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DEBATE

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A debate between Steve Fuller and Giuseppe Tanzella-Nitti on 'scientific progress, human progress and Christian theology'

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ABSTRACT

This piece is the first of new annual feature of the journal, entitled 'Debate'. Two scholars offer their contrasting reflections on a topic of interest – this year, it is 'scientific progress, human progress and Christian theology'. The debate is opened by American sociologist Steve Fuller, who briefly presents his thesis on the subject, proposing in the end the Church to be more open to an 'adventurous approach to nature' in his opinion more consonant with today's 'emerging biometrically oriented genetic science'. In answer, Italian theologian Giuseppe Tanzella-Nitti explains that, from a Christian perspective, human progress needs to respect the 'ontological foundations of creature itself' in order to avoid the 'illusion' of a false progress. Taking these thoughts into account, Fuller replies clarifying his points. The debate is concluded by remarks from the Editor.

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Does humanity's spiritual progress require a change in our species' self-understanding? A twenty-first century challenge for the Church

Steve Fuller

ABSTRACT

The essay explores the prospects for humanity's spiritual progress from within the narrative of secular progress. Fukuyama is the touchstone because he is sensitive to the potential for spiritual loss from what he envisages as the triumph of liberal democracy, notwithstanding its various recent setbacks. His focus on *thymos* as the secular proxy for spirit is accepted and expanded to allow for the inclusion of the more assertive aspects of Jesus' ministry, which suggests the possibility of humans transcending their identity as an animal species by summoning powers that have remained

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dormant in our Fallen state. After alluding to certain modern 'post-Christian' movements and entrepreneurial capitalism as modern expressions of *thymos*, the essay concentrates on the increasing involvement of science and technology in the reconstitution of the human life-world. This history owes its general orientation to Christian theology, yet its *modus operandi* has often stretched the limits of Christian orthodoxy, but in ways that have been largely productive of humanity's spiritual progress. And this has included offering challenges to the idea that to be human is to be a member of a fixed animal species – that is, an 'ape with apps'.

1. Does secular progress involve the loss of thymos?

Francis Fukuyama's *The End of History and the Last Man* (1992) was probably the last major work to cast human progress as a full blown secular eschatology (Fuller 2006: chap. 9). Contrast it with the more recent *The Better Angels of Our Nature* (2011) by Steven Pinker, a thinker who is normally portrayed by himself and others as a defender of 'Enlightenment values' (Pinker 2011). While Pinker presents a rather optimistic vision of humans gradually transcending their violent evolutionary past, his argument is restricted to presenting and extrapolating from a wide variety of historical trends, without suggesting an 'Omega Point' to which they all lead. Indeed, in an earlier book, *The Blank Slate* (2002), Pinker decried that teleological way of thinking as 'utopian', a label that he applied to a range of social science-based ideologies from behaviourism to Marxism. A telling feature about the character of 'secularism' in our times is that Pinker can appear to be an heir to the Enlightenment, even though most of that movement's original figures harboured some sort of eschatological vision of humanity. Put bluntly, but in keeping with his own Darwinian scruples, Pinker's sense of 'progress' is a 'progress *from*' but not a 'progress *to*'. Kant, for one, would not be pleased; but neither should most thoughtful Christians.

This makes Fukuyama all the more interesting, especially in the light of his ambivalence towards what he took at the time to be the imminent realization of his own liberal democratic utopia with the fall of the Soviet Union. Fukuyama's lack of triumphalism perhaps reflects his Christian background, which cautions against mistaking secular success for genuine salvation. The publication of *The End of History and the Last Man* coincided with the end of the Cold War, a conflict that was officially between two irreconcilable visions of human progress, American capitalism and Soviet Communism. The conflict was transmuted into a high-stakes global game – a nuclear arms race – in which the two sides were always on the brink of 'mutually assured destruction'. That form of the conflict was resolved in a relatively pedestrian way as the capitalists simply drove the Communists to bankruptcy by outspending them on national defence systems. As for their larger ideological differences, they were never properly resolved. This in turn explains the strange zombie-like afterlife of Marxism in the academy – and perhaps in certain Latin American countries.

