humans and plants for the study of plant growth. Such technologies can be used by breeders in future to provide nutrients according to the needs of plants and to develop suitable ideotype for any crop[26]. Meanwhile, we have enough opportunity to ponder upon whether cereals, pulses, vegetables and fruits let out a 'silent scream' every time we use them for our daily meals.

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In praise of agnosticism

Tazid Ali

In this note, we portray agnosticism as a line of positive thinking and emphasize that it is in conformity with science and mathematics.

The origin of the notion of God and religious beliefs can be attributed to the attempt of the primitive people to come in terms with the hostile environment they were exposed to. They could not comprehend and were awed at the different physical phenomena like alteration of day and night, lightning, thunder, flood, storm, eclipses, death, etc. They soon realized their helplessness and defencelessness against the forces of nature. They hypothesized that there must be some supreme power or deity/deities that controls all these happenings. They thought these deities need to be pleased to avoid incurring their wrath. So they imagined these deities in different forms, depending on the nature of the force they represent, and started worshiping them. Thus submission/surrender to the hypothesized Supreme Being is the foundation of all religions. With the progress of time and growth of knowledge our view of the universe has changed drastically, but fear of the unknown and search for reality continues. Sages and philosophers contemplated on this issue and thus there emerged the notion of divinely inspired or revealed knowledge resulting in what are called 'dharma sashtras' or religious scriptures. Based on such revealed knowledge there emerged different schools of thought. Consequently, our philosophy of religion developed and we now have sophisticated terminology like 'search for the ultimate reality', 'communion with the Supreme Being', 'to merge with the Supreme Soul', etc. A glimpse of any old civilization shows that the worship of some deity was an integral part of its culture. However, parallel to these religious thoughts, there also emerged other views unwilling to accept the control, power or even the very existence of a Supreme Being. These systems of thought go by the name atheism and agnosticism.

The term 'agnostic' was coined by the English biologist T. H. Huxley

(1825–1895) in 1869. It refers to the principle of both non-denial and non-acceptance of the existence of God. Huxley thought that we would never be able to know about the ultimate origin and causes of the universe. It indicates scepticism and acknowledges uncertainty. Huxley was a strong advocate of the evolutionary theory as propounded by the English naturalist Charles Darwin (1809–1882). Because of his staunch support to Darwinism, Huxley was referred to as 'Darwin's bull dog'. In contrast to an agnostic, an atheist is one who outrightly rejects the existence of God. Atheism has been around at least since the ancient Greeks: followers of the Greek philosopher Epicurus (341–270 BC) believed that life came about by chance and that there was no Supreme Being who ruled and cared for us. It is said that even the Hindu schools of thought like 'mimamsa' and 'samkhya' were critical on the issue of existence of God.

The term agnosticism is more contextual than atheism, as it can be used in a non-theological context and a broad sense as opposed to absolutism. The latter (absolutism) is a belief or theory which holds that values, principles, etc. are not relative, dependent or changeable. A scientist may say she is agnostic regarding a modern theory, meaning neither believing nor disbelieving it. Agnosticism is based on the fundamental premise that there is limit to human intelligence. We do not or perhaps cannot have access to the ultimate or absolute truth/reality. The issue of existence of God is an age-old debate. We are not unanimous even with regard to the very definition of God, say, for example, whether God is abstract and impersonal or personal. Did God give the rules and laws of nature as well as free will, and then withdraw from the scene, or did He continue to interfere now and then with the happenings of the world? Sages and philosophers have pondered and contemplated on this matter, which has led to the emergence of many beliefs, principles and ideologies. These philosophies are seemingly not always converging. Though we associate God with infiniteness and talk of supreme abstract authority, usually in practice what is observed is that people attempt to realize God in a narrow sense. This God has human attributes like love, compassion, anger and the need to be worshipped for blessings and to avoid His displeasure.

