Nations around the world in an interconnected globalized 21st century aspire to establish their own local innovation ecosystems whose archetype is California’s Silicon Valley—that cauldron of cutting-edge technology change.

Thus, India has Bangalore, China Beijing and Shenzhen, Germany has Berlin, Kenya has Konza Technology City, Chile Santiago, Russia has Skolkovo, Israel Tel Aviv, and the United Arab Emirates has Dubai, to name a few.

Not to be outdone, a group of American cities are also hard at work to create their own Silicon Valleys. These include Boston, New York, Los Angeles, Chicago, Austin, Las Vegas, Denver, Phoenix, and even Detroit.

Nations and cities around the globe covet the building of such thriving innovation ecosystems because they are veritable value creators; with jobs, wealth and development.

But what is history’s earliest such ecosystem and what shaped its breakthrough? The intriguing answers to these questions came to me fortuitously as I was rummaging on the results of my own DNA test.

Journey into Deep Time: While I am an American citizen and have now lived in the United States for more than half of my life, I was born and grew up in the Philippines, that geographical crossroads in Southeast Asia—a former Spanish and American colony—where different peoples, ideas, cultures, languages and religions have come together over millennia.

My brain cannot conjure up the thousand-year ancestral trail that led me here. However, its map is deeply etched in the big data of my DNA, the global positioning system that I share with my forebears as they migrated across continents through deep time.

To unlock the memories embedded in every cell that makes up my body, I had a sample of my DNA deciphered for its ancestral linkages.

As I had anticipated, my genome laid bare the fact that I share genes with different peoples—70% with East Asians (China, Russia, Japan, Korea, Mongolia, Thailand, Indonesia), 25% with Pacific Islanders (Samoa, Tonga, Fiji, New Zealand [Maori], Hawaii), 4% with South Asians (India, Pakistan, Nepal, Bangladesh) and about 1% with Africans.

The report that I am 25% Pacific Islander was a bit unexpected. That I am 4% South Asian and 1% African, however, caught me by complete surprise.

More stunning, however, was the gradual realization that indeed my genetic makeup subtly unveiled the molecular mileposts established by my ancient forebears during their odyssey across continents that thousands of years had shrouded for its ancestral linkages.

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More stunning, however, was the gradual realization that indeed my genetic makeup subtly unveiled the molecular mileposts established by my ancient forebears during their odyssey across continents that thousands of years had shrouded
and almost buried. What’s more, the ancestral migration paths retraced by my molecular GPS align with the external fossil and archaeological evidence mapping out the migration of modern humans out of Africa into the Arabian Peninsula, South Asia, East Asia and beyond.

Out of Africa: Evidence points to the emergence of modern humans (Homo sapiens) in Africa around 200,000 years ago. Trekking out of Africa, they reached the Arabian Peninsula as early as 100,000 years ago. Some of them continued their journey on to South Asia and reached East Asia as early as 60,000 years ago. The oldest remains of modern human (the Tabon man) found in the Philippines date back to 50,000 years ago. This was approximately the same time that modern humans reached Australia, or about 10,000 years before Homo sapiens set foot in Europe, and about 40,000 years before modern humans arrived in North America. Humanity was an unstoppable river that flowed out of Africa into the other five continents that we now fully inhabit.

The double-helix record of my ancestral origin more specifically points to Africa’s south-central hunter-gatherers region around South Africa, Namibia and Botswana as my primeval cradle in deep time. From there, my ancient forebears migrated out of Africa likely through Ethiopia, crossed the Red Sea into the Arabian Peninsula and traversed the Persian Gulf into South Asia (India). One line likely continued journeying through Thailand, Indonesia, and into the Philippines, while another probably migrated through China, Taiwan, and into the Philippines. Some of my direct forebears stayed in the Philippines, but others continued their migration by sailing into the Pacific islands of Samoa and Tonga. Some probably reached New Zealand, some perhaps reached Hawaii.

Thousands of years later during the latter part of the 20th century, I resumed this epic ancient odyssey, starting off from the Philippines, and migrated into North America.

Humanity is not a noun. Humanity is a verb. And this perhaps accounts in part for my own peripatetic predilection and tendencies.

Surprisingly, I feel a sense of wholeness if not pride in discovering that I retain, however vestigially, an African heritage in 1% of my genes, which is almost a molecular mark of distinction for my forebears’ intrepid trans-continental journeys.

An Unheralded Fact: But why did my ancestors, having migrated out of Africa, continue journeying while others stayed in and around the Middle East? And, more important, what subsequently made those first modern humans abandon their nomadic ways of life as hunter-gatherers, stay put and transition into sedentary agrarian communities?

These questions are not new, and have been addressed substantially by anthropologists based on archaeological evidence. What is intriguing, however, is that the specific community of modern humans to make the first collective decision to cease from wandering and settle as a permanent agricultural community constituted the world’s first de facto technology innovation ecosystem. How so?

Prelude to Innovation: Archaeological evidence locates the first sedentary or semi-sedentary settlements by modern humans in the western part of the Fertile Crescent, which comprises today’s Jordan, the Palestinian West Bank, Israel, Lebanon and Syria, beginning around 14,000 years ago. With a warmer and moister climate in the region owing to the ending of the last ice age, the place was fecund with plant life, including cereal grasses (wheat, barley), as well as animal life.

With bountiful food available for foraging, the region attracted bands of nomadic hunter-gatherers, of whom the most important were the Natufians. They settled in villages around the region, most notably in an oasis in
the Jordan River Valley, which became Jericho, part of today’s West Bank. While archaeologists located other Natufian settlements in the Fertile Crescent, including Wadi en-Natuf in Northern Israel (from which the name originated) and Ain Mallaha in Syria, Jericho was the most significant because it became what is claimed to be the oldest continuously inhabited settlement in all history.

