Testing the Transhumanism in *What Technology Wants*[1]: Toward an Invention for Innovation Theology

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Theologians Testing Transhumanism (TTT) and CTNS
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Purpose and Premise

An underlying purpose of this paper is to invite you to consider *innovation theology*. Innovation theology is an unexplored territory I hope you will find worthy of some collaborative cartography.

Cartography is a map-making and sense-making challenge. As with many such challenges, some inventing is required, often including new methods and metrics. Such may be the case with this challenge. As a result, the following is largely in the form of an invention disclosure[2], albeit for rhetorical purposes primarily.

As theologians, you may be among the initial cartographers of innovation theology and users of this invention. Other cartographers will be necessary, including not only the theologically curious, but also interested economists, ethicists, technologists, investors, experienced innovators and entrepreneurial types. Despite such a diverse set of orientations and mindsets,[3] a convergent question common to us all is what God may be up to in matters having to do with innovating. Answers to such a question have practical and immediate implications, like how we might collaboratively discern what God is up to, and get with it. These shared questions include where, how and for whom we apply our rapidly accumulating reservoirs and streams of STEM know-how, or what most call technology.

Such a diverse set of cartographers will likely differ in their respective mindsets, orientation and methodologies, which makes substantive and sustained conversation a challenge to say the least. As a result, new tools for conversational cartography will be needed, and old ones repurposed.

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[1] Kelly, Kevin. *What Technology Wants.* New York: Penguin Books, 2010. Kelly, the founding editor of *Wired* Magazine, identifies himself as a transhumanist, though his understanding of transhumanism may be less radical than some. see https://blog.bulletproof.com/kevin-kelly-self-quantification-transhumanism-technology-future-218/

[2] Invention disclosures are typically short essays inventors draft which trigger the subsequent process of filing for a patent application. Indeed, patented inventions may be historical "mile markers" lining the trajectories of a technology's evolution. Patents are arguably where a technology publically expressed for the first time.

[3] While "mindsets" is the term I am using, synonyms might include "worldviews" and/or "cosmologies." (see Carol Dweck's *Mindset: The New Psychology of Success* and Donnella Meadows, *Thinking in Systems: A Primer).* "Mindset" as a term carries some problems, one of which is that the "set" of a mind seldom remains fixed except for limited periods of time, at least among learning beings.

Before disclosing the invention, however, some orientating comments seem appropriate.

Orientation

The central premise of innovation theology in general is the simple notion that *God is interested, engaged and continually inviting us to collaborate with Him in co-creating new value for others.* A specific innovation theology may be especially interested in applications of technology directed to the common ecological and economic good, or especially interested in benefits that accrue to the marginalized, at least if we take the Hebrew and New Testament canons as scripture.

Put even more simply, it likely matters to God where we innovate and why and for whom. Innovation theology may even go so far as to infer that if we were to begin with the plumb lines of God *before* we calculate the expected bottom lines or top lines of our innovating efforts, we may be more successful, more satisfied, more content and even live more meaningful lives, as we create new value for others in response to change–i.e., as we innovate. Of course, this requires that we consider what we are doing in the company of God. How we do that "considering" is innovation theology.

Why should you care? Depending upon your point of view, of course, you might care because

- like Pascal, you figure chances of success in innovating are better working *with* God's interests rather than against or orthogonal to them, or

- like Viktor Frankl, you believe happiness is a bi-product of working for a purpose greater than yourself, and what other purpose could be greater than the kingdom of God on earth?, or

- like Pope Francis in *Laudato Si*, you believe God is making it clear where we should be innovating, why and for whom, and applying our STEM know-how (our technology) accordingly, or

- like Jesus, it's not about what I want–"Abba, father, let this cup pass before me; nevertheless, not what I want, but what Thou wilt," or

- like most, you just want to make sense of change and what it means for you and for others.

At the very least, those who identify themselves as theologians testing transhumanism (TTT) and even those interested in the intersections to which the Center for Theology and the Natural Sciences (CTNS) gives its time, attention and devotion, may want to consider whether innovation theology represents a vector worthy of inclusion in these respective portfolios of interest.

