

Narrative Two: Evolution and Culture

Imagining an Intricate, Intimate Dance of Evolving Human Nature with Evolving Human Cultures

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Abstract

This paper imagines that we humans are biologically wired to be good. Such a controversial notion might invite one to imagine what evolutionary processes would have occurred to hard-wire us that way, and to imagine what particular kinds of goodness would have emerged in the evolution of our remote ancestors? If we imagine that we would be good by nature, how then, might we imagine, could it be that, so often, we seem to act so badly? We might imagine that it would be our cultures that incline us to act badly, and that our cultures would be working in partial contradiction to our wild-evolved hard wiring for goodness. And then we might feel compelled to imagine how such seemingly strange and perverse cultural developments would have come about.

Our species is about three hundred thousand years old. The last 60,000 years has been a period in human prehistory that is referred to by some paleo-anthropologists as an epoch of "human behavioral modernity". One might imagine that it was during this epoch that our human ancestors began systematically to develop cultures. Since then, one might imagine, every new culture they created would have been premised on some novel and unique tools they were making and on the unique ways they were using them. One might imagine that this epoch of behavioral modernity would have been a time in which our species was increasingly occupied with inventing, implementing and discarding ever more complex tools and cultures in shorter and shorter cycles, with each techno-cultural experiment lasting, on average, only a few centuries, before it mutated. was discarded or was overthrown.

One might imagine that, during this 60,000 year epoch, humankind has been engaged in thousands of increasingly large-scale and powerful technological and social experiments, but that it was only about fifteen thousand years ago that some abrupt and deep shift occurred in how humans organized their technologies and cultures. It would have been a development in which some humans first began systematically to convert other humans into tools and to use them as means to fulfill their needs, desires and intentions. One might imagine that the introduction of practices for instrumentalizing human beings would be at the very root of a shift in which human cultures began, most assertively, to overwrite our evolved and deep inclinations toward goodness.

One might imagine that, in cultures where some humans began to use other humans as tools, such practices would have changed almost everything about the way their people lived and related with one another. But, never-the-less, it would have been a development that seeded a techno-cultural tidal wave that has covered most of the Earth and that would still be gaining strength in our time.

One might imagine that, over the last fifteen thousand years, mostly thanks to our use of other people as tools, our technologies have gotten exponentially more potent, our cultures have become exponentially larger and more complex and we have invented more and more effective means to incentivize people to do our bidding (or to fend off such impositions). But also, one might imagine

that, in the most recent few thousand years, some new selective forces would have emerged, possibly related to an exponential increase in the potency of our cultures, that would be starting to diminish the adaptive value of these most extreme of instrumentalist cultural mutations.

One might imagine that, over the last sixty thousand years, our evolving cultures would have passed through several fairly distinct sub-epochs, with each techno-cultural shift that ended one sub-epoch and began a new one being driven by changes in ways we made and used tools, in the potency those tools and in the novel cultures we would have invented to facilitate the use of our new tools.

One might also imagine that over the last sixty thousand years, human nature has co-evolved biologically under the mutative and selective pressures exerted by our cultures. Imagining this might prompt some further questions: How much would those evolutionary pressures exerted by rapidly changing human cultures have affected our much slower processes of biological evolution? To what degree would evolving cultural pressures have altered our human nature from what it was before our experiment with cultures began? How far, in any stage of developing human culture, can we successfully overwrite or contradict the biological promptings of our evolved human nature? And how, in our everyday lives, do these two sets of promptings, genetic and cultural, intersect and interact?

Deep Connections: Biological Evolution, Tools and Culture

Long before there we had cultures we had tools.

One might imagine that before we became culture-makers we were, we still are, the biological heirs of a very long period of human prehistory and of an even longer period of pre-human prehistory reaching back possibly six million years. and that it would have been only in a relatively brief interval, over the last sixty thousand years, that the evolution of human cultures would have passed through their many stages of development. Seen on an evolutionary time scale, we have been culture-makers for only 1% of our time on Earth. Culture is still a very new experiment in its very earliest stages.

A direct genetic line that led to our species has been evolving for a very long time. About six million years ago, in Africa, a new line of apes emerged, of which modern humans are the latest and only surviving members. The other line of apes, from which our ancestors split off, led to a modern group of primates, of which bonobos, chimpanzees, gorillas and orangutans are surviving members.

Over six million years many species of pre-humans have appeared, then vanished, leaving us modern humans as the sole surviving species in our line. Our species, the first anatomically modern humans, *Homo Sapiens Sapiens*, appeared in Africa only sometime around three hundred thousand years ago.

Several hundred thousand years before that, a few other species of proto-humans emerged who were quite similar to us. Their populations started in eastern Africa and some of them spread out, quite thinly, over much of the Earth well before modern humans ever came on the scene. These species of near-modern humans are assumed to be extinct now. Their evolutionary paths and such cultures as they may have developed, if any, are not subjects of this writing.

Since our remote ancestors split off from the other apes, the most notable feature of the many species in our ancestral line has been the intensive and very intentional making and use of tools. We modern humans are not only genetic heirs but also technological heirs of many pre-human species in our line of apes going back for millions of years. We have solid archeological evidence, going back as far as two and a half million years, that some species of apes in our line fashioned and used tools much more creatively and more often

than our cousins the bonobos, chimpanzees, gorillas and orangutans have ever done. One might imagine that quite early our ancestral species became biologically hard wired to make and use tools. Over thousands of millennia the tools they made very gradually became more and more potent and sophisticated. Over a vast span of time our ancestral species evolved, rather than invented, a gradually diversifying and more powerful kit of tools. These developments occurred so gradually that genetically favored social systems had time to co-evolve with the slowly increasing potency of their tools.

