

SCIENCE AND INVASION-THE DAWN OF EPISTEMIC IMPERIALISM

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ABSTRACT: *Sergio Leone in the classical 1966 film 'the Good, the Bad and the Ugly' (Il buono, il brutto, il cattivo) produced by Alberto Grimaldi depicts the theme of 'violence and a deconstruction of Old west Romanticism. As in the title which makes a juxtaposition of varying themes inherent in one movie, science has over the years become potent for both the good and the bad. With its mind-blowing breakthroughs, it has unlocked mysteries, created new knowledge. It has equally generated anxieties and dominance via its methodological rules. This paper examines science and her envisioned biotechnological inventions from the prism of imperialism anchored on methodology. Employing philosophical analysis as our underlining method, we argue for caution against this scientific incursion.*

KEYWORDS: Science, Invasion, Epistemic Imperialism

INTRODUCTION

Often when one consider the vast development as well as the changing face of the world, one cannot but wonder what life would have been without the revolution anticipated and orchestrated by science and scientists. The unprecedented progress in the world on all fronts is an incontrovertible fact that we must all affirm or admit. From its very humble beginnings as an appendage of philosophy, science has over the years unlocked mysteries, broken new grounds and created new vistas of knowledge in virtually every fields of human endeavours. Invariably therefore, we cannot but acknowledge science and technology as great opportunities of progress that has helped to offer rational explanations for events in the universe. Science and technology thus are viewed as progressive forces as against the conservatism of the Victorian age.

These opportunities so created by science and its successes anchored on its methodological rules have led to a situation of dominance. Hence it has gradually assumed a prescriptive authority over other human endeavours, a form of imperialism. Science and truth have thus become ideologies often aimed at benefiting the scientific community at the detriment of the larger population. In reaction to this, philosophers have often questioned this arbitrariness of science in ways and manners that they want to ascertain the reason for its audaciousness. Feyerabend for instance remarked "what's so great about science- what makes science preferable to other forms of life?" (110). It is within this prism that we hope to undertake our evaluation of science and her roles in human life with the aim of ascertaining the 'enough point' for science and scientific discovery.

In doing this, we shall discuss science from the perspective of a discipline that strives for truth, undertake a review of some of the famous works of Herbert George Wells who in most of his science fiction, has articulated that the utopian yearnings of science would take humanity beyond

the limits of the earth into a new culture, review the modern approach to biotechnology (human genetic engineering) and then argue for caution in the face of this incursion. However to set the stage for this discussion, the notion of imperialism as it relates to science shall be articulated.

Scientific Imperialism

As a concept, imperialism is “the sense of arbitrary and capricious domination over the bodies and souls of men” (Powell 1). From this generic meaning, we can infer that imperialism entails dominance, undue influence, arbitrariness, marginalization, and supremacy. When prefixed with the word ‘science’ or scientific, we can simply say that it involves the notion of science with an over bloated self-image seeking to assume leadership and control of other human disciplines. Technically, the term ‘scientific imperialism’ owes its coinage to the efforts of Ellis T. Powell who in 1920 in discussing the unprecedented influence of science and the growing air of supremacy that this success brings with it qualifies it as an act of subjection of all the developed and underdeveloped powers of the earth to the mind of man. In this sense, the terms refers to or technically describes the attitude of science towards knowledge which accords scientific method as the ‘the method’ and the means towards truth.

Dupré in describing scientific imperialism opined that it is the tendency of general characterization in which case, a given successful scientific idea is applied far beyond its original scope and when such is done, often it is with a decreasing success as its application is over extended and expanded (Dupré 16). By this I mean the tendency to push a good scientific idea far beyond the domain in which it was originally introduced, and often far beyond the domain in which it can provide much illumination’ (Dupré 74). This understanding as given by John Dupre obviously implies two correlated notions namely; that in scientific imperialism there exist the tendency to over rate and push a good scientific idea beyond the domain in which it was originally intended. This first act, gives rise to the second implication which is the tendency to push this scientific idea often far beyond the domain in which it can provide the much needed illumination. Illustrating this implies that when a scientific idea is originally introduced to deal with a given issue in a defined context and it adjudged successful within that context that it has provided illumination, the act of extending it far beyond the original context to another context makes such scientific idea to loose its ardour, vitality and capacity to provide the illuminations required to deal with the new extended context, hence it might turn out to be an idea that is not aligned to its new context.