What I have prepared for your consideration today is in part derivative from some previous work published recently by Wipf & Stock (*Innovation Theology: A Biblical Inquiry and Exploration* and *A Primer on Innovation Theology: Responding to Change in the Company of God* (2017)), and in part improvisation on Charles Taylor's *A Secular Age* (2007) and Kevin Kelly's *What Technology Wants* (2010). I suspect some influence also from my teaching assignment with graduate engineering students at Santa Clara University's School of Engineering in a course I am lucky enough to be teaching called "Innovation, Design and Spirituality," and the past thirty five years of working with innovators in commercial labs.

The invention

The cartographic invention described in this paper intends to serve as a different kind of introduction to the field of innovation theology. By introducing you to innovation theology in this way I hope to pierce the generalities and penetrate below the abstractions typical of introductions. Hopefully something a bit more practical will result.

As with many inventions, it is difficult to know what to call it. Think of it as a tool kit for use in charting and possibly navigating the unexplored territory of innovation theology. Or it could be a method for enabling a conversation among those not used to conversing with each other. This invention might serve as a compass or a sextant. Its intent is to help the explorer establish and maintain his/her orientation, laying out the latitudes and longitudes, if you will, of just what this territory is and where the noteworthies are on its landscape.

Most often an invention disclosure is summarized in an abstract. The abstract for this one might read as follows:

> A system and process to enable cartographers from diverse disciplines to communicate and collaborate more effectively in their common task of mapping the territory of innovation theology, wherein the system is comprised of three parts:
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> 1) a sense-making architecture,
> 2) a calibrating and recalibrating mechanism, like a vernier, and
> 3) a user interface able to include and accommodate a plurality of mindsets.

I know. That's a mouthful. As it stands it's a bit dense. But take heart, the remainder of this paper is an attempt to "disclose" what these parts are and how they work together to provide benefits for the users. I will attempt to show how these parts work by giving the invention a test run in a critique of Kevin Kelly's theory of technology expressed in his book *What Technology Wants*.

The invention, as most all inventions, draws upon prior art and combines the art in new ways. The prior art for this navigational aid comes primarily from the sense-making observations of Karl E. Weick (University of Michigan), the immanent-transcendent hybrids observed by Charles Taylor (McGill University), and the systems typology of the late Russell

Ackoff (Wharton, University of Pennsylvania). The invention works by using Weick's concept of a minimal sense-making structure as the general purpose architecture for using theological frames (e.g., scriptural narratives, doctrinal propositions, etc.) in discerning the presence, activity and directionality of the company of God in technology intensive innovating efforts.

Put differently, this invention attempts to aid innovation theology cartographers in discerning and differentiating the often faint "signals" of God's current intentions from the "noise" so often associated with technology. The "noise" can be quite loud, as recognized the Gartner Group's hype-cycles, or even the invisible hand of the market, sometimes found bruising its knuckles on such venture capital communities as found along Sand Hill Road, especially when venture capital flows in ways contrary to the will of God. The invention is intended to work for sense-makers whose secular-sacred mindsets are more hybrids than pure logical or theological orthodoxies. What follows is essentially an attempt to explain to those schooled in the art of theological reflection on matters of science, technology and society how to make and use this invention.

A Note on Cartography

First a note on the art of cartography. Wikipedia describes cartography as the study and practice of making maps. Combining science, aesthetics, and technique (technology?), cartography builds on the premise that reality can be modeled in ways that communicate spatial information effectively.[4] It is worth noting that the description or the model is never the described: the description of some thing is never the thing itself. There will always be a gap between the reality we are attempting to map and the map we use to describe it. Such is the nature of theology, making sense, and indeed, innovating itself.

What follows first describes each of the three main attributes or components of the invention. Then I will attempt to describe how these three work together by applying it to Kevin Kelly's theory of technology in *What Technology Wants*. After that, I hope we have some time for an exploratory and playful conversation about innovation theology.