As our ancestral species were instinctive toolmakers, so are we. We use tools to enhance and extend bodily or mental functions we are born with. Our tools are not just extensions of ourselves. They also become part of our environment. And when we use tools we change our environment in ways that are far greater than we could ever achieve without them.

One might imagine that, for our ancestral species, over millennia a gradually increasing potency of their tools would have become an increasingly huge selective factor in their evolution. One might even imagine that tool-use may even have become the single most potent force for selection in the biological evolution of our species. In particular, the making and using of tools would have become a powerful force in shaping genetically programmed ways of social interaction for our ancestral species.

Many other species of mammals are genetically inclined to be aggressively competitive with members of their own species. But these species are mostly not tool users and without tools, their competitions do not usually result in serious maiming or mortal injuries. But, if any of our ancestral species had been genetically predisposed to be hierarchical, competitive, aggressive and eagerly acquisitive, one might imagine that the use of better tools as weapons against their fellows would, at first glance, have selected in favor of those groups and individuals whose tools were the most advanced.

Set against that, however, for our ancestral species, would have been a chronic debilitating fear of mortal injury that a possible use of tools as weapons against one's own species would engender. One might imagine that, over extended time tool-inflicted chronic injury and death would have tended to select against dysocial genetic predispositions being passed along to future generations. One might imagine that converting tools to weapons and using them against fellow humans would, over time, have been selected against in the evolution of our ancestral species.

One might imagine that all of the tool technology and genetic programming for sociability inherited by the first modern humans was developed by our ancestral species and for, over, possibly, two hundred thousand years our own species continued to make and use tools and to live sociably, in slowly evolving ways, more or less as our ancestral species had. Throughout our earliest millennia the importance of invention and learning would have been so small for modern humans that it was still only a little greater than it was for our ancestral species. One might imagine that the social ways of life of the first modern humans were shaped almost entirely by the promptings of our genome. Coded in that genome would have been the basic rule sets that shaped their lives and had been passed on to them from their ancestral species.

One might imagine that the slowly evolving genetic programming for social behavior that our own species inherited from our ancestral species had co-evolved with their developing tool-use for at least two and a half million years to favor living in social systems that were gentler, more egalitarian, collaborative, peaceful and sharing than many other species of mammals.

One might imagine that, like most or all of our ancestral species, all modern humans were, until quite recently, immediate return hunter-gatherers. They were probably intensely social, living their entire lives in small, highly stable bands of about twenty to fifty individuals. A given band may have ranged over a territory of a few hundred square kilometers. Their regular breeding populations probably would have been comprised of three to six adjacent bands that cohabited a range of a few thousand square kilometers. Each breeding population would have overlapped on occasion with one or more other breeding populations.

The members within each band would have known one another intimately for all or most of their lives. Except for mating exchanges and other occasional membership transfers between bands, lifelong membership in one's band would have been, for all practical purposes, unconditional. Within groups and between groups, their economy would have been based on non-competitive and peaceful exchange,

collaboration and sharing and was one of modestly affluent subsistence. The social structures of their bands would have been somewhat matri-centric, with a ranking system focusing on the adult females, and that would have been so mild and gentle that it would seem to us essentially egalitarian. Some anthropologists today even imagine that their societies were “fiercely egalitarian”.

One might imagine that we have been hardwired by our long evolution to relate with one another the way those ancestors did. How a robust mutual accord of sovereignty in the societies of early modern humans would have functioned and how it would have been maintained are, so far, poorly understood. But sustained egalitarianism, sharing and collaboration would have been vibrant and vitally important features of those early human groups, features that, if we modern humans understand them, would probably have great significance for how we understand our present-day social systems.

One might imagine that, living wild, in primary human societies, the inner life of nearly all individuals would have been dominated by their parasympathetic nervous systems (comfort and intimacy), marked by occasional bursts of sympathetic arousal (fight and flight), and would have most often been characterized by an almost exquisite sensitivity to one's self, to each other and to their environment.

Although these qualities of social and inner life seem to us to have been cultural, they were not. Like our ancestral species, until about sixty thousand years ago, all modern humans were pre-cultural people. Their way of life was very simple, and probably differed very little from one millennium to the next and from one band and breeding population to another throughout the entire human population.

So, my answer to the first big question: Are we hard-wired by evolution to be good? Yes. I imagine that we are. I imagine that the standards of goodness we humans share are rooted in the co-evolution of our biology and technology. We are biologically hardwired to be affectionate, intimate and closely bonded with a small group of others, to be egalitarian, collaborative, sharing, intelligent and kind with our fellow humans. And, the selective pressures at work in our evolved social hard wiring may have come largely through our species' (equally hard-wired) proclivity to make and use tools.

And among modern humans this would have been the genetically inherited, universally shared way of relating until just about fifteen thousand years ago.

Now follows, somewhat longer, my imagined answer to the big question: How has it come to be that we so often act so badly, at least by the standards of social conduct we inherit from our biological evolution?

An Endangered Species and The Origins of Human Culture

Cataclysms: Near Extinction

We are an equatorial species. Our species has only existed for about two to three hundred thousand years. Before about sixty thousand years ago there is no evidence that any group of anatomically modern humans had successfully settled any place outside of equatorial Africa. And in that time no group of modern humans ever developed a distinctive culture, in the meaning of that word as it is used in this writing. But quite suddenly (in evolutionary terms) something happened about sixty thousand years ago that changed the relationship between modern humans and their world.

