Critical Reflection On Coexistence Of Pseudoscience And Scientific Evidence

Till date, nobody has successfully described the meaning of science. For most of human history, science was just an insignificant activity. Prior to today, few individuals were called scientists and even fewer made a living from doing science. However, in our history, there was no shortage of individuals who were curious and wondered about the natural world. Science emerged in the seventeenth century but was self consciously separate from other forms of intellectual activities and social groupings. It was not till two hundred years after the emergence of science that it was seen outside of the small-scaled groups of individuals who practice science, this was mainly due to the industrial age which brought strong changes to culture and economy. Today we view science as a necessity in our life. A positive in the world but it has not been that way in all of history. Science has had its own fair share of beneficial innovations and also, an equally clear disadvantage. Like everything in life, it has its pros and cons.

Pseudoscience and science both have science in common, however, pseudoscience falls far when it comes to matching today's standards of what science is perceived to be. Pseudoscience fails when it is tested, refuted and falsified. John C. Buruham (1987) pointed out that the root of science skeptics was due to the rise of media and consumer in the early to the late twentieth century. His findings were deemed counter-intuitive but compelling. Due to the fact that advertising and public relations aimed to appeal to the audience's emotion thus, aiding the start of a culture which nonrelational forms of decision making is valued over rational ones. Pseudoscience is then interpreted to be a relational concept, that does not have an independent existence, however, it's meaning is achieved through comparison (always unfavorable) with something that it purports to be.

The Human Mind (Bias and Protector)

The human mind is and has been a mystery for ages. The mind plays a big role in everything that is around us. Our mind is biologically made to believe in something and then questioning it later. Then comes the problem of how we have a biased toward something. In truth, we have a personal bias in our subconscious. An example can be seen, when we are placed in an uncertain condition we would probably evolutionarily predispose toward a certain false positive error (Shermer,2011). The idea of "Being safe than sorry", we would probably view a moving stick as a snake while walking in the forest then a stick being moved by the wind. Despite having a bias, most of us are not aware of our biases. A research done by Pronin, Lin, and Ross, 2002 titled bias blind spot, shows that most individuals are readily able to identify their cognitive biases in just about everyone except one person – ourselves. Which leads to us believing that we are largely immune to serious errors in thinking that afflict others. We are not merely biased; we tend to be blind to our own biases. Thus, often leading us to be overconfident of our beliefs which includes those that are false.

Science on another hand is a systematic approach to prevent (like a firewall in computer programs) biases. McComas (1996) mentions that the recipe like science for conducting research that can be applied which could be used across all domains that we have always been thought in our younger days doesn't exist. On another hand, Lilienfield (2010) states that the term "science" is almost certainly extremely diverse, but systematic and finely honed, set of equipment that we have created to compensate for the human race's biases. Similar to everyday selective listening, in science the most prominent form of biases is confirmation bias, which is to be selective about the evidence gathered. Only focusing on evidence which would support the hypothesis presented and deny, dismiss and distort evidence which tries to disprove the hypothesis (Nickerson, 1998). Social psychologist, Carol Tavris and Elliott Aronson (2007) found that science is a method to control the human's arrogance, it does this by ensuring we are always honest in our findings.

MacCauley (2011) notes that scientific thinking is unnatural. It has to be practiced and attained assiduously. Some authors such as Gilbert (1991) suggests that our cognitive apparatus is a believing engine. Khaneman (2011) points out that we believe first, question later. In comparison to this, eminent developmental psychologists and science educators, for instance, Gopnik (2010), argue that human babies and young children are scientists since birth. This was due to babies and young children being intellectually curious, seek out patterns and even perform scaled-down experiments in the world. It is equally important to consider that babies and young children have the poor judgment to sort the patterns that are real and those which are illusory. Also, we have to consider that science emerge late in human history, this makes it hard to accept that babies and young children are a natural-born scientist. Roughly in history science appeared in Greece, not reappearing till the European enlightenment of the eighteenth century this is stated by Wolpert (1993). Thus, it is challenging to welcome the idea that science is part and parcel of the human cognitive apparatus.