Nevertheless, while Fukuyama was convinced that liberal democracy would set the pace for the future of humanity, he worried that our souls would eventually become emptied of the heroic sense of self-transcendence that Plato originally identified as the

basis of courage, a form of anger triggered by the sense of injustice, which in turn motivates direct action. In English, the original Greek *thymos* has been alternatively translated as 'indignation', 'spiritedness' and, to recall that nineteenth-century coinage, 'willpower', a term that suggests that one's own body might be a liability to the outworking of the spirit. This in turn inspired the various heterodox attitudes to health and human biology more generally associated with post-Christian American religious movements ranging from Mormonism to Christian Science. In this context, the ultimate battle turns inward, a kind of Neo-Stoicism that in its more 'spiritualist' variants has courted Gnosticism, whose latter-day expressions include Scientology and even Transhumanism (Fuller and Lipinska 2014: chap. 2).

Moreover, the meaning of *thymos* may be extended to 'care', especially if risk of harm to oneself is involved in acting on behalf of another. The genre of cartoon 'superheroes', starting with Superman and Batman in the 1930s, exemplify the most popular turn in the concept. That each superhero is vulnerable in some way that can be exploited by potential foes harks back to classical psychology, in which *thymos* originally appeared as a military virtue, an essential component of which was physical vulnerability, as in the Homeric rendition of Achilles' heel. It was a line of thought that was later adapted to understand the more assertive aspects of Jesus' ministry. Here, Jesus' connection through his disciple Simon to the Zealots – the Jewish sect that called for a militant separation from Roman rule – has been periodically invoked. A notable recent expression is Aslan (2013), albeit while invoking a polemical comparison with 'Islamic militancy'. Nevertheless, this general interpretation of Jesus as the human face of divinity remains persuasive – and should be interesting to the Church.

The strength of the interpretation lies in providing a clear alternative image of the human to our default fallen state in the wake of Original Sin. In this context, Jesus may be understood as having summoned humanly available resources to achieve superhuman ends. What others might see as Jesus' recklessness (e.g. Judas Iscariot's verdict on Jesus' ministry) makes sense to those who regard their mission in life as going beyond the mere preservation of their physical bodies to the championing of a higher principle, which others then take their lives as having exemplified. This has engendered a very fruitful tradition of writing and performance in the 'imitation of Christ', to recall the famous fifteenth-century spiritual exercises of Thomas à Kempis, which culminated a millennium of thought and action that had begun with St Augustine and was perhaps taken most literally by the Franciscan order and later, in a more oblique and worldly fashion, by the Jesuits, who present themselves as 'nudging' the Christ-like character already present in people (Passmore 1970: chaps. 4, 7).

Whatever else is clear about this tradition, it is that 'imitation' does *not* mean conformity to a prior pattern of action, whether it be set down by nature or law. Rather, as Kant would later put it, it is about 'self-legislation', a personal act of identifying with what is right: This makes for a 'good will' – a living embodiment of the spirit, in somewhat more theological terms. I dwell on this point about Kant because throughout his ethical writings he proposed that the failure to 'self-legislate' in this sense constitutes humanity's 'radical evil', a state of depravity that is illustrated by our knowing what is right but acting on it only insofar as it promotes our material survival. In this respect,

most humans most of the time live 'fallen' lives. For Kant, human goodness arises only when one knowingly does what is right even knowing that harm might follow to oneself and even loved ones. It is only then that one is literally making a stand on principle – and in that sense, 'imitating' the principle. It seems clear that Kant's rather abstract discussions of good and evil were informed by the *thymotic* character of Jesus.

2. The decline of thymos in the modern era

Of course, Fukuyama was hardly the first to bemoan the decline in *thymos* at 'the end of history'. William James originally raised the prospect – prematurely, to be sure – in his famous 1906 lecture, 'The Moral Equivalent of War', in which he worried that the end of war would render people incapable of identifying with a cause greater than their own self-interest (Fuller and Lipinska 2014: chap. 4). Nearly four decades later but before the Cold War got underway, Joseph Schumpeter was predicting in *Capitalism, Socialism and Democracy* (1942) that entrepreneurial capitalism – the bold speculative investments that were driven by what had been called 'enthusiasm' and 'animal spirits', latter-day expressions of *thymos* – would give way to a version of technocratic socialism in order to minimize the social costs of incessant market volatility. But perhaps the closing lines of T.S. Eliot's 'The Hollow Men' captured the concern most eloquently – our humanity might end 'not with a bang but a whimper', not as a result of bloodshed but in mutually binding agreements.