Beginning about one hundred thousand years ago a change in the Earth's climate brought on, in a period of just a few years, periods of extreme cooling that enveloped in deep cold much of the Earth's otherwise temperate regions. Some of the cooling periods lasted for many thousands of years. Locked up inside huge glacial fields was much of the water that had formerly circulated through the atmosphere, and flowed above and below the surface. The result was some of the most severe and long-lasting droughts ever to come upon the Earth's equatorial regions.

Throughout the home range of modern humans these droughts lasted for many thousands of years. Then, at some point during the final few millennia of drought, a supervolcano erupted. It sent a cloud of soot and ash into the stratosphere that shut out a large part of sunlight over much of the Earth for several decades.

Coming on top of the glacial drought, the soot cloud almost brought about the extinction of our species. At its low point, toward the end of these trials, the population of modern humans may have been reduced from a few hundred thousand to, possibly, as few as only thousand individuals. We were an endangered species.

Conceptions: The Matrix Cultures

One might imagine that the novel challenges posed by climate-change, chronic water and nutritional shortages, and a gradually thinning population, may have conspired to produce a novel and incisive selective event for our species. Possibly, among a few of the survivors some genetic programming might have ignited a spark of tool making inventiveness. Some of the novel tools that emerged might have proven highly adaptive in responding to those novel and rigorous conditions. One might imagine that coming up with some novel ways to instrumentalize nature was just what was needed to get the survivors through the bottleneck and out the other side. One might imagine that it was these survivors who endowed their offspring with both a genetic and learned ability for inventiveness to adapt to any changes that might occur in their environment.

A new generation of tools does appear in the archeological record dating to the last few millennia of the drought. The innovations people had started to produce in this period likely were focused almost exclusively on developing new and better ways to instrumentalize nature. As they struggled to survive the radical changes in their environment, they may have found themselves inventing and learning to use novel tools of many kinds to help them with foraging, hunting, defense against predators, warmth, shelter and, despite hardship, possibly even adornment, art and play. Beginning a little over sixty thousand years ago, this abrupt uptick in the pace and power of tool innovation is a most remarkable feature of the archeological record from the most challenging era in human prehistory.

This may have been the dawn of a new epoch in human prehistory. Some anthropologists see it as the beginning of "human behavioral modernity".

Environmental challenges began to lighten at about the same time as the sharp uptick in human technology was happening. The ice age began to let up, the soot clouds cleared off and the rains started to come back to the central-African continent. And the population of modern humans began to rebound. They may have come back from near extinction with a newfound sense of resilience and boldness. Possibly this came from their discovery that they had a prolific capacity for quite quickly inventing and learning to use novel tools to adapt to novel circumstances. Perhaps, in this period, they even became self-aware innovators. Such a conscious sense of technological empowerment would have been the seed of the very first human cultures. One might imagine these to be the "Matrix Cultures".

One might imagine that these people were not just inventing new tools and cultures; they were inventing the very foundations of culture itself. One might imagine that development of language underwent a surge of growth in this period. It would have been developments in their making and use of tools and language that laid the groundwork for new cultures during this watershed period. One might imagine that innovations in language and tool making are the co-foundational forces that drive the evolution of human cultures, continuing all the way to the present day.

It is worth noting, at this point in the story, that our species has invented and lived in cultures for just a little over 1% of the time since our ancestral line separated from the rest of the ape species. On evolutionary time scales, our species is very, very new to living in societies that are organized around invented tool use and the cultures it engenders.

Births: The Proto-Cultures

The Matrix Cultures probably were not more than a few hundred to a few thousand years old when some of their bands left the womb of equatorial Africa and for the first time began to occupy lands where modern humans had never before lived successfully. As people spread to the Northern and Southern parts of the African continent and entered regions that no modern humans had previously inhabited, they encountered

eco-systems, climates and terrains in which earlier, less consciously inventive humans had not been able to survive. But these were environments in which Matrix-Culture people quickly learned to thrive.

One might imagine that there was a newfound confidence among Matrix-Culture people that they could adapt to strange environments by intentionally inventing novel ways to instrumentalize whatever nature they might encounter. And maybe this alone emboldened them to leave the African homeland for the first time and to venture into new territories. If not, it seems likely that some newfound ability to invent novel instruments that were appropriate to novel conditions at least allowed Matrix Culture people to survive, and even thrive, in conditions that earlier modern humans would have retreated from or perished in.

As they spread out and settled down, increasing geographic isolation among groups would have led to increasing reproductive isolation as well, and to the appearance of new genetic lineages. Genetic and anthropological records tell us that, between fifty and sixty thousand years ago, several new lineages of modern humans appeared in different regions of the African continent and that these people were using tool technologies that were unique to each group.

Even while some populations of modern humans were reaching most parts of the African continent, others were also expanding their ranges into the Middle East, Central Asia and spreading out along the southern shorelines of the Asian continent.

And they didn't stop there. The genetic record strongly suggests that, once the expansion of human populations had begun, it took only about forty thousand years for populations of modern humans to occupy, pretty sparsely, most of the earth's surface.