Pseudoscience

Above, I have explained how our mind accepts knowledge, whether false or true and how we try to create a protective barrier to sieve through the knowledge. Next, I shall further explain what is pseudoscience. Firstly, looking into the surface of the meaning pseudoscience, it is made up of two words. Of two, one word, pseudo taken from Greek meaning false. The second, science adapted from the Latin word Scientia meaning knowledge. Pseudo and science mean false-knowledge. Secondly, looking past this, pseudoscience as interpreted by Yoshimasa Majima (2015) beliefs or practices presented as scientific but not related to a true scientific method and missing supporting evidence or any scientific status (Shermer,1997). Lindeman, M (1998) refers pseudoscience to usually comprise of (a) a hypothesis that cannot be validated as bogus, (b) studies are not based on controlled experimental procedures, (c) it is not supported by scientific evidence, (d) it has not been retested considering new scientific evidences, (e) it has yet to provide any sort of research to new areas, and (f) it is not compatible with other theories which are well-supported in their related domains. (Hines, 1988; Kelly & Saklofske, 1994; Marks, 1986). This is, however, just a reasonable assumption, they are not sufficient neither is it necessary as it only describes a prototypical pseudoscience. Some beliefs may share all the above list of characteristics, whereas others may only share a few. Moreover, we cannot

distinguish a belief as pseudoscientific by just considering only its content. Lindeman, M (1998) uses acupuncture to illustrate this point, it is because some believe that acupuncture only reduces pain, some others, however, believe that it cures all diseases.

From the beginning, those who have dealt with and practiced pseudoscience has always claimed that it is separate and dissimilar from erroneous claims. To be clearer in explaining this concept I will be comparing the difference between false news and fake news. Perhaps both are considered news, false news is news that contains incomplete or incorrect information which is typically resulted from the media getting things wrong. Whereas fake news is news that is false and made up, most of the time it is intentional. Pseudoscience is rather damaging as it deceptive. To the untrained eyes, those perhaps of the laymen's, pseudoscience has always dressed up as science but below the appearance, it is an entirely different thing to science. Similarly, those who practice pseudoscience and science both have two completely different views on how the two fields are authenticated. For pseudoscience, it is based more on strength of the beliefs. Scientists, those who practice science on another hand are complete skeptics even of their best theories.

In my journey to understand my literature review topic better, I discovered a study by Yoshimasa Majima(2015). He states in his paper that, previous studies about pseudoscience are merely always based on superstitious belief. I have found that his experiment which explores links between beliefs and dual process thoughts, his study is the few of its kind due to the inclusion of non-paranormal pseudoscience as compared to other studies focusing on superstitious beliefs which refers to paranormal phenomena. I realized that there was a flaw in how he conducted his experiments, whereby the time between the first and second questionnaires given to the two groups of participants differ. University students were given a week compared to the lifelong course students who were given a day.

Conclusion

Apart from this, my readings have concluded that the question I pose toward myself at the beginning of this assignment was extremely I'll advised. Through my journey into understanding my topic better, I have discovered that science and pseudoscience are not two separate beings which exist in reality. They are in fact, cut from the same psychological cloth. Like everything that is around us, both have similarities and differences, this help to ensure that whatever science an individual present to the world is free of any bias and offers only the truth. To provide a detailed picture this, I would introduce an additional idea which is on heuristics through a given scenario, whereby an individual who uses heuristics (mental shortcuts or rule of thumb which lead to approximately correct answers) from time and again. This individual is then placed in a setting whereby he/she is being greeted at the door by army personals, as their son is serving a tour in a war-ridden country, he/she immediately cries as they relate their arrival as being a messenger of negative news. There are times that heuristics is applied wrongly leading to a damaging such as when a cancer patient believes in curing his pain through alternative medicine which may perhaps provide little to no effect as they seize the use of prescribed medication. Showing that pseudoscience and science have similarities such as topics covered, believe that what they preach is correct, the word science, etc. This relates back to the

philosopher named Karl Popper's words, "You have to be open to the idea that your ideas may be false because that is the only way that holding onto them can really mean anything." Thus, I have deduced that scientific evidence and pseudoscientific beliefs can co-exist and has been science humans begun questioning everything around us, trying to collate knowledge and also sharing it with the masses. Ultimately, through my readings, I have learned that not everything that is redundant to one field has no use at all. In this case, pseudoscience, perhaps it is a bringer of false knowledge of the natural world which is more relatable to those who mainly focus on science. It, however, provides every one of us an insight into individual and our social psyche. A psychological perspective on pseudoscience would shine the light into its importance unlike how science would shun and detest anything relating to pseudoscience. Like everything in the world, balance is key. When pseudoscience and science are placed on a weighing scale it would be balanced, when illustrated using everyday objects.