Following thereof from this attitude, an air of superiority behooves on scientists. They develop repressive ideologies and dominate all other activities of human life. Describing this attitude of scientists, Dupre said scientists “... are inclined to claim that they are in possession not just of one useful perspective on human behaviour, but of the key that will open doors to the understanding of ever wider areas of human behaviour” (Dupre16). Herein lies the epistemic imperialism of science as it thus becomes as Staddon will qualify it “the religion of the intellectuals” with those not scientifically inclined declared as ‘non-believers’ (Ukavwe 168).

The Ideology of science

In discussing the ideology of science our aim is to clearly present the overriding interest of science as a human discipline. In other words, we seek to present the comprehensive vision of science as

it relates to knowledge. Basically, science envisions objectivity, reality and truth through a methodology that is not dependent on and influenced by social and historical conditions. Rationality, universality, certainty, systematization and objectivity are all assumed to be imbedded in the scientific discipline.

Central thus to the ideology of science is the means and method of knowledge acquisition. By knowledge, (be it scientific or non-scientific) we refer to the means through which humans categorize, encode, process, and impute meaning to their experiences (Studley 1). It means that knowledge could be acquired via various means such as sensual perception, logical reasoning, authority and intuition. Following thereof, it can be said that knowledge is not as envisioned autonomous and objective as it is tied to those social conditions and the context in which people live. The fact of this has being articulated by Thomas Kuhn (1962) in his discussion about the shift in paradigms that is often experienced by scientists and in the field of science. The daily affirmation of statements as 'true' when such is confirmed by the rules of everyday experience, if and when such is perceived reasonable and if it is in accord with the position of people we love and respect also gives credence to the above point.

In the field of science therefore, propositions and statements are adjudged to be scientifically true when such is accorded the approval of the scientific community, adopts the scientific methodology and tested to have conformed to such and published perhaps in a reputable volume. Key to this is the approval of a scientific community; that is the opinion of reference group. The question however is supposing the community acts in error or perhaps we may even question the viability of the method used since knowledge acquisition is not dependent on a linear method. Invariably therefore, the much sought objectivity in the real sense is nothing but an aggregate opinion of a reference group or the approval of the scientific community of a given proposal that is in conformity with her established norms. In this sense therefore, we can better appreciate the argument of Karl Popper when he insisted that the truth of a statement can never be objectively confirmed in scientific rigour, hence scientific methods demands to falsify well-established hypotheses (Popper 1960).

Science through her method has projected a self-image as the independent, authentic and valueless means of attaining truth. But the vital question remains, is this always the case? Does cultural specificity and consensus not impact on her method? What of the much talked about relation between science, money and power; the Problem of the Americanization of science and its effect on the scientists from the globe? Is it always the case, all of the times that there are no political, economic or other non-scientific interest that sometime intrude into and divert scientific progress? Has the vision of conceiving science as the panacea for all deficits ranging from health/diseases, poverty and hunger, extended life-time as well as ensured or promised secured material welfare being achieved by science?

As we conclude this segment, it is important to remark that the perceived objectivity or objective study of reality by science is but a mirage as attainments of objective truth based on the assumed believe in the presence of objective reality remains an unfinished issue. This is because; the process of appropriation remains as subjective and as relative as ever as objective reality cannot be achieved objectively in the sense that its truth is equally valid for all at the same time. In other

words, the conceptualization of objective reality is embedded in the notion of formulated subjectivity. Thus our point therefore is that the avowed scientific ideology regarding attainment of knowledge that is true, universal and objective is unrealistic. Her truth has the tint of the influence of money, power and the growing wave of neo-liberalism as well as the scientific culture of the time. Anthony Rizzi in *The Science Before Science* while providing a guide to the scientific thinking in the 21st Century argues in similar manner (19). Modern sciences are not (in his opinion) closed system, sufficient unto themselves and exclusive of all else (20).