The first movement of modern human populations out of the African continent was southeastward beginning a little over sixty thousand years ago. In just a few thousand years they reached and took up residence along the southern shoreline of the Arabian Peninsula. Their populations continued to expand eastward, reaching the Indian Subcontinent and Southeast Asia about fifty thousand years ago. From there they reached Australia and populated the islands to the North and East about forty thousand years ago.

By thirty thousand years ago populations of modern human had reached some of the Pacific Islands. Populations of modern humans also expanded out of Africa to the north and eastward. They arrived in the Middle East a bit less than sixty thousand years ago and in central Asia about fifty thousand years ago. From there human populations began to spread both eastward and westward. Thirty-five thousand years ago they were in Europe and in most of Asia. Some time between twelve and twenty thousand years ago modern humans had reached and settled in most of the Americas.

As they entered new territories, some bands encountered climates, terrains and ecosystems that were radically different, from those inhabited by their ancestors in Africa and from those inhabited along the way as their populations spread across the earth.

Not only were they moving into new biomes, but also the climates of the new lands they inhabited continued to shift radically into and out of minor glacial periods throughout most of this forty thousand year span.

As it had earlier, the survival of the people in novel environments depended on their ability to invent novel tools and new ways of life that were appropriate to local conditions. The materials they used, the instruments they invented and the ways they used them to survive pretty much defined a multiplicity of very distinctive cultures, with many of them using novel technologies never before created by our species. As modern humans spread across the Earth this differentiation of technologies produced myriad new "Proto-Cultures". The forty thousand year Diaspora of our species produced a huge array of Proto-Cultures, the most clearly differentiable human cultures ever to exist up to that time.

In the Proto-Culture stage, as in all later stages, technology was the driving force in the birth and evolution of human cultures. Indeed, in their earliest stages, these Proto-Cultures could only have been distinguished from one another by the unique materials and technologies they used.

Technology and the cultures it fosters change generation by generation. But the parts of the human genome that lay down social programs change more slowly. Although their tools differed markedly from region to region, the social, economic and inward lives of people in Proto-Cultures probably remained about as they had been in the African homeland. They probably still lived lives of exquisite sensitivity to one another and their environment, grouped in small, intimate, highly stable, egalitarian, matri-centric bands with minimally affluent, sharing economies that were fueled entirely by immediate return foraging, gathering and hunting.

Maturation: The Primary Cultures

As groups settled in and their members became more familiar with their new environments, most Proto-Cultures evolved, matured and became more complex and differentiated from one place to another. Many novel features of life developed in this stage, features that emerged from, but did not directly concern, their technologies.

Over millennia, as they spread out and settled down, both their cultures and their breeding populations became more isolated for longer periods. Their ways of communicating became more complex and began to diverge from one another. Unique and complex language systems probably began to develop in this period. Co-evolving with their languages, their ways of understanding the natural world became markedly different from one Proto-Culture and region to another.

Not only their cultures but also their bodies were changing and differentiating. With reproductive isolation came new genetic markers, creating many new lineages and sub-lineages of modern humans. Their facial and body shapes, their skin, eye and hair became different from one breeding population to another.

Through these transitions, virtually all Proto-Cultures eventually came to be the distinctive Primary Cultures that have endured, evolved and adapted over the last forty thousand years and more. A few of these Primary Cultures may still exist in the world today.

But even such significant cultural and genetic changes as these probably did not reach down to alter the deeper genetic social programming of the people. Still they probably maintained about the same social forms and inner lives as our ancestral species had for millions of years. Their group size and social-economic structures probably remained about the same as they had been in the African homeland and during the Proto-Culture period, even though other features of their cultures became more and more differentiated from one group to another in thousands of places throughout Africa, Asia, Europe and the Americas.

A Major Tipping Point: The Meso-Cultures

As humans living in Primary Cultures became more and more adept at instrumentalizing nature and more deeply familiar with the living world they had come to inhabit, some of them began to discover ways to instrumentalize and exploit not just inanimate objects, but other species of living creatures as well. Their relationships with these other species grew to be much deeper and much more technologically sophisticated than those enjoyed by immediate return hunters and foragers

Appearing in this stage of cultural evolution, possibly as early as thirty-five thousand years ago, were early forms of horticulture, seasonal harvesting and preserving of surplus foods, fermentation, the use of fire to manage food sources, consumption of herbs to alter internal body functions, driving of animals, herding, taming and, domesticating animals through human-controlled breeding, and ultimately, yoking of animals to do work. Over millennia, practices of instrumentalizing and exploiting other species of living things became central features of the life in some, but not all, cultures.

Daily use by humans of other living creatures as instruments marked a major watershed in the development of human cultures. Instrumentalizing living things created a distinct divide, separating their ways of life from those of purely opportunistic immediate return hunting and foraging people. Some, but not all, Primary Cultures crossed that divide. Those that did became the first human Meso-Cultures

A major change people realized from living in Meso-Cultures was that instrumentalizing and exploiting other species allowed them to have sustainable bands that were both smaller and larger than had been workable in Primary Cultures. Some Meso-Cultures developed seasonal cycles of co-habitation, in which small subgroups of people fissioned off from larger groups for a few months and then fused back together for a period of time. The small subgroups may have contained less than a dozen individuals and the large groups as many as several hundred individuals or even several thousand.

Practices of instrumentalizing other living things probably were accompanied by a tender and growing sense of personal ownership rights within the groups.

Learning to tame other living creatures was the beginning of humankind taming ourselves. But most of the core features of social and economic life in Meso-Cultures probably remained fairly similar to those in earlier cultures. They probably still lived in mostly egalitarian, matri-centric bands that may have been more affluent than previously, but that were still sharing economies, supplemented in varying amounts by immediate return foraging, gathering and hunting.

