What If There Were No Future?

Some Overlooked Consequences of Accelerating Change

Peter Russell

. . . these most brisk and giddy-paced times.

William Shakespeare

Imagine the world thirty years from now. Very likely we'll see quantum computing, nano-tech medicine, 3D-printed organs, artificial intelligence surpassing that of the human brain, possibly fusion power. Advances in molecular biology could be pushing life-expectancy ahead faster than we are ageing. Our bodies, senses, and mental functions may be augmented in ways that seem like science fiction today. These are just a few of the more obvious extrapolations of current trends.

Yet history shows we can often be way off the mark. If we go back thirty years, to 1990, and remember how we saw the future then, we realize how much we missed. The Internet was in its infancy, most of us had not heard of email, the worldwide web did not even exist. Back then, who of us would have predicted online shopping, video streaming, social networks, the cloud, and many other aspects of the Information Age that today we take for granted.

Our predictions often fail for two reasons. First, we may be able to extrapolate current trends, but we cannot include innovation. Its very nature is unpredictable; it brings in something new and unforeseen. In the coming decades there will inevitably be various unanticipated developments: new scientific discoveries, technological breakthroughs, socio revolutions, environmental surprises, and other changes that will render current predictions obsolete.

Secondly, we don't take into account how the rate of innovation is accelerating. We can imagine how the future might be if the pace of development continues as it is—and even that can make us feel giddy—but we easily overlook the fact that change will be coming faster and faster. We think that if this much change has happened in the last thirty years, then we imagine a similar amount in the next thirty years. In reality, it may take half that time to witness a similar amount of progress.

Innovation Breeds Innovation

This speeding up in the pace of change is inevitable. And quite natural. Each new development is, so to speak, standing on the shoulders of what came before, and can come about that much easier and faster.

Take for example the arrival of the Information Age. The technologies behind mass manufacturing and distribution were developed during the Industrial Revolution; when computers came on the scene there was no need to reinvent them. Information technology could therefore develop that much faster. Today, as we enter the era of artificial intelligence, there's no need to reinvent computer technology. Consequently the Intelligence Age will develop much faster than the Information Age—as if that was not dizzying enough.

This pattern of new innovations facilitating future innovations is not limited to current technological progress; it's a pattern that runs through the history of humankind, and beyond.

An Innovative Species

Three factors gave early humans an innovative edge. Their larger brains brought greater intelligence; the dexterity of the human hand led to better tools; and the advent of speech allowed them to share their discoveries. Combine these three trends and you have an intelligent creature able to amass a growing understanding of the world, to think, reason and make choices, and thence mold the clay of Mother Earth into a diversity of new forms.

By a million years ago they had tamed fire. A hundred thousand years ago they were wearing clothes, making jewelry, and burying their dead. Twenty thousand years ago they'd developed farming. Five thousand years ago, civilization had begun.

Homo sapiens had become a technologically empowered intelligence, creating more effective and efficient tools with which to modify and control the world, and using them to get more detailed knowledge and better understanding of the world. Innovation continued breeding innovation, leading to an exponential explosion in development.

Six hundred years ago came the printing press with its profound impact on the distribution of knowledge. On its heels came the Renaissance, with significant advances in art, technology and global trade. Three hundred years ago, the European Enlightenment and the birth of science. Two hundred years ago, the Industrial Revolution was in full swing. A hundred years ago: automobiles, planes, telephones, radio. Fifty years ago computers and the dawn of the Information Age.

And here we are today, witnessing this ever-accelerating development in our lives. We see it in the rate at which new scientific discoveries are made, new technologies are created, new products are developed, new social conventions and skills take hold, and existing ideas, technologies and products are improved upon. They are all building on each other, and all coming faster and faster.

Approaching a Singularity

Some futurists believe that this ever-increasing pace of development will take us into what they call a “singularity.” This is the term that mathematicians give to a point where equations break down or no longer apply. The North Pole, for example, is a simple geographic singularity: How do you go north from there? Or east or west? And which way is south? Our usual concepts of direction no longer apply.

The idea that there might be a singularity in human development was first put forward by the mathematician Vernor Vinge, and subsequently by myself in *Waking Up In Time*. More recently it has been popularized by Ray Kurzweil, who argues that if computing power keeps doubling every eighteen months, then sometime in the late 2020s (that's only ten years from now) there will be artificial intelligence that surpasses the human brain in performance and abilities. These ultra-intelligent systems would then be able to design and create even more intelligent systems, and do so far faster than people could, leading to an exponential explosion of intelligence.

Kurzweil calls this point in time "the singularity." It is not a true mathematical singularity, in which equations break down or no longer apply; it's an historical singularity—"technological

change so rapid and profound it represents a rupture in the fabric of human history" beyond which all bets are off.

