

*Comment*

## **Engagement with Science: A Necessary Condition for the Survival of Democracy<sup>†</sup>**

*Gauhar Raza* \*\*

### **Background: assembly, representative and monitory democracy**

When you enter ‘democracy’ into the search function of Google, the opening result leads to Wikipedia where the first sentence of the Wikipedia article states that: ‘Democracy is a form of government in which all eligible people have an equal say in the decisions that affect their lives’.<sup>1</sup> The article goes on to inform you that the Greek word *Demokratia*, from which it is derived, means ‘rule of the people’ and that this word combines two words: *Demos* or ‘people’ and *Kartos* or ‘power’. For most people this common description still reflects the essence of what ‘democracy’ should be. There has been little change to this origination myth<sup>2</sup> since the days of Athens (5<sup>th</sup> and 4<sup>th</sup> century BC) or Aristotle. What has continuously changed over the years is the definition of ‘citizen’ and the criteria for eligibility to partake in democratic systems.

Democracy has also shown that it can and will change with the times. Three major historical phases of democratic development are

---

<sup>†</sup> The article is based on a roundtable discussion organised between the Sustainable energy Technology and Research (SeTAR) Centre, Faculty of Science, University of Johannesburg and the Mapungubwe Institute for Strategic Reflection (MISTRA) on 18 July 2011.

\*\* Mr. Gauhar Raza, Scientist and Head of the Science Communication through Multi-media (SCM) unit, the National Institute of Science Communication and Information Resources (NISCAIR), New Delhi.

<sup>1</sup> <http://en.wikipedia.org/wiki/Democracy> [Accessed: 05.08.11].

<sup>2</sup> ‘The lamp of assembly-based democracy was first lit in the ‘East’, in lands that geographically correspond to contemporary Syria, Iraq and Iran. The custom of popular self-government was later transported eastwards, towards the Indian subcontinent, where sometime after 1500 BCE, in the early Vedic period, republics governed by assemblies were common. The custom also travelled westwards, first to Phoenician cities like Byblos and Sidon, then to Athens...’ John Keane, *The life and death of democracy* (London: Simon & Schuster, 2009, p.xi).

described by John Keane: The initial ‘Assembly Democracy’ (self-government through an assembly of equals) was followed by ‘Representative Democracy’ (elected representatives take decisions on behalf of the people) which today is being eroded by ‘Monitory Democracy’ (the people directly monitoring and influencing the efforts of elected representatives to ensure the democratic implementation of decisions).<sup>3</sup>

Further back in antiquity, we find the ‘agrarian revolution’ which changed the trajectory of human development in many ways – not all of them to the benefit of humanity.<sup>4</sup> Be that as it may, all human civilizations were built on this adoption of agriculture. It was here that the notion of private property gave birth to the division of labour. Without going into detail it should be pointed out that it was also here that the original notion of equality amongst humans was relegated to the past. Historical materialism tells us that since the advent of human civilisation the evolution of society reflects the history of the struggle between two antagonistic classes: the ruling class and the ruled.

However, even after the domestication of nature, the dream of human equality did not disappear with the demise of primitive

---

<sup>3</sup> *Assembly Democracy*: 2500 BCE to 950 CE; from the Middle East of today through classical Greece and Rome including the world of early Islam. *Ibid.*, p.xv.

*Representative Democracy*: The belief that good government was government by representatives was introduced after revolutions in the Low Countries (1581), England (1644), Sweden (1720) and America (1776). *Ibid.*, p.xvii.

*Monitory Democracy*: Since 1945 power-monitoring and power-controlling devices have begun to ... penetrate the corridors of government ... extra-parliamentary forums, summits, regional parliaments, think tanks, peer review panels and human rights watch organisations play a role in shaping and determining the agendas of government. This new form of ‘deep democracy’ being fashioned today accentuates the point that democracies are capable of democratising themselves. *Ibid.*, p.xxviii.