H.G. Wells and the Dystrophic vision of Science

Following from above where we have tried to discuss the scientific ideology relating to truth and objectivity, we now want to undertake a review of some to the works of H.G. Wells, works that have been classified as science fictions. These will serve as theoretical base for our perception science as an invasion on human life. The value of his works also stems from the fact that H.G. Wells have through these works provided discerning warnings about the misuse as well as the abuse of science. Foremost in this effort will be such works as “The Stolen Bacillus”, “The New Accelerator”, “The Invisible Man” and “The Island of Dr. Moreau (1896)”.

In all of these, a major theme runs through them. Namely; that science as a progressive force, is highly beneficial to humans and that within the same context of its enormous benefits, lies the danger of scientific experiment when left unabated and without guide these wondrous results could spell doom and generate disaster with often ambiguous outcome. These works, encapsulate the contradictions and tensions of science and technology as it can yield both the good and the bad; the gains and the losses. Thus we shall undertake a very review of these stories that have been qualified as science fictions.

The Stolen Bacillus (1894)

It is one of the earliest fictions of H.G. Wells, written in the year 1894 where he relates the experience of the scientist who discovered a cure for cholera. A deranged rebel however stole his bacillus and thus became a major threat to the entire city. Invariably, inherent in science is the good and the bad. Within the powers of science lies the ability to provide cure thus enhancing human life and the potentiality to destroy human life as well. The bacillus that once meant joy in the discovery of cure to cholera has become the new agent of destruction (26-33). In the creation of weapons of mass destruction, we see a kind of fulfillment of this fiction. The potent ability of science to enhance and destroy life comes to the fore in this technology.

The New Accelerator

Here the potentiality of science is projected by H.G. Wells in the area of drugs that accelerates the human characters and or performance. While upon its discovery that human character could be enhanced with their presence, it was celebrated as a blessing. Within the same story, by the end, this blessing appears to be catastrophic (362-377). We can liken this vision with the presence of performance enhancement drugs in professional sports. These drugs are able to raise the oxygen-carrying capacity of red blood cells and as such, boost the human endurance by 10-15 percent. While athletes and sports professionals celebrate their presence, their negative effects even though installmental in nature, are destructive and decisive. As Fukuyama would say speaking of the

opportunities that these scientific breakthroughs offer us “in the future, biotechnology is likely to offer us bargains that trade off length of life for quality of life” (Fukuyama 69).

The fulfillment of *The New Accelerator* is seen in the current option and possibility of medicalized behaviour in other to be exonerated from culpable faults is one of the many options as anticipated by Wells in this work. Scientists have along this line discovered drugs like Prozac and Ritalin serving as biological shortcuts to complex behavioural interventions. These drugs were viewed as harbingers of great things to come and indicators of the so many opportunities that science can so create. Drugs are thus manufactured not so much for their therapeutic value but simply because it makes one feel ‘better or good’. Kramer in Fukuyama describing this situation qualifies the existence of these drugs as a situation of ‘cosmetic Pharmacology.’ In other words, these are drugs that are taken not for its therapeutic value but simply because it makes one feel ‘better than good’ (Fukuyama 46). Apart from its effects on the users, their presence creates a problem of distinction and definition between what we can consider as ‘normal behaviour’ as against that which is ‘socially preferable’.

The Invisible Man

This work of 1897 was anticipated in an earlier work titled *The Time Machine* (1895). In them Wells who is an ardent believer in the evolution theory envisioned the possibility of humans mutating into new species. These leaps so anticipated are both positive and negative as humans could possibly change into new species. Particularly in the *Invisible Man*, Wells projected a science that extends beyond the limits of possibilities such that it is able to create new type of being. The scientist whom he qualified as Dr. Griffin and described his scientific prowess as a ‘strange and evil’ (153) was able through his effort to technically render himself invisible. The effect of this act was seen in the social context of his life as he was now drawn and attracted to immoral acts and insane visions.

In these two works, Wells anticipated a biotechnological revolution which when such is extended beyond its point of illumination, will enslave humanity in such a way that the humans will be at its beck and call. This science will enable humanity to remake itself so long as it continues to unravel its biology, nature and physical environment. Thus the *Invisible Man* depicts all that can possibly go wrong with science when it is extended beyond its limits.