Eliot was reflecting on the grand – and what turned out to be misplaced – claims about 'lasting peace' made on behalf of the Treaty of Versailles. Liberal politicians, such as the treaty's chief architect, US President Woodrow Wilson, had hailed what we now call the 'First World War' as 'the war to end all wars'. However, the rise of Hitler and the onset of the Second World War within two decades demonstrated that *thymos* had been far from tamed, let alone suppressed. An arguably similar rude awakening happened sooner to Fukuyama's own post-Cold War vision after 9/11. Perhaps it happened once again after 2016, the Oxford English Dictionary's year of 'post-truth', following the wave of 'populism' that propelled Donald Trump into the U.S. presidency and the U.K. vote to leave the European Union (Fuller 2018). At this point, it is worth recalling the modern vision of human progress in terms of which the long-term sublimation of *thymos* has made sense.

For self-styled 'progressive' thinkers of the nineteenth century such as Henri de Saint-Simon, Herbert Spencer, as well as the first generation of social scientists that they influenced, humanity progressed from a 'military' to an 'industrial' style of life: the former governed by a strong sense of 'us vs them' that justified internal hierarchies that were maintained under the threat of violence; the latter by a desire to break down those barriers to unleash hidden human potential, resulting in the peaceful production and trade in goods among people who genuinely recognized the value that they have for each other. Adam Smith's phrase 'division of labour' carried luminous meaning in this context.

Karl Marx was also caught up in this way of thinking about progress. He elaborated on Saint-Simon's original point that humanity began to make decisive progress once people shifted from fighting each other (*a la* military) to fighting together against

nature (*a la* industrial). Saint-Simon himself was quick to theologize this shift as a 'New Christianity' that could release humanity from its fallen material condition: a modern solution to the problem of Original Sin. Disciplining nature through industry would supposedly restore the Garden of Eden, whereby the Earth's scarcity is rendered a cornucopia capable of satisfying our wants and needs. Marx did not question either Saint-Simon's secular theology or his 'anti-ecology' approach to nature. However, Marx was concerned that capitalism – the motor of this emerging dynamic society – actually intensified some aspects of the old military mentality, rendering it in the end an inappropriate vehicle for fully realizing the utopian state that Saint-Simon had originally christened 'socialism' (Passmore 1970: chaps. 10–11).

Of course, what Marx had in mind was the ongoing 'class war' that resulted in the exploitation of workers in the midst of all this 'progress'. But his own vision of the socialist utopia drew on the sort of peaceful, even 'anarchistic' idea of spontaneous mutual recognition of 'each according to their ability to each according to their need' that lay behind Smith's original concept of division of labour. In short, mutual recognition would awaken a greater sense of human interdependency, shifting the balance of human self-understanding from individualism to communism. In terms of Marxist eschatology, 'individualism' is simply a waystation on the road to humans identifying more with the totality of their species than with their particular membership in it. Thus, capitalism's fixation on the individual constitutes arrested development. It marks an 'alienation' from some envisaged state of species wholeness, the closest evolutionary analogue to which might be 'swarm intelligence'.

I stress the 'speciesist' side of Marxism in deference to its cornerstone economic doctrine, the labour theory of value, a derivative of scholastic theology, which was 'reformed' by John Locke for the modern age. Accordingly, 'labour' is distinctive from other forms of work – as performed by, say, domesticated animals – by virtue of its inherent creativity, which is in turn the distinctive source of its value, a legacy of our having been created 'in the image and likeness of God'. However, even the most modernized versions of the doctrine – such as Marx's – raise questions in the light of evolutionary theory. I mean here the legacies of both Lamarck and Darwin, neither of whom adhered to the ultimate source of the scholastic doctrine, the Aristotelian idea of species as a well-bounded category of being. The problem came to a head with the revolution in molecular biology in the second half of the twentieth century. To be sure, as we shall see, the status of species-talk remains unresolved to this day, but it should focus the minds of Christians in terms of what exactly it is about the 'human' that should be promoted in the future.

3. The spiritual significance of the rise and fall of humanity as a species

The historic basis for species classification was the clear morphological discontinuities between life-forms. Species-defining features are evident to the properly observant eye, which originally licensed the use of 'specimens' for both teaching and research purposes in 'natural history', understood as an amalgam of geology, biology and anthropology. However, the cracking of the genetic code revealed a massive overlap in the constitution of life-forms, notwithstanding their surface differences. In fact, the extent

of the overlap leads most scientists today to doubt any strictly genetic basis even for demarcating 'human' from 'non-human' (Fuller 2011: chap. 1). At the very least, a human is most definitely *not* an 'ape with apps', notwithstanding the presentation of our species by Neo-Darwinists in both the popular and scientific contexts. Indeed, the 'ape with apps' view of humans makes as much sense as claiming that a personal computer is a television with some additional transmission functions. It mistakes the continuity of the interface – a holdover from the already existing media ecology – with a fundamental reorientation of design and purpose in the artefact.