Nevertheless, there is one thing we can say about a post-singularity world. The pace of change will continue to speed up. We can't put precise figures to it, but if, say, there were to be as much change in the next twenty years as the previous fifty, then after the singularity as much change again might come in the following ten. And then as much change again in perhaps five years. Within a short time, the curve becomes impossibly steep, and the rate of change unimaginably rapid.

This is not to imply that exponential rates of development will continue forever. Eventually there will come an upper limit to the overall rate of change—limits as to how fast the various human, social, and planetary systems can adapt.

It should be emphasized that reaching such limits would not mean the rate of innovation slowed down; it would continue at its maximum rate. We would be living in a world where change comes very much faster than today. Hardly a sustainable, or even desirable world. And certainly not the more sedate pace portrayed in most visions of our long-term future.

We are heading ever faster into something totally different.

The Stress of Acceleration

There is another, often overlooked, consequence of this acceleration—namely, the stress it places on the underlying systems.

Stress may generally be defined as a failure to adapt to change. In human terms, the more we have to attend to, plan for, worry about, and take care of—that is, the more we have to adapt—the more likely we are to suffer stress, with its various undesirable consequences in terms of physical, mental, and emotional health, and repercussions on family, friends, and colleagues.

Today the increasing pace of life is a growing source of stress. There are new technologies to adopt, more information to keep abreast of, new skills to learn, more tasks to accomplish. more time consumed by social media. Many find themselves having to work longer hours, even weekends. We feel overwhelmed, under increasing pressure to make quick decisions, having more and more things to do—and less time to do them all in. The amount of quality time we have with ourselves, family, and friends, relaxing and recovering from the pressures of work, is getting less, and for some disappearing completely. As adapting to increasing change becomes more challenging, exhaustion and burnout become increasingly common.

It is not only people who are experiencing the stress of ever-faster change. Our social, economic, and environment systems are all impacted as they fail to adapt. And with potentially disastrous consequences.

The exponential-like growth of the human population is now, thankfully, beginning to tail off. Nevertheless the consequences for food, water, housing, geo-politics, and other issues are still dangerous, and growing. This is compounded by the growing numbers of people seeking the lifestyle of the more developed countries, increasing the demands on already scarce resources.

Oil reserves are running out because we are consuming them a million times faster than they were laid down. Many other resources, such as platinum, copper, zinc, nickel, and phosphorus, all

of which are crucial for contemporary technology, will have run out, or be in short supply, within a few decades.

On the other side of the equation, rapid growth in industrialization has led to an accelerating profusion of pollutants in the air, soil, and sea. Some are now being released thousands of times faster than the planet can break them down.

Most significantly, the increasing accumulation of carbon dioxide into the atmosphere, stemming from the accelerating consumption of fossil fuels, is leading to a climate crisis. Previously, plants and oceans reabsorbed the gas, but it is now being emitted many times faster than these systems can handle. The repercussions, we are now beginning to appreciate, will be devastating: more extreme weather, unprecedented heat waves and drought, widespread crop failures and famine, flooded coastal regions, and mass migrations, to name but a few.

To make matters worse, most of these ramifications of accelerating development are on their own accelerating curves. Species are becoming extinct faster; temperatures are rising faster; glaciers are melting faster; sea levels are rising faster; ocean plastic is accumulating faster.

Furthermore, these various accelerating trends are not happening in isolation. They're an interwoven set of crises, events in one area exacerbating the impact of others. As food, water and other resources become increasingly scarce, global conflicts are likely to increase. Unprecedented natural disasters could promote economic collapse, leading to social breakdown and increased authoritarianism. Epidemics of drug-resistant bacteria, uncontrollable wild fires, biological and chemical terrorism, collapse of the Internet through hacking or cyber-war, increasing systemic chaos—all are possible. Doubtless some will happen. And, more than likely, completely unforeseen events will also take their toll.

Doom and Light

A system can tolerate only so much stress before it breaks down. Spin a wheel faster and faster, and the increasing stress will eventually break it apart. In a similar way, as rates of change grow ever faster, the systems involved will reach a point where they too begin to crack and break. Whether it be our own biological system, our social, economic, and political systems, or the planetary ecosystem, the stress of ever-increasing change will eventually lead to breakdown.

The future is not, however, all doom and gloom. The conclusion that human civilization is destined to end—and in the not-too-distant future—may, at first sight, seem to imply an end to the many scientific and technological advances on the horizon.

If we look through the lens of linear progress, it might appear to need centuries, or millennia, for our species to achieve all we imagine possible. From this perspective, the continued advancement of our species demands we change our thinking and mend our ways. If we don't, things will fall apart and that vision of a hopeful future will expire. On the linear view it is a race between breakdown and breakthrough.