Meso-Cultures have proved to be more resilient and enduring than Primary Cultures. Several Meso-Cultures have survived more or less intact into our time, and still thrive in some out-of-the-way places.

Aggregation: The Early-Tribal Cultures

Between fifteen and twenty-five thousand years ago, (more recently in the Americas) as the seasonal cycles of fission and fusion continued in Meso-Cultures, their populations grew and their social traditions deepened, becoming more complex and more differentiated. Some of these Meso-Culture societies grew large and complex enough to morph into Early-Tribal Cultures.

Early-Tribal Cultures developed when Meso-Culture groups became more or less permanently fused, forming much larger year-around societies. The Early-Tribal Cultures were probably fusions of several Meso-Culture groups, whose ways of life were similar and who were part of the same breeding population or of neighboring ones.

These larger groups were able to aggregate primarily because of the power over nature conferred by instrumentalizing other species. They also found they needed to aggregate in order to optimize their management of natural resources and to realize the maximum benefits that flowed from instrumentalizing other species.

The increasing size of some Early-Tribal Cultures was accompanied by growing cultural distinctiveness. Early-Tribal Cultures were, possibly, the first human societies to be large and stable enough to organize themselves into somewhat specialized subgroups.

Even though culture was becoming a more pervasive force in their lives and even though personal and family ownership and property rights were slowly growing in importance, yet, probably, the people in Early-Tribal Cultures still retained most of the social and economic ways of life of earlier cultures.

But for some Early-Tribal cultures huge changes were coming.

Cataclysm: The Late-Tribal Cultures

We live in post-apocalyptic times. With the development of Late-Tribal Cultures, a long-running, human-caused cataclysm began.

Between fifteen and twenty thousand years ago some Early-Tribal Cultures grew substantially larger and became much more differentiated from neighboring cultures. Some had probably grown to at least several hundred and maybe even a few thousand individuals.

Once the size of any human society exceeds about 150 individuals, no member can know every other member intimately, certainly not in the bonded way that earlier people knew one another, when group size numbered only a few dozen individuals. This upper limit on the sustainable size of social groups, called Dunbar's Number, seems to be correlated with cortical brain size and can be seen as a fairly direct function of cortical size across many species of social mammals.

Rapid growth of population in some Early-Tribal cultures meant that their people necessarily experienced frequent, prolonged contact with others in the tribe with whom they were not familiar. They began to face social challenges that were profoundly more difficult than those any humans had ever before faced. The stresses of dealing frequently with strangers may have started to threaten the social fabric of Early-Tribal societies. Some of them probably adapted by breaking back into smaller groups and resuming simpler ways of life.

But at the same time there developed another challenge to human societies. Although human populations were mostly very sparse during this period, in a very few regions two or more significantly different, successful and fast-growing Meso-Cultures or Early-Tribal Cultures began to share overlapping ranges. It was becoming increasingly likely that there would be frequent, prolonged and complex contacts between people of significantly different cultures. These people had to deal, on some occasions, with members of other societies whose appearance, language, tools and lifeways were significantly different from their own. This added a huge new dimension of social complexity for the people - how to deal, not only with strangers, but also with strange strangers.

This is when everything started to change. With the combined "stranger-challenges", it began to occur to some of the people living in Early-Tribal Cultures that they might be able to convert and use as instruments, as tools, humans (these strangers, these "others", these "not us", even these "sub-humans").

What had been unthinkable for millions of years in our ancestral species, and in our own young and essentially egalitarian species, now became thinkable - the idea that humans could be subordinated to and used as instruments of fulfillment. Wherever it occurred, this was the most singular and significant tipping point in the development of tool technology by our species.

It was the transition to Late-Tribal Culture.

For any society the earliest transitions from an Early-Tribal to a Late-Tribal culture might have taken several or even many generations to complete. In that period people would discover that the systematic conversion to and use of other humans as tools could be accomplished in many, many ways and, seemingly, to the great benefit of the users. The shift involved a cascade of social inventions. These were the very first human societies in which their members designed and experimented systematically with the earliest institutional forms of social hierarchy, systems of governance, impersonal forms of commerce and even perhaps began to develop planned practices of armed conquest and plunder, subjugation, extermination, kidnapping, rape, coerced labor and trafficking in humans as chattel. None of these behaviors was entirely new to our species. Certainly there had been isolated occurrences of all these behaviors in the millennia that had come before. But in their time they were aberrations. With the emergence of Late-Tribal Culture what was new was the readiness to hand of potent tools and weapons and the willingness to use them and this made possible an intense, frequent, culture-wide and systematic practice by humans of instrumentalizing other humans and a systematic development of very purposeful means by which to accomplish this as a cultural practice.

The skills, both those of finesse and of brutality, that people had gained through instrumentalizing other species of living things, beginning in the Meso-Culture stage, probably translated fairly well to the challenge of instrumentalizing humans.

It soon became clearly feasible to instrumentalize other people and that doing so offered some distinct personal, social and cultural benefits. In some Late Tribal societies practices of using humans as tools probably grew quite quickly, to become a central organizing feature. Despite the complexity and depth of cultural changes these practices required, they probably developed much more rapidly than previous tool-driven cultural mutations. It may have been kind of cultural contagion. The Late-Tribal cascade of inventions was possibly the most non-linear, powerful, and in some ways of thinking, the most disastrous period of technological development that our species has ever undertaken.