Architecture

The first attribute of the invention to describe is its sense-making architecture. Both theology and innovation, interestingly enough, are sense-making endeavors. In the case of

[4] Wikipedia goes on to say that the fundamental problems of traditional cartography are to:

- Set the map's agenda and select traits of the object to be mapped. This is the concern of map editing. Traits may be physical, such as roads or landmasses, or may be abstract, such as toponyms or political boundaries.
- Represent the terrain of the mapped object on flat media. This is the concern of map projections.
- Eliminate characteristics of the mapped object that are not relevant to the map's purpose. This is the concern of generalization.
- Reduce the complexity of the characteristics that will be mapped.
- Orchestrate the elements of the map to best convey its message to its audience.

theology, or more precisely, applied theology, the purpose can be said to include discerning what the will of God is for a particular context or situation in question. Whatever else it may be, doing theology–whether tacitly by the layperson or explicitly and formally by the credentialed theologian–is a way of making sense.

Innovating, defined as a response to change aimed at creating new value for others, is also a way of making sense. However, innovating has at least two additional conditions influencing its sense-making: 1) innovating is always in response to change, often a change that evokes the need to make new sense, and 2) innovating makes sense by embodying the sense made in a product or service that represents value to another, often a value that the change itself opens for discovery.

Karl Weick observes that the minimal structure required to make sense is itself comprised of three elements: a past frame, a present cue and an association between the two.[5] This is but the minimum. Much sense making may involve more than one minimal structure or more than one of each element of that structure. Think of a fractal or simple pattern that replicates itself in a kind of crystalline and more complex form. The basic geometry of sensemaking, Weick suggests, is this minimal, triadic structure–a past frame, a present cue and an association between the two.

Theology has a rich set of past frames, including parables, poetry and prose. These past frames enable, and sometimes disable, sense-makers to notice and attend to certain present cues and not others. The community of faith calls this collection of past frames scripture[6] and recognizes in them both descriptive and prescriptive potential. A striking example of this sense-making is when the resurrected Jesus comes up alongside Cleopas and the other on the road to Emmaus and ends up helping them to make sense of what they were not able to otherwise.

Innovating typically doesn't have as robust a set of past frames. It must improvise its set of past frames, searching for what Peter Drucker calls the seven reliable and predictable sources of innovation.[7] These frames can point to one or more of these sources, like the discontinuities that arise in change between the way things are and the way things should be (what theology calls injustice or inequity); or like surprises–either good ones or ones that do not appear so good, at first. Past frames are often there for the established organization that already has a track record. It is often not there, at least completely, for the start-up or purely entrepreneurial venture.

When an association is made between a past frame and a present cue, whether by the theologian or by the innovator, the association is where meaning, relevance and in the case of the innovator, value, is conceived. Of course, this initial association must be tested, refined, modified and validated and the innovator may use methods different than the

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[5] Weick, Karl E. *Sensemaking in Organizations.* Thousand Oaks: Sage, 1996. p. 111.

[6] And its long history interpretations (e.g., midrash).

[7] Drucker, Peter. *Innovation and Entrepreneurship: Practices and Principles*. New York: Harper & Row, 1985, p. 35.

theologian to do so, but they are both subject to the confines and wisdom of their own fields in strengthening the associations by which they make sense.

The universality and simplicity of this minimal sensemaking structure is one of the beneficial aspects of this first attribute of the invention. Both theologians and innovators should intuitively recognize this architecture for what it is. Both are already familiar and experienced with it. Past frame, present cue and association between the two represents the basic architecture of this invention for charting the territory of innovation theology.

Calibrating Mechanism

A second component of the invention–more subsystem than attribute–is a "vernier." A vernier is a small movable graduated scale for obtaining fractional parts of subdivisions on a fixed main scale of a measuring instrument. It's named after Pierre Vernier, a 17th Century French mathematician who first invented and embodied this measuring device.