From the point of view of exponential progress—which is the perspective we must now take seriously—the interval between significant advances will steadily decrease. We will see technological progress way beyond that which we can now imagine, plus equivalent advances in scientific understanding, all compressed into shorter and shorter periods.

Breakthrough and breakdown now become two sides of the same coin. They are ramping up together, and coming to a head together. No longer is it a question of “either-or,” but an

acceptance of “both-and.” In the coming decades we will see technology beyond our dreams in a world that's falling apart at the seams.

Thus, to the recurrent question of how is it that the most intelligent and creative species on this planet has also become the most dangerous, the answer is now becoming clear: the two go hand-in-hand.

Across the Universe

When we view the future through the lens of exponential development we are faced with the conclusion that technological civilizations are intrinsically short-lived. They are short-lived, not because of any fault in technology itself, or wrong-thinking on the part of their members, but from the consequences of accelerating development.

We usually imagine extraterrestrial civilizations existing for thousands, perhaps millions, of years in a relatively static state, making advances from time to time, but not at the rapid rate we know today—let alone the even more rapid rate of tomorrow. But that probably never happens.

Whatever their physical form, any intelligent tool-using species will develop technologies that enhance their safety and survival. It is a fundamental goal of all life. They would naturally develop the knowledge and technologies that allowed them to do this more effectively and efficiently. The more they learned, the better their tools, the smarter they became, and the faster they would develop. Within a short time (evolutionarily speaking) they would meet the consequences of acceleration, spiraling into the center of their own evolutionary whirlpool.

Marvelous as they may be in their moment of glory, technologically empowered intelligence may exist for but a flash in cosmic time.

This is not to imply that other forms of advanced intelligence may not prosper. Here on Earth, whales and dolphins show signs of intelligence approaching that of humans, even surpassing it in some ways. But having no hands, they have not developed tools, so have not been subject to hyper-accelerating technological development.

Perhaps the evolution of intelligence on other planets has taken a similar, non-technological, course. More advanced intelligence may be living in a planet's oceans (whether they be oceans of water, methane, or some other liquid). There, suspended weightless, a creature's body is free from the constraints of gravity, and can grow much larger than on land, opening the possibility for even larger brains. It may be there, in extra-terrestrial oceans, that intelligence and awareness far surpassing our own has evolved.

What If There Were No Future?

Not surprisingly, most people have great difficulty accepting our species may not have a long future ahead. It’s the last thing we want to hear. We knew human beings would not last forever, but most of us have imagined the eventual end to be way off in the distant future. We think this intelligent, creative, self-aware being ought to be around for the long-term. The realization that our collective end may arrive much sooner than expected can come as quite a shock.

Obvious parallels exist with our own death. We know it is coming, but unless we are diagnosed with some terminal illness or suffer a potentially mortal injury, we tend to push it away to some time in the future—not tomorrow or next week. On the other hand, accepting our own

mortality is part of being a mature human being. Indeed, confronting death directly can produce profound shifts. People may reconsider what is important, value love more than wealth, seek to make amends for past misdeeds, find a renewed purpose in life, and live more for the present moment.

Here, however, we are facing the end, not of our personal lives, but also of our species. And this can be much harder to accept. When we look at all we have created, all the good there is in us, all that we hold dear, and all we might yet become, it seems almost impossible to imagine this not continuing for a long while.

To make matters worse, what little future may lie ahead, does not look as rosy as we might have hoped. The increasing strain of exponential growth on various human, social, and ecological systems point to things coming to a head this century. Or rather, I should say "increasingly coming to a head," since the consequences of this stress are already apparent in today's world. Hardly welcome news for younger generations today who, even now, view the future with growing despondency. Or for parents, as they picture their children and grandchildren growing up in worlds very different from those they'd hoped they would have.

Collective Grieving

As the reality of the unraveling hits home, there will be widespread despair, depression, and distress. What have we done? This is terrible, the future looks so bleak.

How will we deal with such pain and grief? Will we lose ourselves in panic and terror? Anguish over how our lives will unfold as we head into the eye of the storm? Will we go even deeper into denial, refusing to accept what is becoming increasingly obvious?

Or will we be able to allow in the profound sorrow over what has become of us, this wondrous, creative, intelligent species, and of this planet with its awe-inspiring beauty and diversity of life?

Many already feel a growing sadness at the dying coral reefs, the melting of the ice caps, the destruction of rain forests, and the loss of species never to return. This can only increase as the environmental impact becomes even more severe, and we begin to suffer the impact in our own lives and the institutions we so depend upon.