To invent and make tools requires that we subordinate to our will those parts of nature we use in making them. To use tools requires that we objectify, as a "resource", what we take from nature to make the tools. And then it requires that we alienate ourselves from the articles and processes we manipulate with them.

The shift to Late-Tribal Culture demanded members of these societies to make huge cognitive and emotional adjustments, much greater than any cultural change has ever required of our species. People undertaking the transition from Early-Tribal to Late-Tribal Culture must have felt quite keenly what it meant to subordinate, objectify and alienate other humans. So deeply ingrained in the human genome were the old egalitarian ways of relating among humans, that the people of Late-Tribal cultures probably experienced more than a little dissonance as they began to convert into tools members of their own species. But at the same time, one might imagine the novel and intoxicating sense of power that people must have felt as they became increasingly competent at wielding tools that were approximately as powerful and intelligent as they themselves were!

Subordinating, objectifying and alienating strangers also proved, perversely, to be somewhat adaptive. It probably made it a bit easier to manage daily contact with strangers at an endurable level of stress and anxiety in fast-growing populations. At least in the short-run, the social re-organizing and ordering of relationships needed to instrumentalize others may have helped to stabilize growing Late-Tribal Cultures during a period of radical transformation.

The new social practices probably involved a sharp uptick in a sense of ownership and property rights and an accompanying increase in systematic (rather than random or episodic) competition within and between cultures for resources, territory and power.

And it was not just a peaceful cultural contagion. Competition of culture against culture probably played a major role in a rapid spread of Late-Tribal practices. Some cultures, still using more primitive technologies, might have faced fearsome survival challenges from assaults by Late-Tribal Cultures. If they were not quickly destroyed by an encounter with a Late-Tribal culture, the shift to hierarchical social structures and the other forms of instrumentalizing humans may have come very abruptly in some Early-Tribal Cultures, possibly occurring over just a generation or two.

Tragedy: Social Devastation

As the adoption of Late-Tribal Culture deepened in some places, and as its implications became more fully felt, the practice of instrumentalizing people challenged virtually all the essential organizing features of society that humans and our ancestral species had been evolving for at least a few million years. It brought a flood of collateral social inventions that overwrote, but did not delete. the old, genetically programmed ways of relating among humans.

Within just a few generations most of the people living in Late-Tribal Cultures probably could recount very little of the ways people had related with one another before the instrumentalization of humans began. Social life as it had been before Late-Tribal Culture was mostly gone from the conscious memory of most

people, but not from the ancient code for social relationships that was and still is latent in the human genome .

Gone were the days when someone could spend a whole life in daily contact only with people whom one had known from birth and whom one would continue to know until death. Instrumentalizing strangers required weaving them into daily life, and at the same time vigilantly keeping them at a distance. Nearly constant and complex interactions with strangers, with the “others”, became the norm in Late-Tribal Societies.

Gone was universal egalitarianism. The use of humans as instruments promoted the users and demoted the used. Hierarchies in myriad forms replaced egalitarianism as a core organizing principle in Late-Tribal Cultures. So, gone for many of the people were the often-humorous and gentle, but fiercely insistent ways humans had formerly used to maintain a mostly egalitarian society, to soften and discourage efforts aimed at self-promotion or the subordination of others. In Late-Tribal Societies, and ever after, any such attempts to restore egalitarian relations would have been seen by the emerging elites as seditious and occasions for severe censorship.

Gone were the days of matri-centric society. The shift to Late-Tribal Culture brought a radical shift toward various forms of patri-centric social organization. Possibly some women were less willing than the men to deal with strangers, to engage in systematic competition, or to instrumentalize and rank people. The most violent forms of oppression were probably ones that most women ceded entirely to the men. As the women stepped back, they relinquished much of their leadership role as the core of and force for social cohesion in the tribe. Leaders among the men stepped forward to fill those roles, albeit in ways very different from the women - as heads of patriarchal and patri-lineal families, as shamans and priests, as warriors and warrior chieftains and as political and commercial autocrats ruling over instrumentalized subordinates in multi-layered hierarchies.

Gone was peace. The mostly tranquil life of small, widely dispersed societies was replaced by loud, chaotic, stressful, often violent transactions conducted in large societies of people living in close proximity to one another. War and preparation for war and recovery from war punctuated and came often to dominate the experiences and memories of the people.

Gone were intimate bonds that had knitted together societies of humans and our ancestral species for at least several million years. A likely feature of the social and emotional upheaval that accompanied transition to Late-Tribal Culture was that distinctions between intimates and strangers became somewhat blurred. Some women became breeding wives, reproductive property to be chosen carefully and guarded jealously. Some daughters became chattel to be traded. Some sons became generational instruments of their fathers, tasked with carrying into the future whatever wealth, status and power their fathers or grandfathers had accumulated. Some brothers and friends of similar rank became competitors for promotion up the hierarchy, seeking to acquire or avoid incentives bestowed or imposed by the elites as rewards to the productive and compliant and as punishments to the unproductive and recalcitrant.

Possibly worst of all, were many pervasive and subtle forms of intimate instrumentalization. In myriad ways, people began to see members of their own families as tools for day-to-day emotional or economic fulfillment, even for ordinary things. In the intimate context, our evolved humanness was probably more assertive in limiting the range of incentives available to instrumentalize family members. But for the first time in human prehistory, strife and resentment came to persist, side-by-side with love, in the daily lives of family members.