The vernier in this invention is essential because both innovation and theology, being diagnostic disciplines,[8] are subject to distortion given the ambiguities and uncertainties surrounding innovators and theologians in a secular, pluralistic society. Innovators deal with this uncertainty by gaining experience through trial and error, causing many experienced innovators to follow the adage "fail fast, frequently and in the field for the highest fidelity feedback possible."[9] Theologians deal with this uncertainty by turning to faith (*sola fide*), along with scripture and tradition, at least in the short term, for making sense. Long term, they too must accumulate some experience, and sometimes, as in the case of Job, the term seems very long.

When dealing with relatively high degrees of ambiguity and uncertainty, a vernier enables the sensemaker to repeatedly recalibrate and fine-tune their hypothesis. Because we are dealing with contextual systems only partially revealed or understood, this vernier comes with a fixed calibration scheme derived from Russell Ackoff's typology of systems.[10]

Ackoff categorized four types of systems: deterministic, animate, social and ecological. Deterministic systems–like mechanical devices or computers–exhibit no real choice in either parts or the whole. Animate or living systems–like human beings, animals, birds–exhibit no real choice in the system parts, but the whole does choose. Social systems–like organizations or communities–exhibit choice in both the system parts and the whole. And finally, ecosystems–like environmental and economic ecosystems–exhibit choice in the parts but not in the whole.

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[8]Ibid..

[9] Thomke, Stephan H. *Experimentation Matters: Unlocking the Potential of New Technologies for Innovation.* Boston: Harvard Business School Press, 2003.

[10] Ackoff, Russell L. *Re-Creating the Corporation: A Design of Organizations for the 21st Century.* New York: Oxford University Press, 1999, p. 22ff.

Ackoff goes on to observe that category errors are made when we use a metaphor that originates in one type of system and mistakenly apply it to describe something that fits in or with another type of system.[11] For example, when we mistakenly say that a device is like a person, we make what Ackoff calls a category error. Ackoff's typology is based on where choice resides, either in the part and/or in the whole. As such, it functions as a calibration mechanism–a vernier, if you will. It's an error correction code, to use a term of the art from computer storage technology.

The relevance and importance of having some kind of calibration or corrections for even inadvertent false positives becomes apparent, especially when combined with Weick's minimal sense-making structure. In theological contexts, a past frame from scripture can be wrapped around a present cue leading to, for example, judging another when what is called for is forgiveness. Think of the story in John's gospel that contrasts Jesus' response to the woman caught in the act of adultery compared to the scribes and priests who were ready to stone her to death. Or more recently, consider the category mistake evangelical Christians in the U.S. perpetuate by using the means of political knowledge and power to change the world rather than using the means of grace and truth.[12]

Likewise for an innovator, consider the damage a category mistake can make when, like Kimberly-Clark Corporation, you see yourself as a company making and marketing facial tissue under the brand name Kleenex® and along comes what the NPD Group called the most innovative product that year, dubbing it "killer Kleenex"–a tissue impregnated with ascorbic acid which, it turns out, kills the herpes-2 virus in less than five seconds. Kimberly-Clark couldn't see that they had a disinfecting wipe rather than a virus killing facial tissue. Facial tissues are personal products, for the most part. Wipes are social products. They care for household surfaces rather than facial surfaces. Kimberly-Clark made a category error by failing to recognize their new product as a wipe not a facial tissue.

Or consider the category error made when the Haloid Corporation (the predecessor to Xerox) came to Kimberly-Clark with a proposal for something called xerography. Kimberly-Clark tragically rejected the opportunity, largely because at the time Kimberly-Clark not only saw themselves as a papermaker, but ironically at the time was internally debating a capital appropriation for a new carbon paper machine! Kimberly-Clark could not understand the present cue before them because they lacked a wide enough frame to include what turned out in hindsight to be clearly a much bigger innovation opportunity than their entire business.

These examples remind us that we can very easily wrap an inappropriate past frame around a present cue to derive an association between the two. This leads to much wasted time and effort. We end up making a sense that is irrelevant or does not line up with the realities emerging.

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[11]Ibid., p. 21.