It should be noted that though the Natufians settled in villages, they remained hunter-gatherers. Their new sedentary life nonetheless represented a sudden radical departure from the historically nomadic lifestyle which had required constant migration, forcing them to live in small bands of only about 20 to 30 extended family members to maintain a sustainable population for each band. Since a peripatetic band could not feed too many infants or support sickly elderly members, the band either had to abandon or kill them. A sedentary life made possible by an abundance of food available for foraging in and around Jericho, however, eliminated many of the harsh strictures of nomadic existence. The Natufians could now feed their infants and did not have to abandon the elderly. Their population increased, and for the first time in nearly 190,000 years, a group of modern humans experienced living within a large sedentary community of an estimated 200 to 300 people, probably the largest community up to that time.

Jericho allowed the creation of a hitherto unprecedented form of interactions among modern humans within a large and semi-permanent community. It was the first time that they experienced, and more than likely enjoyed, regular, extended, and networked interactions, communication and cooperation within such a setting. It was an ecosystem for sharing information, and received knowledge as well as individual and group experiences.

**Genesis of an Innovation Ecosystem:** Inevitably, however, the Natufians’ increasing population overran the available food in and around Jericho, and they were faced with a severe dilemma—either maintain their new village lifestyle but risk starvation or return to their historical nomadic way of life by migrating to different locations where available food could be foraged.

We do not know what choice was made by the first Natufians who were faced with such a dilemma, but we do know that archaeological evidence exists for the remains of a six-acre farming settlement in Jericho dating back to 11,600 years ago, arguably the earliest remains of a farming settlement in history. Thus, sometime between 14,000 and 11,600 years ago, a group of people—faced with rapidly dwindling food resources—made the collective decision, not to return to a nomadic hunter-gathering lifestyle, but to settle as a permanent community by designing an innovative solution that would meet their food demands.

This community of Natufians in the Jordan River Valley arguably constituted history’s first good-sized innovation ecosystem, producing the world’s first breakthrough technology innovation—agriculture.

With the necessity for food serving as a compelling driver to innovate, a confluence of factors made it possible for this community to function effectively as an ecosystem. First was their preconditioning to share knowledge and exchange information as facilitated by their sedentary community lifestyle. Second was the extensive database of practical knowledge and observations on all things edible they had accumulated through their experiences as foragers.

As a group, they must have discussed which plants were edible; which grew fast and produced the most food; how they propagated and multiplied through seeds; what soil and water conditions were required for their growth; where water could be sourced; what animals were edible; which animals were docile; and so forth. It was through such interchange that these Natufians developed the practical knowledge necessary to their eventual conception of agriculture. And third, the entire community was fully invested into the project that all the members...
The approach to agriculture became more refined to involve division of labor, skills specialization, governance structure, family and individual private ownership, and so forth. All these, of course, together with the emergence of artistic and religious expressions and other advances, worked together and contributed toward the development of towns, cities, and ultimately civilizations. With the eventual widespread adoption of agriculture throughout the Fertile Crescent in the following centuries and its independent development in other continents, agriculture transformed the course of human history.

Creating Innovation Ecosystems: Today nations around the world constantly attempt to duplicate Silicon Valley, though none has yet to succeed fully. This is because merely bringing together the major factors of an innovation ecosystem, including universities, entrepreneurs, companies and investors, does not create the algorithm for a robust and dynamic society. Such ecosystems require deeply held values that become their raison d’etre, creating unique energy and vitality. It is not the decision to produce innovations that makes such an ecosystem happen. It is the why behind that decision—the values that propel it, shared and held by the members—that galvanizes and makes it happen.

Cultivating community connections created the values that conceived the ancient Jordan River Valley innovation ecosystem over 11,600 years ago. And it is championing individual freedom and creativity—that arguably constitutes the values which still energize today’s Silicon Valley.

Genuine assimilation of the values of an innovation ecosystem by its major actors is what informs and motivates people to take risks, be boldly creative and build the new frontiers of innovation.

Necessity vs. Values: It needs underscoring, however, that the necessity for food could not have been the exclusive or even the principal factor that compelled the Natufians to innovate and invent agriculture in the process. With 190,000 years of history of nomadic existence to hunt and gather, the Natufians would have had no problem getting up and leaving the Jordan River Valley to search for food in other locations if nutrition was the only important thing to them at the time.

But they clearly valued things other than food that they were not willing to leave behind. This led them to innovate so they could maintain their sedentary lifestyle and preserve what they valued. Certainly the Natufians must have valued the practical comfort of living in a long-term shelter and all the conveniences this provided. What they valued most, however, must have been their newfound community connections, that is human connections within the setting of a large and permanent village. To them, such connection in a settled environ provided a greater sense of belonging, security and sustained fellowship in contrast to the enduring loneliness, the dread of constant exposure to unknown dangers and the harsh human realities (infanticide, inbreeding) that accompanied small-band nomadic lifestyle.

Cultivating community connections thus epitomized the values of the ancient Jordan River Valley innovation ecosystem. The Natufians engineered a breakthrough system, agriculture, to meet their demand for food, enabling them to maintain their values. Most notably, they did not only design a technology innovation to produce food but, even more, they applied their values to shape how their innovation would be implemented.

Thus, the Natufians practiced agriculture through community cooperation, with the participation of men, women and children. Over time, the cooperative

must have resolved to give their effort, time and other resources to achieve their innovation.

References: