

Influences and Varied Perspectives of Colonial Science and Technology in Amitav Ghosh's "The Imam and the Indian" and *The Calcutta Chromosome*

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Abstract

The colonialists' advances in terms of establishing complete political, economic and often cultural hold in the colonies came with their concurrent advances in scientific and technological arenas. The technological advances of the colonizers were also a means of showcasing their superiority over the colonized, and in turn, holding the colonized in awe of the colonizers' scientific inventions. The focus of this paper is on how the technology of the colonizers played a role in the making of the modern world, and the way it has been reflected in literature and science thriller writing. Taking Amitav Ghosh as an example, it will also focus on the varied viewpoints and encounters of the colonized people with the technological advancements of the colonizers.

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Civilization in the western world is often viewed as an interchangeable term for technology; Lévi-Strauss's idea of the raw and the cooked is a classic case in point. The supremacy of Western technology led them to believe that non-Europeans, or more specifically the non-whites, needed white men's protection. This article highlights how the colonizers showcased their technological superiority over the colonized people and created a hegemonic relationship with them because the idea of development and advancement were often imbued in the technological prowess of the colonizers. Amitav Ghosh, an anthropologist by training, is keenly aware of this Western parading of technology. His science fiction explores this issue in a

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fictive plane and offers a counter punch. In *The Calcutta Chromosome*, Ghosh traces the invention of the malaria parasite by Dr. Ross to some primitive local knowledge in India. In doing so, Ghosh adds another layer to postcolonial discourse: technology. Simultaneously, he also demonstrates that the then British government indulged more in governing the colony than in engaging in serious scientific research. They also lacked the proper facilities to carry out cutting edge research, and that Dr. Ross was not cut out to be a scientist.

Before I move on to analyze how Ghosh responded to the western superiority claim in his science thriller, let me conceptualize the issue. Charles Grant who was posted as an administrator in India in 1792 wrote, “Except a few Brahmins, who consider the concealment of the learning as part of their religion, the people are totally misled as to the system and phenomena of Nature...the communication of our light and knowledge and science to them, would prove the best remedy for their disorders” (qtd. in Baber 41). For another administrator James Mill, “*The Surya Siddhanta* is the great repository of the astronomical knowledge of the Hindus ... This book itself is the most satisfactory of all proofs of the low state of science among the Hindus, and the rudeness of the people from whom it proceeds” (qtd. in Baber 41). The statements by Charles Grant and James Mill, quoted by Zaheer Baber in an article titled, “Colonizing nature: scientific knowledge, colonial power and the incorporation of India into the Modern world-system,” exemplified how the colonizers viewed themselves as superior. James Mill’s citation of *The Surya Siddhanta* implies that the native relied on a belief-system based on the sun, therefore they are technologically inferior.

The ignorance about local knowledge has been pointed out by Gurminder K. Bhambra who, in an article, “Historical Sociology, Modernity and Postcolonial Critique,” hopes that the meta-narratives of the twenty-first century will “leave behind more than two millennia of historical writing designed to proclaim and validate the superiorities of particular civilizations.” But his hope comes with a note of caution as he thinks that it will take longer to move on from narratives preoccupied with “western achievements in science, technology, economic organization and warfare” (660). As Agustí Nieto-Galan rightly observes:

If we turn to technology and technical education, it is worth mentioning that Gramsci was deeply impressed by the new systems of chain production of cars in the North American factory of Henry Ford (1863-1947) – the founding father of the utilitarian car – and by the great international impact of Fredrick W. Taylor’s *Principles of Scientific Management* (1911). [H]e realized their potential as mechanisms of domination and materialization of the elite hegemony.... (462)

Nieto-Galan based his argument on Gramsci who was commenting on the mass production of cars in the North American factory of Henry Ford, which Fredrick W. Taylor in his *principles of Scientific Management* dubs as “mechanisms for

domination and materialization of the elite hegemony.”Put simply, technology is nothing but a tool of control and subjugation. Even Michael Adas in his book titled, *Machines as the Measure of Man: Science Technology and Ideologies of Western Dominance* agrees when he mentions that technology was indeed a way of measuring superiority and subjugating people.