Gone was authenticity and transparency that had been a baseline feature of social life in primary groups. While some lying and secrecy had certainly been part of life before Late-Tribal societies, most of the lies told previously were not really believed and most secrets were not well kept. Within the intimate context of earlier societies, most lies and secrets were necessarily semi-transparent and carried fairly low stakes.

But as the processes for converting people into tools took hold, honesty and openness in most things of importance was replaced by myriad opaque and serious lies that had to be told (both to one another and to one's self), and believed, in order to complete the conversion of humans into tools and to maintain the hierarchies, the structure of incentives and the coercive practices that were needed to keep the new instrumentalist cultures intact.

Gone was a sharing economy. The patri-centric family, rather than the group, became the fundamental economic unit of society and with it came systematic and aggressive assertion of family ownership and property rights. In place of a sharing subsistence economy, inter-family competition for resources, wealth and status became the fundamental social and economic model in Late-Tribal societies.

Gone was a gentle transition from childhood to adulthood. The counter-intuitive and complex skills that were needed to function in Late-Tribal society took a while to learn and were hard to teach. The difficult transition from wild child to sophisticated adult, who would be competent to function in a Late-Tribal Culture, required the invention of adolescence, a new stage of life that took several years of training and coming-of-age trials and was often fraught with frustration, dissonance and conflict for both teachers and learners.

Gone were the core woman-to-woman bonds that had formed the very heart of virtually all societies of modern humans for about two hundred thousand years. Affection and cooperation among women, the central social organizing principle of all early human societies, was replaced, wholly or partly, by inter-family enmity and competition between the mothers. The isolation of women from one another, walling them off within patri-centric families, obliterated the last, best hope that the women soon might unite and rise to reform human society to more closely resemble the way it had been before Late-Tribal Culture.

Gone was a quiet confidence that each group and each individual could make a living from the natural world. In order to use people as tools, the users invented, appropriated and controlled a variety of incentives that they could bestow to reward productive and compliant behavior and withhold to punish the unproductive and recalcitrant. Gradually more and more of what was needed from nature to sustain human life came under the ownership and management of the elites. Access to the bounties of the natural world became conditional and restricted. The tacit knowledge that nature provides was replaced by the invented incentivization of everything the elites could think of to insure the fealty of their human instruments. On top of incentivization came specialization, leaving most people without the primitive skills and technologies they would need to make a living in the wild.

Gone was the quiet, mostly unconscious faith of each member that they belonged, unconditionally, in their group and could count on other members of the group to come to their aid when it was needed. In order to cope with the economic and social disruptions produced by the treatment of humans as tools, people in Late-Tribal Cultures rapidly invented and put into practice elaborate systems of social norms, rules and laws, as well as the sanctions needed to enforce them. The threat and systematic use of demotion, death or expulsion from one's society, or even from one's family, proved to be among the most effective sanctions available for failure to follow directives of the leaders and to observe their newly invented commandments.

So, gone, along with unconditional lifelong membership in one's society, gone also, for many of the people, were the myriad expressions of innocent love that had formerly worked so well to hold together earlier forms of human society. The invention and deployment of systematic, culturally mandated conditions for belonging ruthlessly undercut the credibility and effectiveness of long-evolved, genetically programmed ways of social grooming within the group and between neighboring groups. The novel cultural proposition that all human bonds are provisional, and can be permanently severed for failure to observe invented cultural mandates, subtly and effectively, undercut the credibility of all the ancient, evolved practices that humans and our ancestral species had used over millions of years to build and maintain bonds of lifelong attachment with one another. Gone for some was the core meaning of the grooming practices that had been

at the very heart of creating and maintaining social cohesion. While grooming behaviors continued, though attenuated, for many they lost their former bonding power.

Gradually, for some of the people, what previously had been acts of innocent affection became little more than brief and infrequent sensual interludes, early-stage courtship offerings, and ultimately little more than meaningless pleasures or perfunctory acts – soon to become commercial services that could be bought and sold. Except in very tightly prescribed contexts, acts of affection got turned on their heads, and instead of being ways to strengthen bonds among people they became powerfully destabilizing events that often destroyed families, friendships and lives.

And ultimately gone was faith. As membership uncertainty has grown, at some point every member of Late-Tribal Cultures and onward has had to acknowledge the possibility that any one of us might soon find ourselves exiled to live as a "solitary", homeless, with the vulnerability, anxiety, poverty and shortened life expectancy that isolation from intimate society necessarily seems to entail for most of us.

Gone, along with personal security, gone also was cultural security. Dominance over other humans through militarism came to be known as an inherently fragile proposition, an necessarily unsustainable one, even in principle. As it became common knowledge that such extractive cultures can rise and fall in mere decades, or at most a few centuries, it meant that depending on one's culture for a livelihood seemed more like a gamble than an actual way of life and far less a safe bet than were the older, simpler technologies and cultures.

Gone were the previously sustainable relationships that earlier cultures had maintained with their natural world. If making and using inanimate tools objectifies the naturally occurring materials used to make them and alienates the user from the natural world he or she manipulates with them, then making tools of other humans magnifies those perverse effects and their impacts on nature many times over. Late-Tribal Cultures often discovered, too late, that unknowingly, and mostly through subjugating people, they had exploited crucial parts of the natural world far past the ability of those parts to regenerate.