But humanity's species status is equally problematic from a Christian standpoint because the Bible says that humanity becomes a distinct species only *after* the Fall, as a mark of demotion from divine privilege. Prior to that point, it is not at all clear in which material form humanity appears, except that it is 'in the image and likeness of God'. This divine authority had enabled the first humans to command nature – at least in the sense of naming its various species in ways to which they responded appropriately. Humanity's prelapsarian state inspired the dual naming taxonomic strategy pioneered by Carolus Linnaeus in the eighteenth century, which would identify a species in both morphological and functional terms. Of course, Linnaeus acknowledged that the Fall had reduced the human to one more life-form, albeit the most knowledgeable one, hence his coinage of our species name, '*Homo sapiens*'.

But before Linnaeus so explicitly related humanity to apes, largely on morphological grounds, this association had been conspicuous by its absence, simply because until the first wave of European colonial expansion in the late fifteenth century, Westerners had not encountered apes in the numbers that would inspire them to see any overriding similarity with humans (Fuller 2017). Nevertheless, there is a regrettable anachronistic tendency on the part of even historians of science to imagine that when, say, Renaissance artists and scientists fixated on the significance of the proportions of the male human body – notably Leonardo da Vinci in *L'Uomo Vitruviano* (1490) – they were engaged in some sort of species or perhaps even gender narcissism. On the contrary, they fixed on the body as a site – a 'microcosm', as was sometimes said – for the playing out of timeless ratios that are also present in other aspects of nature, with no particular privilege given to our simian cousins, let alone men.

This Platonization of the human body, which contributed to the invention of linear perspective in painting, is best understood as operating in the same spirit as the search for a common set of mathematical laws by which nature is governed, regardless of its surface 'qualitative' differences. Indeed, this was the ground on which Plato defeated Aristotle more generally, resulting in the 'Scientific Revolution' of the seventeenth century – a sort of 'denaturalisation of nature', whereby differences in kind were rendered into differences in degree. The point was picked up in the twentieth century by Ernst Cassirer, Alexandre Koyré and perhaps most astutely by Michel Foucault (1970), who saw it as part of the Renaissance's heightened sensitivity to resemblances at multiple levels of reality, of the sort that scientists now routinely describe 'isomorphisms'. This mentality gave a new impetus to such ancient heretical practices as astrology, alchemy and other forms of 'magical' thinking, bringing to the fore their associated excesses, which we would now associate with the 'hype' and 'risk' of entrepreneurial capitalism.

This hype and risk came from the magicians' own attempts to use whatever small demonstrable achievements they made as a way of leveraging belief ('investment') in larger unproven claims. These included access to cosmic principles that had the potential to destabilise established authorities and rearrange existing power structures. Thus, the action taken against the magicians was often done in the spirit of 'precaution', since usually the magicians' claims could not be adequately decided on their face. The short-term result was a flurry of persecutions in both Catholic and Protestant countries, which have been emblazoned in the modern mind as 'witch hunts'. But more important in the long term was the response of King James I's personal lawyer, Francis Bacon, who kept a very open mind about magic. He proposed systematic experimentation to resolve the more excessive claims made by its practitioners. The result was a conception of 'ultimate knowledge' that is orthogonal to ordinary sense perception – indeed, the phrase 'artificial intelligence' could be easily applied to it – and yet capable of robust replication and extension. This is what we now call 'science'.

Bacon's innovative repositioning of magic was helped by the fact that not all the possible 'magicians' got caught by the authorities. Kepler and Newton are arguably ones who escaped, and out of astrology and alchemy thus came astronomy and chemistry (Koestler 1959). But make no mistake, all of these disciplines – both today's sciences and their 'pre-' or 'pseudo-'scientific progenitors – regard the natural senses as in equal measure virtue and liability when it comes to the fathoming of reality. This justified the development of specialised corrective instruments, such as the telescope and the microscope. And after the media revolution initiated by the telegraph in the mid-nineteenth century implicated humanity in a global noetic order, it became increasingly common to think about all of technology as the prosthetic extension of the body that releases the full powers of the mind. Emerson, Wells and McLuhan are obvious secular sources. In recent Catholic theology, this vision has been most clearly – albeit controversially – expressed by Pierre Teilhard de Chardin. And part of the controversy surrounds the suggestion, now generally associated with 'cyborgs', that humanity might come to be not simply enabled but at least partly constituted by technology, effectively subverting the status of humanity as an animal species.

A driving theme in this narrative is a profound distrust in the reliability of native human judgement without strenuous external checks and enhancements. It began with the Reformation's revival of St Augustine's interpretation of Original Sin as a trait with which each human is born in exactly the same sense as Adam's original descendants, and its secular legacy is what the sociologist Robert Merton dubbed science's 'organized scepticism' (Harrison 2007). Here, nature as given is presumed to be not merely an obstacle but also a prod to awaken the divinity within us. In the case of science, that process of 'awakening' involves both the transformation of matter and the mutual criticism of fellow inquirers. This secular revival of Augustinianism contributed to the idea that humanity's fallen state is not absolute but transitional to some sort of 'new world order', which in the modern era – as in the medieval era – was sometimes presented in apocalyptic and even violent terms (Löwith 1949). Even the pursuit of science, which has declared its peaceful intentions since the Charter of the Royal Society, has throughout its modern history been marked by many rather self-conscious appeals to 'revolution' (Cohen 1985).

In our time, genetics is the most obvious site in which this narrative has taken hold. Nearly, all the relevant plot elements are in place. Eugenics is the tainted precursor, standing in for astrology and alchemy. But there is also recognition of the alloyed character of nature as normally presented to our senses and the indistinctness of species boundaries. Together they license activities that aim to purify, individuate, recombine and reunify nature – increasingly with the aid of technology. An interesting way for the Catholic Church to get ahead of the game this time round would be to promote an understanding of the history of science that does not put the Church on the defensive as a 'conservative' entity, protecting people from themselves, as it were, which has the unwitting effect of suppressing *thymos*. Instead, it would capitalize more on the precedent set by the medieval orders – both monastic and mendicant – that married a strong sense of self-monitoring to an adventurous approach to nature, including human nature. This suits the exploratory attitude of today's emerging biometrically oriented genetic science, which involves increasing levels of intervention into default life processes, where the outcomes are 'indeterminate' in that they are likely to go beyond the restoration and maintenance of some classical species-based ideal of health. This reorientation would enable the Church to engage more constructively with the emerging meanings of 'being human' – and not be locked into an 'ape with apps' conception.

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Theological reflections on the relationship between human progress and scientific progress

Giuseppe Tanzella-Nitti

The notion of 'progress' implicitly expresses a judgment and a pre-comprehension, depending on the perspective from which it is considered. Progress is not a simple advancement in time or history, but indicates an improvement, the movement towards a goal, sustained by the hope of reaching it. This, then, implies declaring beforehand what is the end towards which one tends and wants to drive the progress. For this reason, the two expressions 'scientific progress' and 'human progress', both refer to values, purposes, in the light of a specific anthropology, one satisfied and fulfilled by the end that the progress searches and wants to achieve. These expressions cannot indicate facts only.

Depending on the purposes that guide our praxis, the same facts may appear in the eyes of some as progress, and in the eyes of others as regression. In short, we need a reference anthropology, which needs, in turn, an appropriate foundation. Similarly, even to judge what scientific progress is and what is not, we need an epistemology which should be used as a benchmark. To understand this, it is enough to consider the different views on scientific progress endorsed by Popper, Kuhn and Lakatos. The first author supported the idea that scientific knowledge proceeds substantially in a cumulative way; progress of knowledge is rather revolutionary for the second; and it is subject to slippages and subsequent re-categorizations according to the third. Following the theological perspective that I have declared, I prefer here to address what Christian Revelation and theology (which tries to interpret Revelation) say regarding the relationship between scientific progress and human progress.

If by scientific progress we mean the activity by which we discover the laws of nature and their dynamics, we study and understand the intimate structure of reality and life, and we try to present and organize this knowledge in an intelligible way. and, moreover, if by scientific progress we mean the activity of employing such a knowledge, both to understand the role of the human being in the cosmos and to transform reality thanks to technology, in order to increase the quality of our lives; then, from a theological viewpoint, there is no doubt that this progress is part of, and fully inherent in, the mission entrusted by God to man. This is how this task is presented by the narrations of creation collected from the book of Genesis, or in other places of sacred Scripture, especially in the Wisdom books. As Fuller well recalls in his essay, Adam is asked to give a name to animals, thus expressing his capacity to know things intimately; he is called to discover and employ the laws of sowing and harvesting, to build irrigation systems that ensure the fruits in due time. But in a more general and programmatic way, God asks our ancestors to populate the earth, to make it ever more suitable for their lives, that is, to humanize it.

In this regard, the verbs that the Scriptures use in these narrations have the meaning of 'organizing a territory', 'preserving the earth', 'making life possible', and not the idea of subjecting and exploiting, as a hasty exegesis, coloured with criticism to a supposed biblical anthropocentrism, has sometimes conveyed. On these original bases, the

Christian vision of the high dignity of human work, unknown to the Greek-Roman world, was soon inserted, which first the Jews and then the Christians understood as participation in the creative work of God. This is the work that Jesus of Nazareth took on himself and that he personally wanted to exercise for about thirty years, in aspects that today we might call *technical*.

If we reflect on the theological meaning of the expression 'human progress', we find here two dimensions. A dynamic dimension, which concerns the personal progress with which every human being, configuring himself or herself to Jesus Christ the true man, makes the entire human community advance and flourish according to a relational logic guided by charity. The other dimension, permanent and normative, puts the emphasis on the adjective 'human', indicating here specificity, a dignity that every progress and development must respect and make explicit.

What we recognize as 'human' is a good and a value to be preserved and shared, rather than a goal to be achieved. The dynamic and normative dimensions of human progress indicate a form, the 'human form', which has to inspire and characterize all activity and illuminate all relationships. This form is a 'filial form', it is the *forma Christi*, to which corresponds a filial freedom, the only one capable of generating a history, a work, a scientific progress, in constant reference to the plan of God the Father, who created everything through the Word and in view of the Incarnate Word. In this way, human progress is never only development, but rather disclosure and explanation of what has already been acquired in Christ. He is the apex of human progress, an apex already reached in His Paschal Mystery, fully disclosed in the law of charity, in the revelation of our dignity as children of God. Looking to Jesus Christ, true man and true God, the human being has the possibility to reach his or her best enhancement. In a certain sense, if by 'human' we mean a humanity wounded by sin and limited by our natural capacities, Christ is the way in which the human being can became *trans-human*.

In the light of the previous reflections, when examined from a theological viewpoint, the relationship between scientific progress and human progress could be summarized as follows: a) when science and technology are carried out with a filial freedom and sustained by a filial hope, then they achieve a true scientific progress; b) when scientific progress is informed, that is characterized, by charity, which is 'Christ's form', then it builds a true human progress, as a task inherent in the human vocation to be a child of God. A filial freedom is neither despotic nor absolute: it is sustained by a creaturely relationship and corresponds to a legitimate autonomy, respectful of the ontological foundations of creature itself; when these foundations are denied, nothing is built and everything vanishes, even if we perhaps have the illusion to progress.

Christian, filial hope trusts in the truth: it has a realistic, not a catastrophic attitude towards the future. It has also the awareness (and the relief) that the progress we build does not depend only upon us, because a son knows that the destiny of history and of the world is always in the hands of his Father–God. In brief, Christian theology recalls that not every accumulation of scientific knowledge, nor every new technological application is *ipso facto* a step forward in human progress, and therefore scientific. They are part of true progress insofar as freedom, hope and goal that drive and govern those knowledge and applications are informed by filial charity, that is, by the form of Christ.

Genuine improvement vs. mere enhancement: the aporia of human progress

Steve Fuller

I would like to thank Rev. Prof. Tanzella-Nitti for his useful intervention, since he has made some points in relation to which I can define my own position concerning human and scientific progress – and what Christian theology can offer to that understanding.

Let me start by drawing a distinction in conceptions of progress. I agree with Tanzella-Nitti that the conception appropriate to discussions of human or scientific progress is in terms of movement towards a goal, the distance to which we might then measure over time. However, that is not the only conception. In addition to the idea of 'progress to', there is simply 'progress from', the destination to which is by no means clear. But we can still measure our movement away from the starting point. Generally speaking, the difference in the metrics required in the two cases is that 'progress to' is about degrees of approximation to a goal, whereas 'progress from' is about incremental advance along a dimension. In short, it is the difference between genuine improvement and mere enhancement. This distinction is routinely confused in discussions of both scientific and human progresses.

In the case of scientific progress, it is common for the accumulation of facts in some domain of inquiry to be taken as a proxy measure of our access to the truth about that domain, as if a whole were no more than the sum of its parts. Of course, no philosopher of science has ever endorsed such a view. Indeed, the first chapter of perhaps the world's most widely used introduction to the field is devoted to debunking it (Chalmers 2013). Nevertheless, there is a circle here to be squared; hence, the widespread use made of the 'Gestalt shift' in the philosophy of science to explain everything from individual discovery to paradigmatic change. The implication is that the ultimate value of adding more facts lies in the prospect that the next one may trigger a systematic reinterpretation of all the previous facts, thereby bringing inquirers closer to the truth they seek. This is close in spirit to the so-called law of dialectics whereby quantitative change eventuates in qualitative change. It is also reasonably regarded as an attempt to retrofit the classical sorites paradox to bridge the gap between 'progress from' and 'progress to'.

In the case of human progress, matters become still more difficult. To be sure, in modern times it has been common to take greater convenience as a proxy measure of our access to a good life, if not the *summum bonum*. Technology is normally implicated in such assessments of convenience, as machines reduce drudgery, remove delays to gratification and permit customization. And that might be seen as comparable to the confusion involved in interpreting 'more facts' as 'more progress' in science. But there is more here than meets the eye. The roots of this general mode of thought reaches beyond sociology back to medieval theology, perhaps most explicitly in John Duns Scotus' doctrine of the 'univocity of being' (Fuller 2011: chap. 2).

If God is understood as having unified fully in his being all the virtues that humans display to a variable but limited extent, then the human condition is effectively 'dimensionalized'. In other words, it is by the same standard that reveals God to be at once omnipotent, omniscient and omnibenevolent that we are also revealed to be weak, ignorant and bad. It is as if 'divine' and 'human' stand apart in a continuum akin 'light vs dark', in which darkness is the complete absence of light. Consider it a mathematical expression of the Augustinian intuition that our 'fallen' nature is to be understood in terms of our 'distance' from God. In this respect, human exceptionalism consists in our being held to just this highest of standards, as it marks us as proper children of God, not simply highly advanced animals.

Notice, however, that the dimensional nature of this 'divine standard' does not make specific reference to any particular material realizations. Although humans are clearly embodied and embedded in the material world, there is no expectation that, say, degrees of goodness will be aligned with amounts of wealth, or even of charitable contributions. Without at all dismissing material success, Christians have rightly placed a moral burden on the 'successful' to show that their proxy for goodness is not simply a decoy. To think otherwise is to court the heresy of Pelagianism, whereby greater spiritual success in our journey back to God is measured straightforwardly in terms of material success. In short, material and spiritual success should be regarded as orthogonal – not parallel – measures of human progress. It was in the light of these concerns that the concept of efficiency – doing the most with the least – started to acquire moral standing, first as an expression of monastic asceticism and later as an ethic of productivity that in the modern period came to be championed by both capitalism and socialism (Noble 1997).

But humanity faces two major challenges in progressing along this 'divine standard'. One, which was well identified by Pope Francis in his 2015 encyclical, Laudato Si, is that of an ecologically sustainable sense of social justice. This might be understood as an efficiency principle for the planet as a whole, in which spirituality emerges from our balancing the countervailing material demands of all of the Earth's inhabitants. However, the ultimate challenge is conveyed in the term used by the medieval theologians – 'transcendentals' – to describe those dimensions along which humans continue to fall far short.

God remains a conundrum to psychologists because while individual humans are expected to vary across dimensions such as knowledge, power and goodness, it is difficult to imagine someone who excels in all of them equally, while retaining their humanity. Yet Christians accept not only that humans are created 'in the image and likeness of God' but also that Jesus demonstrated how it is possible to live as a human in that understanding. The continued fascination with superheroes, which feeds the transhumanist imagination, is a popular secular expression of that aporia.

Our understanding of what it means to possess knowledge, power and goodness may be itself distorted by our fallen status, which would in turn explain our difficulty in imagining that someone could possess all of these qualities without trade-offs. But if I may put words in Duns Scotus' mouth, 'knowledge', 'power' and 'goodness' may reflect conceptual distinctions that do not make a real difference.