[12] Hunter, James Davison. *To Change the World: the Irony, Tragedy and Possibility of Christianity in the Late Modern World.* Oxford: Oxford University Press, 2010.

Metaphors are potent rhetorical devices. But they can also seduce. Truth happens where the analogy breaks down. As a result, our cartography invention needs this built-in error correct code–a way to calibrate and correct, or at least alert us to category errors.

User Interface

The third component of the invention is the user interface. User interfaces that are more successful are intuitive to the user and accommodate a diversity of users. This may be the most important of the invention's three essential attributes or components.

The invention's potential users exhibit what Charles Taylor refers to as hybrid mindsets or cosmologies.[13] Taylor suggests that in our post-Enlightenment, secular society, individuals tacitly and often unconsciously create their own logically inconsistent hybrid mindsets from four more discrete and logically consistent ones. The four from which these hybrids are derived can be described as immanent, either open or closed, or transcendent, either open or closed.

Immanent cosmologies generally deny any transcendent being or reality viewing mystery as simply that which has not yet been discovered. In the case of a closed immanent mindset the natural world is seen as finite and regulated by laws governing physics, the biosphere and all that is inanimate and animate–a closed yet complex system. In the case of the open immanent mindset the natural world is seen as still evolving, open-ended and dynamic, but still without a transcendent dimension. A still expanding universe after the big bang is posited as the prime mover of this open immanent mindset.

In contrast are two transcendent mindsets or cosmologies, one closed and the other open. The closed transcendent mindset might prefer to call nature "creation", but the Creator is William Pauley's Divine Watchmaker. He has created (past tense) the heavens and the earth and the creation is fixed according to His original design. Rules governing this design hold sway for natural, human and moral realities. "The arc of the universe bends towards justice" or karma or morality has a gravitational force behind it that cannot be denied. The open transcendent mindset might also call nature "creation" but assumes a Creator who is still engaged. Creation–really "creating"–is not yet complete. Process theology would likely be resonant with this open transcendent mindset.

The user interface would be so much more manageable to design were sense-makers so inclined to pick one of the four. However, as Taylor observes, we are not so lucky. We live in the soup of secularity where most tend to express a genuine sense of spirituality while manifesting an orientation to either one of the immanent mindsets or express an urbane sense of secularity with little awe and wonder for mystery all the while espousing an

[13] Taylor, Charles. *A Secular Age.* Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 2007. Note: I have taken some liberties with Taylor's observations in simplifying his observations of a complex and dynamic set of world views active in secularity.

orientation to one of the transcendent mindsets. All this makes the design of the interface of our invention that much more difficult.

This is where the user interface must assume that the user is not a fixed much less static entity, but an evolving, changing and dynamic becoming–a human becoming rather than the human being. The highly awarded study of the late Walter Wink on the Son of Man[14]–the title Jesus used of himself most often and freely–may also be worth considering here. Wink's suggestion is that the gospel's message–what Jesus was really showing and teaching us–was how to become human; implying, of course, that our current state of faith (or sanctification), however well or poorly developed, is something less than fully human.

These are the invention's three main characteristics–a sense making architecture, a vernier to avoid category mistakes, and a user interface robust enough to deal with secularities. Now we need to test it to see how it works.

Test Case

Kelly's breezy but provocative *apologia* for technology's inevitable progress (*What Technology Wants)* turns out to be a *prima facie* example of Taylor's hybrid mindset. Kelly's evolutionary theory of the escalating influence of technology is at least a sample–not necessarily representative–of a rather mixed-and-not-fixed mindset steeped in the technological innovations of several decades in the Silicon Valley. At times Kelly exhibits a closed immanent mindset. At other times his immanent mindset appears open. Even still at other times Kelly seems to express a closed transcendent mindset, while at other times it may be open. Regardless, Kelly's thinking represents a pretty good example of just what Charles Taylor describes as a hybrid and dynamic mindset.