<sup>4</sup> Now archaeology is demolishing another sacred belief: that human history over the past million years has been a long tale of progress. In particular, recent discoveries suggest that the adoption of agriculture, supposedly our most decisive step toward a better life, was in many ways a catastrophe from which we have never recovered. With agriculture came the gross social and sexual inequality, the disease and despotism, which curse our existence’. Jared Diamond, ‘The Worst Mistake in the History of the Human Race’. *Discover*, May 1987, pp.64–6. <http://www.ditext.com/diamond/mistake.html> [Accessed: 05.08.11].

communism.<sup>5</sup> Throughout history it survived – vividly in smaller spaces and away from the civilised world – especially among tribal communities. Many times this notion asserted itself, with short duration, within civilised societies as well. The oppressed classes always aspired to equality between humans, and the ruling classes continuously extended their high-handed control of the masses through coercion.

The two sets of ideas – for equality and against it – at all times clashed with each other, and in every walk of life. It is not difficult to find examples of strong assertion of the ideas of human equality in literature and even in religious beliefs. The emergence of proto forms of democracy at various points in history may be considered as an assertion of the same dream of human equality. In rare circumstances the ideas of equality became a material force within the civilised world and some democratic (social and political) structures were created. Most of these were short lived and were bulldozed by the burgeoning monarchy and theology of the Middle Ages (sometimes also called the ‘Dark Ages’).

How was an individual enabled to share in the fruits of democracy? This seems to have been a difficult road to travel, especially for women. Athenian democracy excluded women, slaves, any citizen below 20 years of age and foreigners from the definition of a citizen. The first experiment with the idea of ‘universal suffrage’ was conducted in the Corsican Republic (1755).<sup>6</sup> It was short lived. The British parliament was elected by only 3% of its citizens even as late as the last decades of the eighteenth century.<sup>7</sup> Women were given voting rights in most European countries only after the First World War, and they had to struggle for it. In France resident male citizens were allowed to vote since 1848 but women were at last presented with the opportunity to vote

---

<sup>5</sup> Primitive communism attained its peak of organizational development in the clan system, where productive relations were based on collective ownership of the means of production, while existing alongside of personal property (weapons, household articles, clothing, etc.). <http://www.marxists.org/glossary/terms/c/o.htm> [Accessed: 05.08.11].

<sup>6</sup> In November 1755, Pasquale Paoli proclaimed Corsica a sovereign nation, the Corsican Republic, independent from the Republic of Genoa. He created the Corsican constitution, which was the first constitution written under enlightenment principles, including the first implementation of female suffrage, later revoked by the French when they took over the island in 1769. [http://en.wikipedia.org/wiki/Corsican\\_Republic](http://en.wikipedia.org/wiki/Corsican_Republic) [Accessed: 05.08.11]

<sup>7</sup> In Britain the 1928 The Equal Franchise Act finally brought about universal suffrage. All women over 21 gained the right to vote, bringing them in line with men. <http://www.socialismtoday.org/120/suffrage.html> [Accessed: 05.08.11].

in 1944 (and then they had to wait till 1946 to do just that). In Spain women were granted the right to vote in 1933 only for this privilege to be taken away during the Franco regime (1939–1975) and reinstated in 1977.<sup>8</sup>

Around three hundred years ago nation states emerged out of a divided and slowly awakening Europe. The modern notion of democracy is a product of the industrial revolution, scientific and technological innovation, enlightenment and the appearance of these nation states. In modern Europe it might appear as if these geo-political maps were carved out along linguistic boundaries,<sup>9</sup> however broader cultural identity was central to the creation of these nation states. In other words national and cultural identities were synchronous. In many parts of the colonised world imperialism had to wipe out indigenous populations and or their culture and language to prepare the ground for the creation of nation states (the United States of America and Australia are but two examples).

The rise of bourgeois democracies created grounds for universal suffrage but it did not come into being right away (as indicated above). It took time to become part of the universal social consciousness within the national boundaries of European countries and the United States of America and eventually on a broader international level. There are many examples where a clash of ideas was followed by clashes on the streets.

The desire to control human beings, i.e. to control private property, natural resources, knowledge – in short, the entire human and natural wealth – did not vanish. During the first half of 20<sup>th</sup> century, fascism in Italy, Germany, Spain, Portugal and Japan was an assertion of the philosophy that rejected human equality. Even though fascism was a short lived entry on the time-line of human history, it was a violent display of brutal power by the ruling classes and, in the final analysis the ultimate objective of the project was to control citizens with an iron fist.<sup>10</sup> World War II has been analysed from many perspectives (it might

---

<sup>8</sup> [http://en.wikipedia.org/wiki/Universal\\_suffrage](http://en.wikipedia.org/wiki/Universal_suffrage) [Accessed: 05.08.11].

<sup>9</sup> The origins and early history of nation-states are disputed. A major theoretical issue is: ‘Which came first – the nation or the nation state?’ At the time of the 1789 French Revolution, only half of the French people spoke some French and between 12 per cent to 13 per cent spoke it ‘fairly’, according to Eric Hobsbawm. During Italian unification, the number of people speaking the Italian language was even lower. [http://en.wikipedia.org/wiki/Nation\\_state](http://en.wikipedia.org/wiki/Nation_state) [Accessed: 15.08.11].

<sup>10</sup> ‘The historic function of fascism is to smash the working class, destroy its organizations, and stifle political liberties when the capitalists find themselves unable to govern and dominate with the help of democratic

even be the most studied episode in human history), however, what at first appears to have been a clash of opposing national states originating from a set of complex political and historical conflict potentialities is, in the final analysis, shown to be a clash of two dreams, two opposing sets of ideologies. The fascist dream of controlling humanity had come very close to victory. Its defeat had a profound impact on the dominant and shared human consciousness of the future.<sup>11</sup> The death of fascism in Germany (and other countries) did not ensure the demise of the rejection of human equality as the basis for a world order, however. It still thrives in many forms in the present world.

Then, in the late forties, representative democracy broke out of Europe and started its greatest experiment in India.<sup>12</sup> A new post-Westminster democracy resulted and the people of India showed that democracy can take root outside of the west and transform itself into the largest electoral democracy that the world has seen.

### **The Indian experience**

Not once during the ancient period did a single emperor rule the entire landmass that today is known as the Indian subcontinent. Even during the medieval period large parts were ruled by kings, which were independent of the Delhi Empire (or Sultanate).<sup>13</sup> The entire Indian landmass can be divided into large regions, which have nothing in

machinery'. — Leon Trotsky, 'Fascism: What it is and how to fight it.' <http://www.marxists.org/archive/trotsky/works/1944/1944-fas.htm> [Accessed: 05.08.11].

<sup>11</sup> '... in 1941 there were only eleven democracies left on the face of the earth ... By 1950, with the military defeat of Nazism ... there were twenty-two democracies ... By the end of the twentieth century ... 119 countries (out of a total of 192) could be described as 'electoral democracies ...' John Keane quoting a *Freedom in the World Report* by Freedom House (an international NGO based in Washington, DC – note that almost 80% of its budget derives from the USA government). John Keane, *op.cit.*, p.xxiv.

<sup>12</sup> 'Democrats in India demonstrated that unity within a highly diverse country could be built by respecting its differences; that, despite everything, the hand of democracy could be extended, to include potentially billions of people who were defined by a huge variety of histories and customs that had one thing in common: they were people who were not European'. *Ibid.*, p.586.

<sup>13</sup> The Delhi Sultanate is a term used to cover five short-lived Islamic kingdoms or sultanates of Turkic origin in medieval India. The sultanates ruled from Delhi between 1206 and 1526, when the last was replaced by the Mughal dynasty. [http://en.wikipedia.org/wiki/Delhi\\_Sultanate](http://en.wikipedia.org/wiki/Delhi_Sultanate) [Accessed: 05.08.11].

common. These regions were always geographically, culturally and socially diverse. Inhabitants of Punjab speak a language, which for Tamil, Tilagu or Malayalam speaking people is as alien as any other language in the world. There are more than 3 000 dialects that are spoken in India today. People differ in food habits, dress, habitat, and much more. There are numerous religions practiced in India. The list is long. There was really no ground for a common identity. However, the only common feature – the caste system,<sup>14</sup> practiced in various forms – did cut across all and even religious boundaries.

By mid 19<sup>th</sup> century the British had captured and ruled over almost the entire Indian population. It was a fragmented population displaying many varied identities. However, for governance and administrative purposes the entire region had to be given a single name. Initially the British referred to this part of the world as ‘the Indies’.<sup>15</sup>

Historians are divided on the question as to when the notion of an Indian nationhood was born. Some argue that it existed before the British came to India. Others firmly believe that it grew in response to colonial oppression. Even if we concede to the idea that a feeling of nationhood existed in this part of the world before colonisation, it is apparent that the Indian identity was quite weak in the nineteenth century. Caste, ancestry, religious and regional identities were some of

---

<sup>14</sup> The Indian caste system is a system of social stratification and social restriction in India in which communities are defined by thousands of endogamous hereditary groups called *Jatis*. The *Jatis* were hypothetically and formally grouped by the Brahminical texts under the four well known categories (the varnas): viz *Brahmins* (scholars, teachers, fire priests), *Vaishyas* (agriculturists, cattle raisers, traders, bankers), *Kshatriyas* (kings, warriors, law enforcers, administrators), *Shudras* (artisans, craftsmen, service providers). Certain people like foreigners, nomads, forest tribes and the *chandals* (who dealt with disposal of the dead) were excluded altogether and treated as untouchables. Although generally identified with Hinduism, the caste system was also observed among followers of other religions in the Indian subcontinent, including some groups of Muslims and Christians, most likely due to inherited cultural traits. There is, however, no universally accepted theory about the origins of the Indian caste system. [http://en.wikipedia.org/wiki/Caste\\_system\\_in\\_India](http://en.wikipedia.org/wiki/Caste_system_in_India) [Accessed: 05.08.11].

<sup>15</sup> The name ‘Indies’ is derived from the river Indus and is used to connote parts of Asia that come under Indian cultural influence. Used by European explorers from the 15th century and later (late 15th century) renamed ‘East Indies’ to differentiate from the then newly named ‘West Indies’. <http://en.wikipedia.org/wiki/Indies> [Accessed: 05.08.11].

the markers which defined an Indian individual. Its abundant variety also indicated that nationhood was not a pre-colonial imperative.

‘The Sepoy<sup>16</sup> Mutiny of 1857’, as it is called by the British or the ‘First War of Independence’, as it is remembered by Indians, was a major turning point in the history of India.

The ground for this revolt was prepared by the oppression, loot and deceit unleashed in all parts of India by the British East India Company. By the mid-seventeen-nineties, the Company had consolidated its power over the entire Indian landmass and operated like a government ruling a country. One by one the warring princes were overcome and left powerless. The representatives of the Governor General of the British East India Company took over and managed their princely states.

The Company forced Indian farmers to grow cash crops (mainly indigo dye and opium), imposed heavy taxes and usurped the land at the slightest pretext. Repeated outbreaks of cholera and plague all over the country and relentless looting caused widespread discontent. There were many small-scale peoples’ revolts during the first half of the 18th century. However there was no united effort made by Indians to throw the British out of the continent. People could not be rallied around any binding identity.

During this period the British East India Company had become an international military force by raising a big army from indigenous manpower, primarily upper-caste Hindus and Muslims. After the two Afghan wars in which Indians had fought gallantly, the demobilised soldiers of the Bengal Native Infantry were sent back to India and treated badly. The resentment reached flash point and revolt started at the cantonment area of Meerut in 1857. It spread like wild fire throughout northern part of India. People joined the sepoys in large numbers. Many princes had scores to settle with the Company and they saw this revolt as an opportunity to take revenge. Some were forced by the mutinous soldiers to lead the revolt.

The revolt continued for more than a year but ultimately the British were able to crush it. Of course it was not possible to quench this fire without the active help of large sections of natives. Substantial segments of the military (raised from other parts of India, like the Punjab and Madras) and feudal lords remained loyal to their British overlords. It was a fragmented society that rose against a technologically modern force. While the rebels fought against the British, they did not fight for a

---

<sup>16</sup> Sepoy: an ‘infantry private’ – the lowest rank in the Indian Army. Came into use in 18th century in the British East India Company and still used today.

common cause: The feudal classes had nothing in common with the peasantry or the sepoys. Visible seeds of democratic thought sown in the proclamations issued at the behest of the War Council constituted in Delhi, just after the mutiny, must have made the feudal lords quite uneasy.

The mutiny was crushed. What followed the defeat was sheer barbarism. It was the biggest revolt of the century and had to be dealt with extreme brutality. A hundred thousand sepoys of the Bengal Native Infantry regiments had revolted and each one of them was killed. A million civilians were massacred.<sup>17</sup> Cruelty exceeded all limits, many acts of savagery were declared as ‘un-Christian’ by moderate British commentators, both in India and in Britain. The imperialist had to teach the native population a lesson and it turned out to be a bitter one. But the oppressor also learnt something important which helped them rule over this country for the next almost one hundred years: divide and rule. Instilling fear is a necessary but not sufficient condition of rule. Soon after the 1857 mutiny the British parliament disbanded the British East India Company and India became an integral part of the countries ‘protected’ by the Crown.

The leadership of the national freedom movement that subsequently emerged was divided right from the beginning. Some wanted to seek concession from the British and played the ‘game’ by the British rules of justice and respect. There were also those who wanted to use force and organise people to overthrow the British Raj. It is important to note that all the political and reformist groups that emerged realised the importance of building an overarching national identity which would form a common thread and bind all Indians. This will be an identity that cuts through all divisive identities, an identity that is based on a modern, secular and scientific value system.

The British occupiers concerned themselves with convincing the natives that they had come to India carrying ‘the white-man’s burden’. They had a responsibility to civilise the uncivilised and it was in the

---

<sup>17</sup> Roshan Taqui describes scenes of horror and looting that took place in Lucknow and one incident alone reports ‘...there was no law and no justice. The innocent Indians were falsely convicted and put in the mouth of Howitzer and fired, even a smartly worn turban or a dashing military style moustache would be taken as proof that the owner was a sepoy and thus a mutineer. Thousands were hanged, shot, blown away from guns, etc. There was no record how many’. The description of looting by the British fills pages – the looted palaces numbered 92 in the region spanning from Moosa Bagh to Bibiapur. (R. Taqui, *Lucknow 1857. The two wars at Lucknow – the dusk of an era* (Lucknow: New Royal Book CO, 2001), pp.264-67.

interest of the Indians to let them accomplish this. They did not stop at that message, it was also made amply clear that the British Raj, if need be, is capable of using brutal force to arrive at the completion of this project of local civilisation. They are omnipresent and immensely powerful. The writing on the wall was bold and clear: 'The sun does not set on the British Empire'.

All 'selves' are constructed against 'the other'. In order to commence a struggle against a colossal 'other' an equally robust and gigantic identity of 'the self' must be created. The seeds of this identity, i.e., Indian identity, were already present in the universal subjugation of the Indian masses, including the former ruling classes. The emerging national leadership only had to chisel, carve and shape it. Without undermining the contribution of many heroes and martyrs of the Indian freedom struggle, the two larger than life sculptors who created the Indian identity were MK Gandhi<sup>18</sup> and Jawaharlal Nehru.<sup>19</sup> Next to their names, surely and without hesitation, must be placed the name of Shaheed Bhagat Singh,<sup>20</sup> who was one of those who lit the fire of the Indian struggle for independence in the 1920s and gave his life for a free India in 1931.

This Indian identity evolved during the freedom struggle, which continued for more than 90 years. The evolutionary process necessarily meant the propagation and inculcation of ideas, which were not rooted in Indian culture and philosophy. Notions of universal suffrage, equality of gender, education for all, jobs for all, science and technology for nation building, secular value systems and scientific temperament were borrowed from the west. The Indian freedom movement acted as the most potent channel of disseminating these ideas and over a period of time they became part of the discourse and shared social consciousness.

It is remarkable that Indian identity was not constructed against the image of the white oppressors. It was not a racial movement. The 'self' was build against Imperialism. Therefore when the British left,

---

<sup>18</sup> Mohandas Karamchand Gandhi led India to independence and inspired movements for civil rights across the world. [http://en.wikipedia.org/wiki/Mohandas\\_Karamchand\\_Gandhi](http://en.wikipedia.org/wiki/Mohandas_Karamchand_Gandhi) [Accessed: 17.08.11].

<sup>19</sup> Jawaharlal Nehru was the first and longest-serving Prime Minister of India (1947–1964) and one of the founders of the Non-Aligned Movement. [http://en.wikipedia.org/wiki/Jawaharlal\\_Nehru](http://en.wikipedia.org/wiki/Jawaharlal_Nehru) [Accessed: 17.08.11].

<sup>20</sup> Indian freedom fighter, marxist and anarchist. Shaheed Bhagat Singh is considered to be one of the most influential revolutionaries of the Indian independence movement – hanged in 1931 – his legacy prompted the struggle for independence and contributed to the rise of socialism in India. [http://en.wikipedia.org/wiki/Bhagat\\_Singh](http://en.wikipedia.org/wiki/Bhagat_Singh) [Accessed: 17.08.11].

Indian identity did not shrink, it stood tall. As British imperialism weakened, the transition of 'the other' happened smoothly. US imperialism became 'the other'. India and Jawaharlal Nehru unhesitatingly took up the leadership of the Non-Aligned Movement.

While the Indian freedom movement was struggling to carve an Indian identity, the British rulers were busy experimenting with their 'divide and rule' policy. They tried almost every possible way of enlarging divisive identities. Most projects did not yield large-scale results. However the British Raj succeeded in widening the religious split.

There was a section of Muslim leadership, which was encouraged to think and argue that when the British occupiers leave, power should be passed on to the former rulers of India – 'the Muslims'. At the same time they also encouraged Hindu fundamentalist to think and disseminate the old idea of the 'tyranny of Muslim rule': fifteen hundred years of Hindu slavery under the Muslims. Indian history was divided into three periods, Hindu, Muslim and British. Urdu was made the language of Muslims and Hindi became the language of Hindus. Violent Hindu-Muslim clashes were engineered with government funding, following the 'divide and rule' policy. Hindu and Muslim religious identities (and the divide) were encouraged to grow.

No identity can grow larger than 'the other'. Anti-science Hindu and Muslim antagonistic identities were constructed against each other. Therefore, both 'selves' remained as what may be termed as, 'Pigmy Identities'. With active support of the British rulers these two identities succeeded dividing a not yet born nation in the minds of large sections of the population. The land mass and the population were partitioned. The two 'Pigmy Identities' played havoc during the time of partition and hundreds of thousands of Muslims and Hindu's were butchered. Millions were forced to migrate. Next to the disastrous Second World War, the results of the Indian partition were the biggest human tragedy of recent times.

In the month of August 1947, two blood soaked countries, two nation states were born, Pakistan and India. For Pakistan, the Hindu India was 'the other'. Under the leadership of Gandhi and Nehru, new-born traumatised India was struggling to mend the scarred 'Indian Identity'. The anti-science and fundamentalist Hindu right-wing committed a big mistake soon after independence. They killed Gandhi. The backlash was so intense that not only those who believed in the right-wing ideology but the ideology itself had to retreat.

During the years that followed (under the leadership of Nehru), the civil discourse on secularism and scientific temper intensified. It is

remarkable that in a country which was facing hunger and poverty, where the literacy level had not yet touched the 50 percent mark and a basic infrastructure was lacking, issues related to science and scientific temper were brought into the public debate.

Indian identity during its formative years was constructed around modern ideas and the notion of scientific temper was one that played a major role during those years. After independence, on the one hand, the newly emerging bourgeois realised that without widespread acceptance of science it could not access public funds for technological development. On the other hand, the left of centre political formation used the popularisation of science to mobilise young activists and reach those sections of masses which otherwise could not have been approached. They also recognised that propagation of scientific ideas could help in raising the revolutionary consciousness of the masses.