To speak of knowledge, power and goodness as 'coextensive transcendentals', in the medieval jargon, is to see them as alternative routes to the same destination – diverse

senses eventuating in a unified reference, as the founder of analytic philosophy, Gottlob Frege would have it. And Frege was clear that 'Truth' was his God surrogate. Moreover, this metaphor of 'alternative routes' was subsequently pursued by Karl Popper (1972), who likened science's search for truth to the different paths pursued to reach a mountaintop shrouded in clouds. In these cases, one can speak about proximity to the goal without any commitment to the ultimate value of the route taken, as that will be determined only at the end.

This general approach implies that progress always involves 'learning to learn', whereby one comes to a greater understanding of the nature of the goal at the same time that one gets closer to it – and the goal may not be quite as one originally thought. This point applies no less to our understanding of humanity as to our understanding of science, which is why we should always keep an open mind about what a 'good life' might mean for those who will be living it in the future.

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Editor's final comments[1]

The topic at the centre of the debate is extremely central and complex: man and the 'progress' that he is able to promote and achieve through his ability to know and operate – thanks to various instruments – and how much and how this affects known reality and therefore man himself and the society in which he lives.

The key point of the debate is whether human progress is towards an end and therefore has its full meaning and a targeted aim, or whether, on the contrary, it is to be understood only as a development, an evolution and a result of human activity understood only as a spontaneous process, somehow 'blind', and therefore not oriented, not controllable and not assessable according to precise and shared criteria.

One interesting characteristic of this debate is the difference in approach of the two scholars: while both speak about the relationship between scientific and human progress, Fuller does so from the perspective of a social scientist, Tanzella-Nitti from that of a Christian theologian.

Steven Fuller presents the issue in a very articulate way, rich in ideas and references, analysing different points of view and presenting today's most relevant thematic issues. The debate proves to be very lively and highlights how man, promoter of progress, somehow risks to become part of it almost unconsciously, to be involved in such a way asc to become 'distorted' or changed, in a radical way, in his attitude and in his identity, even to the limit of being tempted to or even aspiring to become a superman

through various means for enhancement or genetic modification. In this way, man would come to assume a new image and new potential, without a well-defined vision of what he can achieve in the effects.

Giuseppe Tanzella-Nitti's answer is as clear and linear as it is reassuring: following Catholic doctrine and its anthropology, man must not fear progress, nor the changes or important results to which this can lead. On the contrary, man is entrusted by God himself with the mission of advancing and developing the reality in which he finds himself in order to improve man's life and, at the same time, taking care of the world in all its aspects. We must not, therefore, be surprised by the progress of which man is capable, nor be led into fear or anxiety, but we should be recall that man is required to act responsibly and seriously.

Man, both as a rational animal and, for believers, as a son of God, has a great task to accomplish. Precisely for this reason, he has excellent cognitive and operative capacities, as he has shown in over 2000 years of history and as he will continue to do. Errors, mistakes or failures are always possible and have occurred historically, but are recognizable and correctable thanks to the perspective in which this progress is made and that involves the whole of human life and society.

Fuller's presentation clearly underlines how nowadays the panorama is very complex and subject to different interpretations – and not infrequently very far from the religious framework and a well-defined anthropological vision recalled by Tanzella-Nitti – but rather centred on other particular dimensions, such as the economy, science, technology, politics, etc. in which man tends to get lost or remain dissatisfied or confused. Tanzella-Nitti's perspective proposes the Christian anthropological doctrine – today often forgotten or even rejected, under the general impression that it wants to limit or deny man the development of his abilities – in an optimistic and positive light: man is engaged in progress – not only scientific but also social, artistic, cultural, etc. Tanzelli-Nitti makes progress somehow comprehensible in its different phases, and assessable in the outcomes and directions it can take. Finally, answering Tanzella-Nitti's observations, Fuller clarifies and deepens his remarks on how Christian theology can be useful in his view of human and scientific progress, noting at the same time that, unlike Tanzella-Nitti, he recognizes 'progress from' as well as 'progress to'.

The debate clarifies the precise points of difference between two diverging positions. While some seek to find agreement at any cost, others on the contrary believe that where such fundamental difference exists, the most necessary step for fruitful dialogue is to clarify the issues at stake by honest and profound analysis. We thank both professors for their engagement in this necessary and exhilarating intellectual work regarding a question which carries such powerful logical implications, not only for our understanding of who we are as humans, but ultimately for the future of our species.

Note

1. The editor wants to thank particularly Prof. Valeria Ascheri, expert in Philosophy of Science and Epistemology, for her suggestions to analyze and comment on this complex but fruitful debate.