While the scope of this paper affords neither time nor space to address all aspects of Kelly's theory of technology, I will briefly attempt to apply the invention to four aspects of his theory. The four are

1) Kelly's hybridizing mindset;
2) Kelly's category mistake;
3) the practical advantage of open transcendence; and
4) thoughts on Kelly's differentiations of ["created,"][15] "born" and "made."

[14] Wink, Walter. *The Human Being: Jesus and the Enigma of the Son of the Man*. Minneapolis: Fortress Press, 2002.
[15] Kelly did not use "created," but I suspect could have easily, given his identification as a Christian. How he would have differentiated these three terms, rather than just "born" vs. "made," remains for us to ask him.

Hybridizing Mindsets

Depending upon what page or even paragraph you are reading in *What Technology Wants* you will find Kelly speaking from any one of the four secularity quadrants.

Hinting of a closed immanence quadrant Kelly says this:

> "Predicting the future of technology is impossible. It's too hard to filter out the random noise of commerce. We will have better luck extrapolating historical trends that in some cases go back billions of years to see how they arc through technology today. These trends are subtle, nudging technologies in a slow drift in one direction that may not even be visible in the blink of a year.
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> They move slowing because they are not driven by human events. Instead these tendencies are biases generated by the tangle of the techium's system. Their momentum is like the gravity of the Moon, a weak persistent, insensible pull that can eventually move oceans." (p. 344)

From the open immanence quadrant Kelly says this:

> "This exhilarating self-acceleration resembles the mythical snake Uroboros grabbing its own tail and turning itself inside out. It is rife with paradox–and promise. Indeed, the expanding technium–its cosmic trajectories, its ceaseless reinvention, its inevitabilities, its self-generation–is an open-ended beginning, an infinite game calling us to play." (p. 345).

These two quadrants Kelly articulates nearly side-by-side. Not even a full page separates the two.

From the transcendent quadrants–albeit quadrants he doesn't get to until late in the book–Kelly demonstrates one foot in a closed quadrant, the other in a more open one. Here's what he says:

> "In general, the long-term bias of technology is to increase the diversity of artifacts, methods, and techniques of creating choices. Evolution aims to keep the game of possibilities going. . . . Looking at the world through the eyes of the technium, I've grown to appreciate the unbelievable levels of selfish autonomy it possesses. Its internal momentum and directions are deeper than I originally suspected. At the same time, seeing the world from the technium's point of view has increased my admiration for its transformative positive powers." (p. 352)

Although not logically neat and tidy, the straddling of quadrants (as Kelly does) remains relatively agnostic (or uncommitted) to any one mindset. This may actually be a good thing. Such an "unsettled" point of view can enable one to be more responsive to the emergent nature of reality, revelation, epiphany and the discovery of present cues. Such an uncommitted posture may sacrifice logical inconsistency for the access to more fluid

frames with which to attend to a wider variety of present cues, not to mention associations between frames and cues. In short, we have more sense-making capacity and arguably more sense-making capability.

The part of the invention working overtime here is the user interface. It alerts us to the mindset being used at any one time. This should be a useful aid to communicating, even if we choose not to debate the merits of one mindset versus another, but to appreciate them all, and especially the movements from one to the other. However, one of the dangers of hybridizing mindsets is the propensity to make category mistakes.

Category mistake

Here we remember Ackoff's warning about metaphors: they are helpful, even essential, but we should be careful not to cross the borders between different types of systems–deterministic, animate, social and ecological. In this Kelly fails to show sufficient restraint. For example, Kelly says, "The most helpful metaphor for understanding technology may be to consider humans as the parents of our technological children." (p. 257).

In this statement Kelly has not only crossed the borders between animate systems and both deterministic and social systems, he has also confused technology with products. This later confusion is a frequent mistake. Technology is know-how. When technology, or know-how, is embodied or "incarnated" in a form intended to be of some value to the end-user or beneficiary, it becomes a product or service or both, often embodied in both hardware and software. Most technologically intensive companies have what they call technology roadmaps and product roadmaps and the two types of maps have very different orientations, time frames and subject matters. Certainly the two types of maps are related and inform each other. However, confusing them is something no company would do in its right mind.