Even as European global power and arrogance peaked, non racist educational policies continued to be pursued in China and India and the racist, social evolutionist foundations on which British and French policies rested in Africa had begun to be eroded by the doubts and counter evidence of travelers, officials and missionary educators. It was not just that race was a peripheral issue or that racist assumptions were strongly contested. There were other criteria by which Europeans measured the achievements and potential of non-Western people. These involved the treatment of women, legal procedures and marriage customs. But no standards were more frequently invoked in this era (19th century) than attainments in science and technological distinctions. Though the vast majority of Europeans may have considered themselves superior to Africans and Asians, significant numbers did not see or express this superiority in racist terms. For many of these the conviction that they possessed vastly better tools and weapons was sufficient to justify European conquest, commercial expansion and efforts to educate and uplift the ‘benighted’ peoples of the non-Western world. (341-342)

The Western parading of technology is again reinforced by David Arnold who in his book *Science, Technology and Medicine in Colonial India* states that, “The history of Indian science served as a mere prologue to the eventual unfolding of Western Science in South Asia as science was rescued from centuries of decline and obscurity by the British rule and the introduction of more scientific and technological knowledge of the West” (55).

Western parading of technology is again seen clearly when Fernando F. Suarez, in an article titled “Battle for Technological Dominance: An Integrative Framework,” mentions that, “The better a technology performs with respect to competing technologies, the higher the likelihood that it will become dominant. Western obsession with technology gave them tools of domination. Science and technology were sources of domination over African and Asian people” (6). Suarez makes it clear that people in the West viewed themselves to be superior because their technologies such as hypodermic syringes and obstetric forceps superseded native technologies of the colonized. Implements like these replaced the methods or technologies that were employed before them. So the statements that science and technology were sources of domination over African and Asian people, and that Western obsession with technology gave them tools of domination supports the fact that the Western people “technologically subjugated” the non-Western people and portrayed themselves as the master society.

Lévi-Strauss's idea of the raw and cooked is further reinforced by Federico Caprotti in the article titled "Visuality, Hybridity, and Colonialism: Imaging Ethiopia through Colonial Aviation, 1935-1940" where he states:

Technologies and progress were depicted as improving formerly "wild" and inaccessible African landscapes, turning them into a new colony described as "Italy's breadbasket." Aviation played a key role on two levels: materially through the institution of networks of air routes criss-crossing the deserts, mountains and coasts of the horn of Africa, rapidly connecting far-flung colonial outposts with colonial capitals and Rome, the imperial capital; and discursively, through the elaboration of imaginations connected with aviation technology as one of the means through which "natural" African landscapes could be subjugated and controlled by advanced fascist technology. As a result, the natural and the social were separated and produced, through images and text, into discourses that pitted fascist technology and progress against nature and an indigenous colonial "Other." (380)

Even though the Italians did not finally manage to colonize Ethiopia and were ousted in 1941, the wild or natural African landscapes can be thought of as the "raw" and the fascist technology that was wielded for improving the formerly wild landscape can be thought of as the "cooked." According to Albert Doja, in his article, "The Apotheosis of Heroic Anthropology," Lévi-Strauss concerned himself in the ideas of dichotomy especially in the realms of social transformation and cultural ideologies such as ethnocentrism. Fascist Italy's exploits in Africa to expand the frontiers of the West is illuminated by Lévi-Strauss's ideas of the raw and cooked: primitive and non-primitive.

Amitav Ghosh, who spent a considerable time in the West, was no stranger to this (ab)use of technology. In his autobiographical essay, "The Imam and the Indian," he uses the metaphor of a hypodermic syringe for colonizers' technology and assesses its supremacy. The thought of scientific progress and achievements, and the consciousness of it pervade the whole essay as the discourse between the Imam (one of the residents of the village in Egypt where the author was living) and the author, when it comes to the Imam's profession and his views about the Indian doctor (that is the author himself), unfolds. Even though the Imam knew a lot about herbs, poultices, and the old medicine, it brought him little credit in the village. This is evident when the author says, "No one had time for old fashioned Imams who made themselves ridiculous by boiling herbs and cutting hair" (Ghosh 2). But Ghosh hears from Ustad Ahmed, who taught in the village's secondary school, that the old Imam read a lot. This aroused an interest in Ghosh to meet the Imam personally and talk to him about "the methods of his system of medicine" (3).

However, the Imam is not at all interested in talking about his herbs. Instead, he is more enthusiastic to talk about the hypodermic syringe. The Imam informs Ghosh that he was learning the art of mixing and giving medicines, that there was a huge

market for it, and that one could make a good living out of it. The hypodermic syringe is an instrument that represents advancement: a Western medical implement that is all about scientific progress. Even though the terms “Western science” or “Western scientific achievements” are not mentioned by the Imam when he first meets the author, the Imam realizes that the traditional herbal treatments that he uses to cure his rural patients are now painfully out of fashion. The Imam finds himself to be a relic from the past and his learning the art of mixing and giving injections is his desperate attempt to modernize his ways as everyone in the village wanted injections. They wanted it for “coughs, colds, fevers, whatever” (4). The Imam’s admission about the lack of demand for his herbal medicines and his faith in the hypodermic syringe can be seen as his interest in keeping up with the science of the great powers of the world. Thus, it is evident how strong the influence of Western science is on the Imam, as he learns to administer more up to date medical solutions through the hypodermic syringe. The influence is also strong on the villagers who are keen about injections and not herbal medicines.

The author also points out that uneasy realization about one’s own regressive reality gives rise to frantic search for people/culture/traditions that can be deemed inferior to one’s own. A comparison with seemingly more regressive civilizations and traditions provides consolations. And in the author the Imam had seen the rich possibility of that comparison and contrast. If Egypt was not as advanced a civilization in terms of science and technology, then India was still worse. According to the Imam, India had nothing in the way of science and scientific progress since Indians burn their dead and worship a bovine animal like a cow. According to the Imam, how can these people possibly be educated and civilized? But the author defends India and tries to show that it is not as backward a civilization as the Imam was portraying it to be by saying that even in the West people are burnt after their death, that is they are cremated. He says in the West they have special electric furnaces to burn dead people. The Imam does not believe this simply because he thinks Westerners are advanced, educated, and have technology, meaning they have guns, tanks and bombs. The author defends India who also has guns and bombs and tanks, but the Imam thinks he is lying and that the Egyptian guns and bombs were better than the ones in India, and only second to the West. The author continues to defend India. After this heated argument the author realizes that shouting at each other did not change the fact that both the Imam and the author were delegates from two civilizations that were superseded by the West:

So there we were, the Imam and I, delegates from two superseded civilizations. At that moment despite the vast gap that lay between us, we understood each other perfectly. We were both travelling, he and I: we were travelling in the West. The only difference was I had been there in person: I could have told him about the ancient English university I had won a scholarship to, about punk dons with safety pins in their mortarboards, about super highways and sex shops and Picasso. But none of it would have mattered. We would have known,

both of us, that all that was mere fluff: at the bottom, for him as for me and millions and millions of people in the landmasses around us, the West meant only this – science and tanks and guns and bombs.” (11)

The fact that the Indian or the Egyptian civilization did not possess any modern day technological or scientific legacy makes them weak and vulnerable. The sorry state of affairs forces Ghosh to sadly affirm his inability to protect his dignity from the assailing Imam owing to him not being a Westerner. His not having “an aura of inherited expertise in the technology of violence” as the Westerner does “like a bulletproof screen” subjects him to ridicule and questioning as an Indian citizen, a member from a regressive culture in need of justifying its religion, superstitions and awkward ways (11). The despair of the Imam that sets him lounging for the Indian doctor is clearly a result of his frustrations in not being able to identify himself with the advanced science, technology and military exploits of the West. In fact, both the Egyptian Imam and the Indian doctor can be subjected to Western technological subjugation.

The author makes it clear that there is respect and power associated in being a Westerner who belongs to a land of scientific advances: nations that have bombs and tanks. This is evident when he says:

The Imam would not have dared to say any of those things to me had I been a foreigner. He would not have dared. Whether I wanted to or not, I would have had around me the protective aura of an inherited expertise in the technology of violence. The aura would have surrounded me, I thought, with a sheet of clear glass, like a bulletproof screen; or perhaps it would have worked as a talisman, like a press card, armed with which I could have gone off to what were said to be the most terrible places in the world that month, to gaze and wonder. And then perhaps I too would have had enough material for a book which would have for its epigraph the line, The horror! The horror!– for the virtue of a sheet of glass is that it does not require one to look within. (11)

This is indeed very true in case of the Westerners. They are shocked at some of the practices of the people of the Indian-sub continent. An example is keeping housekeepers whereas the white people themselves had slaves that they bought and, more often than not, treated with cruelty. However, because of the aura that protects them “like a sheet of glass,” the colonized people can hardly question and frown upon what they do. Furthermore, the sheet of glass that they have wrapped around themselves gives them the privilege of not looking into themselves and critically examining the kinds of things they do or did in the past.

Moving on, in Ghosh’s science thriller, *The Calcutta Chromosome*, the protagonist L. Murugan does not question the discovery of how malaria is spread, but brings forth from his perspective, a unique alternative explanation as to how Ronald Ross, the British scientist who discovered the malaria parasite, arrived at his conclusions.

According to L. Murugan's perspective, the discovery of the malaria parasite might have been nothing short of a providential accident, an intervention from the unknown that brought in a breakthrough. The news in the *Colonial Services Gazette* confirms to L. Murugan that D. D. Cunningham, the original custodian of the Calcutta laboratory where Ronald Ross made his discovery was removed from Calcutta not of his own accord, but by an obscure fear of forces which could be traced back to the Shrine of Silence in Alexandria, Egypt. The anxiety and terror ridden Cunningham is deduced to have visited a mysterious association in Madras, where a certain Finnish lady named Salminen held court and shed light on the occult, unknown and mythical. This force is also implied to have a hand in the disappearance of the American scientist Elijah Monroe Farley. The only lab in which Ronald Ross had any chance of discovering the malaria parasite was the one under the charge of Cunningham. Lutchman (Ronald Ross's laboratory assistant) and Mangala (the sweeper woman) most probably had connections with the Shrine of Silence in Alexandria. Major Ronald Ross, who was not otherwise a "scientist," succeeds in making a breakthrough as he is helped by Lutchman and Mangala. L. Murugan discovers that there was no question that Mangala and Lutchman knew a lot more about the malaria parasite, the prognosis of the disease, and that it could cure or arrest syphilitic paresis.

Here what Ghosh offers is proof that Mangala (with the help of Lutchman) was essentially performing experiments and proving her knowledge on the nature of malaria parasite. She was the one, in fact, who discovered the cause of the disease, and not Ronald Ross. But Ghosh describes the experimental ways and philosophy of discovery that is very non-western: an attitude and approach towards invention and its applications that the westerner cannot fathom, cannot account for. For example, Mangala did not seek to have credit for her discovery or explain her special knowledge of the disease to others. Mangala severing the heads of pigeons and drawing fresh blood for experimentation, her analogy with human sexual intercourse with the parasite reproducing in blood cells, starkly contrasts Western ways of looking at such a phenomenon. A Westerner would have pored over the microscope and proffered his observation that the parasite was reproducing itself. A Westerner would have thought of the personal fame of making such a discovery and established scientific processes that helped him/her make it. The difference in science of the West and non-West is not in the quality of outcome, but in the approach and attitude towards it. Thus, Ghosh claims in this fictive plane, that Western and non-Western science, are in fact, equal.

Years before the Austrian scientist Julius Wagner-Jauregg found a treatment for syphilitic paresis (making incisions and artificially inducing malarial blood into the patients' bodies) which won him the Nobel Prize in 1927, Mangala was treating the same disease in the 1890s through the avian strain of the malaria parasite. All this was, of course, before the invention of antibiotics. Since Mangala was treating syphilitic paresis in the late nineteenth century before the treatment was officially

discovered in 1927, her patients considered her a goddess. Non-Western primitive forces paralleling colonial science is evident because we see Mangala treating patients with syphilitic paresis long before Julius Wagner-Jauregg found a treatment for it.

Thus we find that pitted against Western science is the unconventional, primitive, local force that underpins the strange vicissitudes of Mangala and Lutchman, the seeming connections to the Alexandrian cult in Egypt and their machinations in making Sir Ronald Ross a success. This esoteric intervention is not an influence by a conventional science that craves for power and political correctness in the annals of colonial hegemony. This is a force unleashed in the hands of waifs like Mangala and Lutchman. We find an oriental force whose aims and ambitions in making discoveries are also not clear; yet it stands in stark parallel to colonial science and its powers and achievements. The oriental force stays in the shadows, keeps going about in its obscure ways and is intolerant of anyone who tries to shed light on the mystery. The myths, events, and actions that are evoked by Ghosh are not necessarily Indian in origin. He refers to the ancient Valentinian cult of Alexandria in Egypt. The people who are pawns to this dark esoteric power encompass a curious mixture of nationalities: not only the colonial dichotomy of Indian and English, but also Americans and Europeans such as Finns and Hungarians.

We also notice that while espousing his alternative theory of the process of discovering the malaria parasite, L. Murugan paints a rather unflattering picture of the colonial establishment and its capacity to carry out cutting edge research. The laboratory where Cunningham was doing his research in Calcutta is described by mentioning that it could not have been more unlike the laboratories of European and American universities, and that it was just an ordinary bungalow, the kind that was common to British military installations everywhere. So, in a way, the much lauded technological prowess of the then British Government in India is deemed substandard for carrying out scientific feats of global impact according to Ghosh in his science thriller.