We've been conditioned to keep such feelings at bay. To grieve briefly perhaps, then wipe away the tears and carry on with life. But, as psychologists are wont to point out, keeping our sorrows at bay numbs our being and blocks our vitality.

Unexpressed grief is often sublimated into anger and blame. It is easy to get angry at the corporations, the politicians, the wealthy, the Church, the military, the terrorists, or anyone else we think is to blame for our predicament. They may to be blame for particular situations that have arisen, but ultimately there is no one to blame for the overall unraveling. It is the inevitable exponential development, with all its consequences, that has brought us to this point. We'd have ended up in a similar situation whatever path we took.

Will we be able to move beyond fear, denial, anger and blame to allow in our grieving and through that move on to acceptance, facing an unknown future with courage and an open heart?

Will we be able to let go of our attachment to how things should be, our hope that things will turn out well in the end, and accept that this is the way it is for a technologically empowered intelligence spinning ever-faster into the eye of its evolutionary hurricane?

Preparing for the Unpredictable

How then will things unfold? As developments are compressed into shorter and shorter intervals, it will become ever more challenging to make reliable predictions. Rather than trying to forecast what might happen, and what particular eventualities we should prepare for, we should be focusing on preparing for a future in which the only certainty is uncertainty. And which, furthermore, will only increase as the winds of change whip up into a storm of change, and then a hurricane of change.

Trees provide a good lesson. If a tree is to withstand a storm it must be flexible, able to bend with the winds. And it must have strong roots and be stably anchored in the ground. The same is true for us. If we are to brave the coming storms—along with some unanticipated exceptional gusts—we need to be flexible. We've never been in this situation before, and have no past experience to go on. We'll need to let go of outdated thinking, habitual reactions, and assumptions as to how to respond, and find the inner freedom to see things with fresh eyes and draw more fully on our creativity.

Second, like the trees, we will need greater inner stability. We need to be anchored in the ground of our own being, so that when the unexpected suddenly arrives, we can remain relatively cool, calm, and collected; not thrown into fear and panic, which would only serve to make us increasingly stressed and prone to burnout.

A third factor that helps trees withstand a storm is being in a forest of trees. They soften the wind for each other. Similarly, we will need the support and companionship of others. The future is uncharted territory, and we will all feel vulnerable or shaken at times, needing to express our feelings or asking for emotional support. Caring for each other will become more valuable than ever, helping alleviate stress and suffering, adapting to unexpected circumstances, letting go of cherished lifestyles, and adjusting to new social and economic realities. We will need to open our hearts and be more forgiving, seeing ourselves with kinder, non-blaming, eyes.

For me, acceptance of the situation has brought with it some surprising shifts in attitude. I am not so angry at the people whose views and actions I disagree with. I am no longer so upset by the latest political shenanigans, economic swings, or social unrest. This is simply how it is to be living through the final generations of an intelligent, technological species. There is no blame to be apportioned. Instead I can be more understanding, more forgiving.

Nor does it mean I no longer care for the world around me. I still want to do what I can to preserve the planet. But now I want to do so for the planet's own sake. Perhaps the best we can do with our remaining years is to make sure we leave the Earth in as good a state as possible for the species that remain and those that may follow.

A Blossoming of Consciousness

It also leads me to a different story of our cosmic significance.

We don't know how common intelligent life is in the Universe. Maybe it arises on only one in thousand planets; or less. On how many of these do intelligent tool-using species emerge? Perhaps only a tiny fraction of those with life. But on those that do, something miraculous happens. A bud of creative intelligence suddenly appears.

Within a short time, cosmically speaking, it starts to bloom, bursting into an exotic, multifaceted cultural inflorescence. Billions of self-aware petals, seeking to become all they can be; to know all there is to know.

And here we are the fruits of this budding: wondrous beings, capable of love and empathy, an appreciation of beauty, the creation of great art, music, and poetry. We have studied the world around us, and been awed by what we have discovered. We find meaning in our lives, a sense of justice, and an inner wisdom.

There is much to celebrate about us. The question is: Can we celebrate all that we are, while accepting that our species is here but for a brief flash of cosmic time?

I am reminded of the so-called "century plant" that flowers once in twenty years. When it does finally bloom, we marvel at the giant stalk, holding high a magnificent array of flower-laden branches. The spectacle is made all the more awesome by the knowledge that it flowers but once; then dies, its function complete. Can we celebrate ourselves in a similar light? Another exquisitely beautiful blossoming in the cosmos.

Can we let go of the cherished belief that we are here to stay, rejoice in our existence, and live our final days with grace?

> *Despite knowing the journey, and where it leads, I embrace it. And I welcome every moment of it.*
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> ~ Louise Banks in *Arrival*