In short, the bourgeois, the state and revolutionaries together, for different reasons, helped the Indian society to engage with science. This helped in establishing a fairly strong basis for democratic consciousness. By no stretch of the imagination am I suggesting that this was the only factor in the development of post independence Indian democracy. What is being argued here is that the scientific temper debate, along with other factors, helped in building strong democratic traditions and it was because of this fact that India did not become a 'Hindu Nation'.

Instead, India became the first country to include the spreading a 'scientific temper' as a fundamental duty of its citizens. The Indian constitution was amended, by parliament, in 1976. Five years later, after a national debate, a document, which defined 'Scientific Temper', was prepared. Intellectuals drawn from various disciplines endorsed it.

For the past more than 50 years India remains an island of democracy surrounded by nations which could not sustain a democratic structure. There is one thing in common amongst these surrounding nations: they did not base the construction of their national identity on secular and scientific values. Although the form and content of the Indian identity has also gone through ups and downs, these periods have been short lived. Fascistic ideas in the garb of religious identities have always remained corrosive and the biggest threat to Indian identity.

### **Fascists love technology but hate science**

A major distinguishing point between 'science' and 'technology' is that science embrace worldviews, while technology do not. Therefore science, especially in the public domain, provides a basis for democratic consciousness. It inculcates a spirit of enquiry and questioning. The intrusion of high level technology without a wider acceptance of

scientific ideas does not lead to a spirit of curiosity, instead, more often than not, it breeds fascism. Jacob Bronowski<sup>21</sup> had remarked that ‘technology without science is magic’. One could also add that magic without explanation is totalitarian.

I will dare to say that fascist, fundamentalists, and right-wing reactionaries of all shades hate science and love technology. Examples exist in history. Fascist in Germany burnt the books of Albert Einstein and denounced his work but the same fascists had no problem in trying to build a nuclear bomb. In the not so distant past when India exploded a nuclear bomb, Hindu fundamentalist were the first to celebrate it on the streets and called it their ‘Hindu bomb’. Subsequently when Pakistan did the same Muslim fundamentalists danced on street corners celebrating their ‘Islamic bomb’. The Taliban banned television when they came to power in Afghanistan, but their leader, Usama Bin Ladin, always used the latest in communication technology to project his messages. The world knows his face and message through ‘un-Islamic TV’. The Taliban, even now, have no problem in using the latest technology to kill people.

The Christian terrorist, who recently attacked labour party workers in Oslo, Norway, also used modern weaponry to ‘kill’ multiculturalism, Islam and cultural Marxism. He was defending age-old Christianity with the help of the latest technology. As per his manifesto, he does not believe in the equality of human beings. He will without doubt also reject the conclusions of the genome project that indicates that his ancestors migrated to Europe from Africa. Scientific tenets do not fit into his hate driven ‘anti-migrant’ ideology.

## **Conclusion**

In this discussion I evoked the history and growth of democracy in India to demonstrate a unique set of circumstances that brought about this largest democracy in the world. By following the trajectory path of India in its achievement of a democracy that conquered the traumatic effects of British rule, I argued for the introduction of a methodology that is based on the promotion of a scientific temper amongst the population. Awareness and knowledge of science supports democracy since it allows space for growth within the scope of a nation’s worldview.

Our work in the field of Public Understanding of Science (PUS) shows that the cognitive structure of a common citizen is constituted by

---

<sup>21</sup> Jacob Bronowski (1908–1974) was a Polish-Jewish British mathematician, biologist, historian of science, theatre author, poet and inventor. [http://en.wikipedia.org/wiki/Jacob\\_Bronowski](http://en.wikipedia.org/wiki/Jacob_Bronowski) [Accessed: 17.08.11].

two distinct spaces. The irrational and extra-scientific ideas occupy one part and the rational and scientific ideas reside in the other. The two coexist quite peacefully. Invocation of one or the other is a function of a complex mix of parameters including the historical, cultural and socio-economic circumstances in which a citizen is operating. In order to save and strengthen democracy, especially in culturally rich and varied countries (generally known as developing countries), constant engagement with science and thereby enlargement of scientific cognitive spaces is essential. A high level of technology and a low level of scientific temper is a threat to democracy, in any society.