategies were protection from floods and conservation of water, as well protection from wind, sand, and invaders (Devaraj and others: 1996: 60–63, 90–99; Krishna Murthy and others: 2019: viz. 28–50).

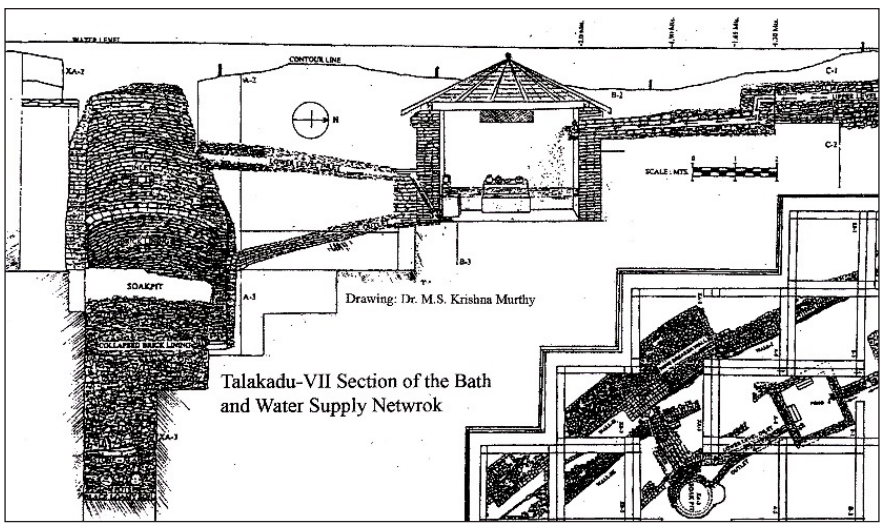


Figure 7: Cross-section of bath and water-supply system at Talakad on the south-west Deccan Plateau by the Kaveri River, c14th century C.E. Karnataka (India). Drawing by M.S. Krishna Murthy. Krishna Murthy and others 2019: Fig. 10.

Another problem faced in the climate crisis is conflict among disrupted populations. Research on violence has been less in anthropology than that of material culture, but peace-building studies – like public anthropology – arose in the Cold-War era (Bräuchler: 2022). In big-history, Japanese social scientists adopted macro-perspectives to promote accord, as with the Institute of Global & Cosmic Peace, which arose in reaction to the U.S. threat to put weapons in near-Earth orbit (Nakanishi, 2016; Nakanishi and Tsujimura, 2016).

In the Soviet Union and Russia, Akop Nazaretyan documented how humans have managed to reduce violence over the last million years, despite development of ever more lethal technologies. His Law of Techno-Humanitarian Balance includes not just weaponry but chemical contamination, racism, reduction in biodiversity and, indeed, any behaviour that negatively impacts humanity (Nazaretyan, 2010). So, as he saw it, while we are confronting today's crises, ones in which many will perish, there is hope.

Humans are the *Children of Climate Change*. Our lineage survived because of our ability to adapt to major disruptions. When the Ice Ages began, our ancestors came out of their forest habitat and onto the savannahs of East Africa, where they developed new cooperative skills to survive. Just as natural-philosophers came to understand and implement the concepts of gravity and culture, we humans today also need to conceptualize and foster new behaviours and abilities for adaptation to the present and up-coming crises (Rodrigue, 2022a).

Conclusion

Both anthropology and big-history have the skillset to engage with and successfully promote humanity's challenge to survive the present climate, resource and migration crisis. As scholars of humanity, we should think of ourselves as social mediators. It isn't a matter of giving up our present research projects, but to instead consider how they might be adapted to the present-day benefit of humanity. Our work can be prescriptive as much as descriptive.

Our indigenous and rural societies as well as many other grassroots communities are repositories of knowledge and ways of learning that the modern world will increasingly come to rely upon as our access to cheap fuel dwindles and the damage from industrial waste increases. This suggestion is not to advocate for a celebration of primitiveness or ethnic identity but rather to acknowledge that we need to establish a world heritage commons, in which the best ideas are assembled and adapted.

The choices are simple. If we do nothing, billions will die and our hard-assembled global civilization will crumble, if not into dust, then into dictatorship and chaos. In the past, migration was a remedy to many problems. Today, we do not have anywhere else to go. We need to face reality and – consciously, intentionally – adapt to the crises we face. The world and its civilization are in our hands.

Note

1. Examples in this section as well as a few other portions appeared in a volume of presentations from the Second conference of the International Big History Association (Rodrigue, 2014.)

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