And gone was innocence. In the millennia since the onset of Late Tribal Society most members of our species have at least glimpsed the fragility of our exploitative cultures and have come subtly to experience what amounts to a paradoxical "Thriving Extinction Event". To ease this existential burden, most of us have chosen to put more and more attention on the "thriving" part, in the vain hope that by "doing well" we can distract or secure ourselves from having to consider that, through some twist of fate, any one of us or any group of us may soon have to go it alone and naked in a post-apocalyptic wilderness, a wilderness with which we are utterly unprepared to cope and alongside survivors with whom relationships will teeter precariously between collaboration and exploitation.

Focus on Thriving: Super-Cultures and the Beginning of History

Between ten and fifteen thousand years ago, empowered by the capability to use other humans as instruments, people in some Late-Tribal Cultures began to invent and refine agriculture and architecture.

Croppable plants, arable land, manageable water flows, buildable wood, mud and stone became instruments in the hands of humans, all of whom were incentivized by the elites to do the work and many of whom were conscripted under threat of death to perform the necessary labor.

Probably within just a few dozen generations some Late-Tribal Cultures managed to transform themselves from egalitarian hunting, foraging, horticultural or nomadic societies into multi-layered, permanently settled urban-centered societies. These newly emerging civilizations were almost always based in one or several small cities. With these developments, our species began to create Super-Cultures that contained many hundreds or thousands of people and several subcultures and that came to assert dominion over large areas of land.

As Super-Cultures emerged people found themselves capable of inventing and mastering ever more sophisticated and large-scale ways to incentivize and exploit other humans on a grand scale: to enforce

dominion over the land, to make war, to plant and tend the crops, to harvest and market agricultural surpluses, to make and sell tools and weapons, and to build the permanent housing, temples, palaces and marketplaces that fueled and glorified the life of increasingly thriving city centers. Thriving was taking on a plethora of new meanings

Possibly within just a few hundred more generations, having demonstrated the apparent, if short-lived, viability and competitive advantages of Super-Cultures over earlier forms of society, humankind had taken the next step on our way to creating the Hyper-Cultures of the present world. In combining multiple Super-Cultures, our Hyper-Cultures have come to employ stunningly complex and advanced technologies for instrumentalizing nature, and most especially, for incentivizing and instrumentalizing humans. The dense, complex and dynamic social fabric of our Hyper-Cultures both makes possible and demands social technologies of incentivization on a level of sophistication and complexity unknown even in the most highly developed Super-Cultures.

Since the beginning of Late Tribal Cultures, probably in less than fifteen thousand years, nearly all societies of modern humans have transformed themselves from a mostly wild state to a state that demands of their members almost total immersion in culture. Such an immersion can only be sustained by very sophisticated technologies of incentivization. Step by step, cultures have come to suffuse deeply and completely surround the lives of their citizens. As cultural evolution leapt from prehistory into history, the reach of Super-Cultures and Hyper-Cultures expanded to shape virtually every aspect of life, during virtually every waking moment of the day, for virtually everyone living in or near them. If people were a little wilder in Late-Tribal cultures or even in Super-Cultures, if there were still brief periods in the day in which the people were not thinking about instrumentalizing others, or working as the instruments of others, the immersion in technology that comes with Hyper-Culture leaves little such respite to its citizens.

In just the last few thousand years, at the cost of taming ourselves we have created a stunning succession of Hyper-cultures that incorporate thousands of subcultures and hundreds of millions or billions of individuals. We may be drawing near to the next tipping point in the evolution of human cultures – the gathering of all the world's Super-Cultures and Hyper-Cultures into one all-embracing Terra-Culture. Already our Hyper-Cultures have grown so large, so powerful and so integrated that they are the dominant way of life in almost every part of the planet... except in a very few, out-of-the-way places.

Anachronisms: A Few Gentle Reminders

Even now, there exist, in some out-of-the-way places, a handful of small, intimate Primary Cultures, Meso-Cultures and Early-Tribal Cultures who continue in (or have returned to) ways of life organized around earlier, simpler kinds of instrumentalization.

Some small cultures, even in our time, are still organized around the mothers. Some are still fiercely egalitarian, refusing staunchly to incentivize and to instrumentalize or be instrumentalized by one another. A few even dismiss at least some practices of instrumentalizing other living things. Some still have economies of abundant subsistence and sharing. And some still enjoy lifelong membership in their group as an unquestioned, unconditional right and the unspoken expectation of every member.

Costs and Benefits: A Long Overdue Accounting

One might imagine that our species is approaching a tipping point in the evolution of the very idea of culture itself. The strength of selective forces may be approaching a critical level in denying the adaptive value of many forms of instrumentalization. Clearly, what our ancestors lost in those early days is still gone today, as we continue to instrumentalize one another in our time.

One might imagine that our wisdom would be suggesting quietly to us that the costs imposed on our species and on the rest of the natural world by our choices to wrap ourselves so completely in cultures of total instrumentalization must soon be honestly and fully accounted and set explicitly against the benefits our species accrues from those choices. It may even become the central work of our own and of our next few generations to perform this long overdue accounting....

Integration: Enlightened Cultures

Most of us have learned to be quite fond of life in our culture. How shall we integrate the narratives of our human nature with the narratives of our human cultures? For us the next big question might seem to be: Is it even remotely possible for us as cultured beings ever to live in deep and sustained mutual accord of sovereignty with all people and with all the natural Universe and still enjoy the benefits we have come to love about our culture? Can we ever become the most wild of acculturated people and the most acculturated of wild people? Maybe we can...

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A monograph by Robert Walling

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