Both religion and science emerged in an attempt to understand the universe, i.e. its nature and laws. The same impulse to know the world and our place in it is at the roots of both science and spirituality. Both are attempts to illuminate the mysteries of our world and expand our vision of the greater whole. A basic question is whether the method of science can be applied to examine the veracity of existence of God or religious beliefs. There is disagreement among philosophers and scientists on this issue. Many argue that spirituality and for that matter the notion of God/religion exists outside the realm of logic, mathematics and science. Huxley declared that the issue of the God question could not be settled on the basis of any scientific method. Evolutionary biologist Richard Dawkins, on the other hand, believes that the existence of God is a scientific hypothesis like any other and hence can be settled by science. In his book *The God Delusion*, Dawkins[1] argues that the God hypothesis is close to being ruled out by the laws of probability. On the other hand, Israeli mathematician Aczel[2] in his book *Why Science does not Disprove God* gives counter arguments to Dawkins's claim. He invokes highly nonlinear mathematical systems like chaos theory and catastrophe theory to buttress his point that there still are aspects of life and the physical universe that remain and will remain outside our ability to fully understand and control, and hence we cannot outrightly reject the existence of a Supreme Being.

The axiomatic approach to mathematics is compatible with agnostic philosophy. In this approach truth of a mathematical result is valid subject to truth of the axioms from which it is deduced; there is nothing sacrosanct about the result itself. As we know mathematics has proved to be a surprisingly powerful tool for analysing and learning about the real world. Galileo (1564–1642) taught us that 'the book of nature is written in the language of mathematics'. However, we need to ponder whether the mathematical space is an accurate description of real physical space–time, or whether there are other possibilities that may describe it. In 1937, Austrian logician Kurt Gödel (1906–1978) proved two theorems called incompleteness theorems[3]. In the one of the theorems he established that in an axiomatic system there are valid mathematical propositions

that cannot be proved through the application of deductive reasoning within the system, i.e. using the given axioms. This is what he called 'undecidable proposition'. The other theorem is concerned with consistency of the system. Consistency simply means that the axioms, together with the rule of inference must not allow the deduction of a contradiction. However, he established that even the consistency of the axiomatic system could not be settled beyond doubt. That means that results deduced from any list of axioms might not all be true.

Philosophically, Godel's incompleteness theorems place limitations on human knowledge. They demonstrate mathematically that some truths are outside our knowledge, and must remain so. Interpreted in a physical sense, it implies that we will never be able to know everything about our universe because we are a part of it. Thus Godel's theorems point to the fact that we may never be able to decide the question of the existence of God. German mathematician Georg Cantor (1845–1918), who used to associate the concept of God with the mathematical notion of infinite remarked: 'The concept of God as the highest possible level of infinity is beyond our mathematical abilities to comprehend'[3].

A belief in absolutism begets intolerance[4]. It bars lateral thinking and is retrogressive. How long will we hold to the view 'I am right, you are wrong'? We need to introspect how far our religious beliefs are infallible. Narrow and literal interpretation of religious scriptures is often in conflict with established scientific facts. Even scientific theories are undergoing evolution. So, theoretical physicist Stephen Hawking describes scientific facts and knowledge as model-dependent reality[5]. An agnostic mind is flexible and allows sufficient space for accommodating diverse viewpoints which is essential for a peaceful co-existence of the human society. It accommodates diversity of opinion and leads to innovative thinking. We talk of reasoning and argument. All these are based on logic, and logic is further based on premises/assumptions. However, we have no way of establishing the truth or veracity of these assumptions, except through experiences. Again, there is no guarantee regarding the accuracy or precision of our experiences. In other words, experiences may be illusory or deceptive. We

usually find that every argument has a counter argument. So in this sense there is nothing right or wrong; it all depends on the context under consideration and our perception. Perhaps the only thing we can be certain of is uncertainty. Absolute certainty or reality/truth is a mere delusion. Thus, it seems better to be an agnostic rather being antagonistic, which is usually a product of absolutism. As no sane person will reject the very premise of agnosticism, can we safely assert that every human being is more or less an agnostic?

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