In all of these and many more of Herbert George Wells’ works, ‘the good and the bad’ of science and technology are evidently seen. Science creates further a dependency through her progress and for every of her new discovery, a new problem is thus created thus the conceptualization of science as an invasion and an effort in epistemic imperialism.

Human Genetic Engineering

In discussing the science of human genetic engineering, we must acknowledge that genetic engineering generally is a by-product of the science of genetics that emerged from the pioneering work of Gregory Mendel. In 1865, he developed the theory of organic inheritance from his work on the hybridization of green peas. In the 1950s with the landmark discovery of the DNA (deoxyribonucleic acid) by James Watson and Francis Crick, other biologists began to realize that by changing the ordering pattern of the genetic material, they can change and or modify the life

forms. This thus became the overall aim of genetic engineering, the possibility of crossing of species even to the level of the human life.

Genetic engineering which is a very complex process entails therefore artificial construction, deconstruction or reconstruction of the genetic composition of organisms and their components (Omale 84). Its complexity apart from its procedures is derived from the fact that it is at the intersection of science and human hope; hence it is not in any way a single monolithic practical or social issue. Despite its complexity, it has opened the door to a wide range of molecular biological opportunities. This has the potential to produce organism to any desired specification and to use such for human welfare.

The vision of this science is the opportunity to enhance the quality of human life and thus science is changing the object of its inquiry with hitherto had been the outer universe to the most precious of humanity's possessions- the self and her posterity. Thomas Lee in celebrating this opportunity wrote "the effort underway is unlike anything ever before attempted... if successful; it could lead to our ultimate control of human disease, ageing and death" (Lee 1). Obviously, Thomas Lee is only celebrating the envisioned hope and aspiration of this scientific growth without a careful assessment of the possible monstrosities that this science can create.

While we may over look the practice of this engineering at the level of the somatic cell, the germ-line engineering is worrisome and calls for reassessment of its options. The somatic cell is simply a medical procedure which involves the use of the DNA for therapeutic purposes. It involves adding of genes to cells other than the egg or sperm cells such that defective cells can be replaced with functional one. This majorly is an attempt to treat a disease through the insertion into the patient's somatic (body) cells a functional gene. This is a response to illness and it is based on the desire to be restored to a normal health life. This procedure simply builds on the current practice of adding reinforcement to the bodily cells (Rothman 175).

On the other hand, germ-line engineering is the process of "artificially and purposefully changing the genes of an organism such that when it procreates the changes replicate themselves in the next generation and subject to the laws of genetics- in all future generations" (Cohen 1). This simply can be said that this engineering entails the alteration of the fertilized eggs such that such alteration in the first cell of the embryo will be copied into every single cell of the adult including the sexual cell in a way and manner that it will be passed on to the next generations. This touches on the very core of what it means to be human hence Bill Mckibben "qualifies it as a technology that is on the far side of the enough point due to its ability to alter everything in a man from his health to IQ and its potential of passing it along to the future generations" (Mckibben 123).

Arguing for the justification this scientific progress is more likely for the sake of genetic enhancement, for a quest for a better human being. Within this frame work, "man will become masters of evolution and will be empowered to control their own evolution as well as that of other species" (Stableford 15). From these celebrated views, it is clear that these scientists are simply oblivious of the ills and the dangers involved in this creation. As a reprogentic technology, it allows parents to go beyond their own genes to enhance their embryos with the genes that they themselves do not carry. It opens humanity to a possibility of gene manipulation as genes for specific species

can be manipulated and placed in another. While these experiment may further scientific understanding and be celebrated as such, it may pave way for designer babies and a new form of eugenic society.

It is thus within this framework of extended application of science beyond its boundaries and scope that we adjudged human genetic engineering as a novel imperialism that has its foundation in the epistemic claim of the sciences. As noted this science extends knowledge of somatic engineering beyond the point of its illumination to the germ-line and thus argues for a new form of life that is created not by chance but by design. Here in lies the enough point and argument.