In regards to the category mistake, however, children are animate systems–their individual organs or parts do not make choices, but the child as a whole does. Likewise, ascribing choice and volition, or agency, to a body of knowledge, whether explicitly contained in books, canons of the discipline, or implicitly emergent in tacit conversation among experts in communities of practice, this is a clear category mistake. Know-how does not carry volition. Know-how does not choose, much less desire. It does not have that capability. This is the central problem with anthropomorphisms, which of course theology is rife with as well. But theology is, at least sometimes, aware of this temptation.

Here's another example of Kelly's basic category mistake: "The technium is less an adversary to life than its extension. Humans are not the culmination of this trajectory but an intermediary, smack in the middle between the born and the made." (p. 356)

To be fair, what may be worth keeping in Kelly's theory is his observation of the technosphere's influence on the biosphere, for good or for ill, and the influence of the confluences of both on what could be included in the commons. Often the influence of

technology is ignored or underestimated in theological discussions of culture, worldview and post-modernism (whatever post-modernism may mean to those who like to use the term). But endowing technology or the technium with agency or choice, simply goes too far.

Pithy and provocative though the title may be, "want" implies volition and desire and is appropriate to animate or social systems, not deterministic or ecological systems. Clearly technology is not an animate system. I suspect Kelly would agree. However, Kelly might say that what he calls the technium *is* a social system and hence capable of choice, both in its parts and as a whole. The problem with this, of course, is the difficulty social, organizational or societal systems exhibit in making choices. While IBM has been actually working on technological aids to dynamic governance and management since the late 1990's[16], it remains to be seen whether humans will ever completely be closed out of governing and decision-making loops, especially at the scale of organizations, communities and societies.

This brings us to a theological perspective on ecosystems. Ackoff suggests that choice resides in parts but not the whole in ecosystems. A perspective with a transcendent sensitivity–one with a theological point of view–may indeed ascribe choice to the whole of an ecosystem, where the One who is choosing, however, is not mankind but God. This is another aspect of Kelly's theory that is worth considering theologically.

Advantage of Open Transcendence

Kelly quotes Ray Kurzweil's *The Singularity Is Near* with the following premise:

> "Evolution moves toward greater complexity, greater elegance, greater knowledge, greater intelligence, greater beauty, greater creativity, and greater levels of subtle attributes such as love. In every monotheistic tradition God is likewise described as all of these qualities, only without limitation…. So evolution moves inexorably toward this conception of god, although never quite reaching this ideal." (p. 354).

Then Kelly adds his own commentary on Kurzweil's: "If there is a God, the arc of the technium is aimed right at him" [Would that it were so!]. Kelly then goes on to speak about theology, specifically how process theology attempts to make sense of the evolutionary trajectories of change influenced increasingly by technology. Kelly writes

> "There is even a modern theology that postulates that God, too, changes. . . . this theory, called Process Theology, describes God as a process, a perfect process, if you will. In this theology, God is less a remote, monumental, gray-bearded hacker genius and more of an ever-present flux, a movement, a process, a primary self-made becoming." (p. 355)

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[16]Haeckel, Stephan H. *Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations.* Boston: Harvard Business School Press, 1999.

Though John Cobb may not agree with Kelly's characterization of process theology, much less God, Kelly, I believe, is making some attempt here to speak through an open transcendent quadrant to the possibility of God's active and on-going interest and engagement in shaping the evolutionary trajectories of the human technium. Or said with a bit less Kellyism, that God is interested, engaged and active in the innovating efforts to create new value for others. And if this is true, then might not Kelly need a little help with his innovation theology?

It may turn out to be that innovation theology is a subset of process theology, which may not be such a bad thing. In my opinion, process theology comes close to keeping us focused on *the company of God*–the phrase I use as a stand in for the kingdom of God on earth, not the kingdom of God in heaven and/or after we die.[17]

This life, in the here and now, is where we make choices, invest our time, attention and devotion, and exercise our freedom and demonstrate responsibility, whether well or poorly. This is where creating new value for others–innovating–happens in a way that is either aligned with God's intentions or not. This is the sphere in which innovation theology can and will matter most.