The manner in which L. Murugan talks about Sir Patrick Manson who proved that the mosquito was the vector for malaria shows that someone from Britain getting the Nobel Prize for discovering the malaria parasite was part of the colonial agenda, regardless of whether that person delved into serious science or not. About Doctor Patrick Manson, L. Murugan mentions, “Now he’s got a hunch that the mosquito has something to do with the malaria bug too. He hasn’t got time to do the work himself so he’s looking for someone to carry the torch for the Queen and Empire. Guess who walks in? Ronnie Ross” (61).

Based on this statement, it would not be wrong to assume that Ghosh in a winding way through his protagonist L. Murugan says that the colonizers were busier governing the colony, establishing their colonial agenda and keeping the Empire going, rather than delving in serious science.

L. Murugan also critiques the lifestyle and pastime of colonial military officers. The kind of inclination, views on life and interests that Major Ronald Ross had could not have been conducive to cutting edge research that was required for the discovery of the malaria parasite. L. Murugan mentions Sir Ronald Ross was in the lab for about only half the time he was in Calcutta. Murugan continues, "The rest went into cleaning up epidemics, playing tennis and polo, going on holidays in the hills, that kind of stuff" (46). The manner in which L. Murugan describes Ronald Ross makes it obvious that he was anything but a scientist. He mentions imagining a man who takes pleasure in hunting, fishing, and shooting, and is like the colonial type in the movies. He plays tennis and polo and goes pig sticking. L. Murugan mentions his other interests like a night out in the town now and again and talks about his strange lifestyle – drinking whiskey for breakfast sometimes. He had no idea what he wanted to do with his life. He tried writing medieval romances and when that did not work out, he tried writing poetry, which did not work either. The description of his lifestyle suggests that Sir Ronald Ross was more of an adventurer who liked to try out different things rather than a scientist who would seriously and consistently concentrate on research.

He joins the Indian Medical Service only because his father, a big general in the British army, asked him what is it that he thought he was doing with his life and succeeds in convincing him to join. L. Murugan mentions, "Medicine is the last thing on his mind, but he gets into the Indian Medical Service anyway and the next thing you know he's back in India toting a stethoscope and carving up vets. So he coasts again, a couple of years, playing tennis, riding, same old same old" (47).

This is the way his life continues. One day after getting married and having children he is suddenly interested in science. He asks himself, "What's hot in medicine right now? ... What's going to bag me the Nobel?" (47-48). The answer that stood before him was malaria, and once he starts the research, he is helped by Lutchman and Mangala.

Sir Ronald Ross's lifestyle, it is quite clear, indicates that he was not the type of person who had the mindset of a scientist. He was a laid back person with no real or serious interest in research. His father literally pushed him into the Indian Medical Service. His interest and his lifestyle suggest that he is more of an outgoing, adventurous person who likes to take life easy. He did not really have the mindset or determination that was needed to discover the malaria parasite. He was more into merry-making and trying out different things, rather than the type of person who would seriously concentrate on something for a long period of time. Thus, the discovery of the Malaria parasite might have been nothing short of a providential accident, an intervention from the unknown that brought in a breakthrough.

It is interesting to note what a conversation is like between two people whose countries have been dominated by the science and technology of the West. Quite interesting to note is how an uneasy realization about one's country can give rise to a desperate search for people who can be deemed inferior to one's own. "The Imam and

the Indian” is the Imam’s loss of ability as well as authority to dominate and civilize the citizens of a country which, to his understanding, is still a backwater of civilization. It is also the author’s realization that there is respect associated with being a member of a country with advanced science and technology. He realizes the fact that both he and the Imam could go on arguing for hours boasting about the science and technology of their countries, but nothing could change the fact that they were dominated by the superior technology of the West.

By the same token, *The Calcutta Chromosome* is unique because even though it is a fictive plane, the colonized (L. Murugan) questioning the authenticity of the scientific acumen and achievement of the colonizers is quite unusual. The other unusual aspect of this science thriller is that here science is not pitted against science: that is the colonized challenging the scientific achievements and methods of the colonizer with a more advanced or alternative homegrown process. Science, or at least an instance of science, is challenged by knowledge gleaned from indigenous esoteric sources, a source that is far removed from logic, science, and rational explanations as Westerners see it.

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