Science and the ‘enough point’

With the varied discoveries, the breakthroughs and the landmark achievement of science, comes also the incursion into domains that until now are considered sacrosanct. Science and technology are great vehicles and opportunities for progress, there are equally open to misuse and abuse. Along the line of this progress, comes also the fear that it could create mutations in human and as such generate new species. In the animal world where this science is already in full use, we have experienced the blatantly unethical use of technology to genetically engineer animals for maximal weight and profit. For instance the ‘Beltway pig’ so created by the Maryland team gave the world pigs with maximal weight but afflicted with arthritis, deformities and respiratory disorder. Likewise, cows engineered with bovine growth hormone (rBGH) often suffer various forms of abnormalities (see Fox 1999). The fear is what happens when this technology is extended beyond the level of animals to the humans. These create several uncertainties.

In all, the movement direction of science as seen in the germ-line engineering seeks to create a reorientation in the definition of human life and nature. It advocates for a redefinition of humanity’s natural ends as projected by Plato and Aristotle to the ideals of utopians who are seeking ideological ends for humanity. Science is not in any way an infallible discipline as observed by Thomas Kuhn and Karl Popper already, hence her nature limits her opportunities and influences.

Apart from the philosophical positions of Kuhn and Popper, some criticism of western science relates this fact. Namely; that most technology on the long run are blind to risks and are destructive, science is greatly influenced by power, wealth and money hence it produces knowledge not for knowledge sake but for those in power. A priori decision as to the usefulness of science is no more invoke but the profit interest of technologies now determines the scientific investment rate. It is also noted that even though on the face value, science is seen to empower humanity, on the long run, science deprives humanity of the possibility to self decision. The revolution of Robots and the crisis of unemployment, the computer technology and the loss of IQ are all but instance of this point.

The comprehension of reality is limited by science. It veils more than it illuminates. This is the reason for the inevitability of philosophy in the comprehension of reality come to the fore. Hence, it is said that philosophy is the queen of sciences. This is because of its subject matter which is so elemental and goes right to the roots of all reality. Aristotle speaking particularly about metaphysics which is a core branch of philosophy refers to it as “science that studies Being qua

Being (ens qua ens) and the properties inherent in it in virtue of its own nature” (McInerny 3). This science “is not the same as any of the so-called particular sciences, for none of the others contemplates Being generally qua Being; they divide off some portion of it and study the attribute of this portion, as do for example, the mathematical sciences”(ibid). In this way, Aristotle opined that Metaphysics unlike other sciences, studies reality as a whole, that is the totality of Being, others study an aspect or certain aspects of reality. Science thrives on representative surveys that conditions respondents to the categories identified as relevant in an a priori manner by the scientist. Here in lies the justification for our call for caution on the part of science and her projected expansion.

CONCLUSION

It has being the position of this paper that science had liberated humanity in such a way that human life has been enhanced, richer and better. It has equally being our position that this astronomic growth of science as exemplified in the field of biotechnology with particular reference to human genetic engineering opens the world to a ‘world of possibilities’, a world that we may not be able to clearly articulate the effect that this scientific invasion would bring upon us. In these plethora of possibilities than, this paper has argued for check on science so as to ensure that it is kept within a certain limit.

It is however interesting to note that when a check is proposed on scientific expansion, many a times, people become too emotional regarding the role of other disciplines in this regards. Relating what Fukuyama observed, during the debate in the U.S. Congress on bills to ban human cloning in 2001, Congressman Ted Strickland of Ohio argued thus “we should not allow theology, philosophy, or politics to interfere with the decision we make on this issue” (185). For Ted, science is to guide itself, hence, other disciplines are lacking in content and means in performing this duty. For people of this ideology, to do or envision otherwise is to undo the effort of Galileo and Francis Bacon, we sought and fought for the liberation of science from the scholastic grip of the Church and her philosophers.

This position is unfortunately incorrect. Science needs to be checked and guided by other disciplines. Science needs inter-disciplinary efforts; that it is able to create and discover vaccines and cure diseases as in the case of Stolen Bacillus of H. G. Wells, it can also create infectious and monstrous agents. This is evident in history in the activities of the Nazi doctors who injected concentration camp victims with infectious agents; these were legitimate scientists who gathered real data for potentially good use (Fukuyama 185). It is within this need that philosophy needs to assume its role as that discipline with the critical mass aimed at providing guidance and inspirations for other discipline. Skeptics may argue to the contrary, but philosophy qua philosophy sets the stage for science and other disciplines. Hence, the epistemic imperialism of science and its invasion should be limited by philosophical efforts.

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