This sphere is where the "created," "born" and "made" meet and either work and play well together, or don't.

"Created," "Born" and "Made"

Early in *What Technology Wants* Kelly differentiates between that which is born compared to that which is made. Citing a previous book he wrote in the 1990's, Kelly reflects back on the evolution of his own observations of the way technological systems mimic biological ones. Not that long ago

> "biologists were learning that living systems can be imbued with the abstracted essence of a mechanical process like computation. For instance, researches discovered that DNA [. .] could be used to compute the answers to difficult mathematical problems, just like a computer. If DNA could be made into a working computer, and a working computer could be made to evolve like DNA, then there might be, or must be, a certain equivalency between the made and the born. Technology and life must share some fundamental essence.
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> During the years I was puzzling over these questions, something strange happened to technology: the best of it was becoming incredibly disembodied. . . . .(and) the process of disembodiment was speeding up." (p. 10)

[17] This is not to say that hope and beliefs related to the afterlife do not have a bearing on what we do and how we live in this life. Rather, it is simply that the kingdom of God–the central message of Jesus–was not relegated to otherworldly realities. This much is very clear in the gospel testimonies, if not always acknowledged in the variety of Christian expressions.

In parallel Charles Taylor speaks about what he observes in secularity as "excarnation"–the opposite of incarnation, if you will. I suspect he is referring to something quite similar.

Unfortunately, Kelly doesn't spend much time developing this born vs. made distinction. However, if we leave the dichotomous thinking and move toward the triad of "created," "born" and "made," then we may have a sense-making structure that helps us make meaning as well as incarnate or embody value for others. This could be a very useful cartographic distinction in the field of innovation theology.

Perhaps it is simply thinking of the *born* as that which is native to the biosphere, that which seems native to the technosphere as *made*, and that which both the biosphere and the technosphere depend upon as *created*. But what if we were to alter our language a bit and infuse it with a bit of theology? For example, instead of referring to nature as "creation" which admittedly has the advantage of reminding us of the Creator, what if we called this sphere (universe, cosmos, etc.) the sphere of grace, God's generosity, Gensis, or the genosphere, if you will? Might this help us remember that it is given to us, and that "the whole of creation still groans," is not finished, and is itself inviting us to co-create and collaborate with the Creator?

For innovation theology this may be a central distinction. In the context of innovating–particularly technological innovation–we invent nothing without prior art and materials given to us. Better and more prepared minds than mine at CTNS should be able to take this further than I can. In so doing, CTNS would be making significant, practical advances to innovation theology or what Kelly calls the technium.

Likewise, inheritance–a persistent biblical background theme that often enough comes to the narrative foreground, throughout scripture as well as the various landscapes of the present realities–might be understood differently when considered through three different lens–one created, one born and one made. Think stewardship of the earth, social and economic equity, and sustainability (both economic and ecological), respectively.

Summary

Whether I have achieved my intended purpose–to invite you, the TTT in particular and CTNS in general–to add innovation theology to your portfolio of considerations, time will tell. I certainly hope you will consider it, whether because of this paper, or because of what may sprout from seeds not even planted yet.

In the meantime, I leave you with the following thought related to the intersection of technology and innovation and theology:

The scientist is someone who attempts to understand the *created* technologies of God. The innovating technologist is someone who attempts to apply the *made* technologies of mankind. Both scientists and technologists, however, are either aligned with the interests

of the company of God, or not, in the co-creation of value for others (i.e., innovating), which may have as much to do with ROI as it does with our moral and spiritual condition.

Our common future, of course, depends upon aligning ourselves–our time, attention and devotion–with the interests of the Company of God. Innovation theology should help us discern just what those interests are in response to change and in our efforts to create new value for others.

Thank you for your consideration.

(Interested in more, please visit innovationtheology.org.)