Essay: Sociotechnical debate in information systems

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The sociotechnical debate in information systems literature is concerned with the role technology plays in driving human evolution. When discussing this topic, writers often draw from two opposing viewpoints: technological determinism and social determinism. Technological determinists cite technology as a magic bullet in society, acting as a catalyst for all social change. American sociologist and economist, Thorstein Veblen coined the term ''technological determinism'' during the 1920s however, it is widely associated with socioeconomic Marxists who often extensively discuss the implications of technology on human social relations and organisational structure. Critics, however, condemn the notion that ''technology'' is a powerful enough agent to determine human actions and control human destiny, due to the abstract, intangible and quasi-metaphysical nature of the word (SMITH, M. & MARX, L., 1994). This is reminiscent of the social

determinist perspective, which, posits that technologies such as the printing press and the internet are merely products of society created for the purpose of not only transporting ideologies across borders but also transforming and shaping beliefs. Simpson (1995) suggests ''technology can be viewed as that constellation of knowledge, processes, skills and products whose aim is to control and transform''.

Technological determinists believe that like science, technology is an autonomous, neutral and apolitical force, with intrinsic characteristics associated with positive and beneficial effects. The words ''science'' and ''technology'' are often used interchangeably. This is because Science is concerned with acquiring knowledge through observation and experimentation in order to explain natural laws and phenomena while technology is concerned with the creation of products or entities in order to resolve problems or simply improve human life. Thus, it is possible to argue that technology is the practical application of science as tacit knowledge and experimentation is required in order to seek explicit knowledge or take certain actions towards certain innovations.

However, social determinists would argue that if technology is in fact, an application of scientific knowledge, then it is not innovative, as scientific knowledge already exists. They also accentuate the interpretive flexibility of technology, which contrasts the objectivity found in science. For example, some may view the printing press as an empowering tool, encouraging freedom of expression whilst others may see it as one of the many means that allow those in power to transmit their ideologies and subtly shape the beliefs of the public.

Prior to Johannes Gutenberg's invention of the printing press in 1440, the process of bookmaking was very time consuming and expensive as it entailed replicating all words and illustrations by hand. However, Gutenberg's intelligent design of a machine that had the ability to produce a large quantity of pages at an incredible speed, allowed more people to gain direct access to reading materials. Hence, one of the implications of the emergence of the printing press in the middle ages was an increase in the demand for books and other literal materials among less wealthy individuals as they had become more affordable. Furthermore, there was a growth in the demand for more books in the English language as opposed to Latin, which was the language of scholarship, making it easier for all individuals to comprehend texts. Technological determinists thus, emphasise the tremendous impact the printing press had in societies. Most importantly, the way, in which the emergence of the printing press led to the formation of other industries such as papermaking and book trading, consequently leading to a stronger economy and a more literate populace.

The printing press is also of great importance due its role in contributing to major social changes. For example, the printing press was one of the virtual initiators of the reformation, a sixteenth century movement characterised by strong criticism of the religious sphere, which directly affected the spiritual, societal and political sphere. (SMITH, M. & MARX, L., 1994). This is because before it was widely available, with the exception of the clergy, not many individuals had held copies of the bible. This meant that the church exploited its power and authority and insisted on interpreting the meaning of the bible for the public. However, after the emergence of the printing press it meant that ordinary people could gain direct, personal access to the word of god. As a result, the printing press became an empowering force, allowing oppressed individuals to explore alternative views and ultimately decide for themselves what they should believe.

While social determinists do not undermine the opportunities and benefits that rose from the implementation of the printing press, they argue that the emergence of the printing press was not a newly established and innovative phenomenon. This is because society sets up the conditions for all technologies. Thus, the implementation of the printing press was only possible because there were already existing infrastructure that enabled it. Mackenzie and Wajcman (1985) hence propose that ''new technology then typically emerges not from flashes of disembodied inspiration but from existing technology, by a process of gradual change to and new combinations of that existing technology''. Furthermore, social determinists would argue that the implementation of the printing press is merely reflective of the attitudes of the given society. Hence, it was only possible to develop the printing press in the west because the practice of authorship, freedom of the press and intellectual property were recognised and valued.

When examining technological determinism, it is important to distinguish between the two contrasting school of thoughts: hard determinism and soft determinism. Hard determinists hold the view that free will is incompatible with technology, indicating that humans are powerless and passive consumers. Consequently, society merely permits technology to become the main governing force in society because individuals are unaware of ''the alternatives to the values embedded'' in a technologically determined world (Merritt Roe Smith). Hence, According to this view, humans adapt to meet the requirements of technology. On the other hand, while soft determinists support the argument that social progress is in line with technological innovation and maintain that all of our actions are determined, they believe that humans are morally responsible for their actions. For example, when posed with the question ''do guns kill people or do people kill people?'' a hard determinist would agree with the former, emphasising the fact that guns are the means of killing as they have been designed for the sole purpose of causing harm. However, soft determinists would agree that the availability of guns permits killing, however they hold that individuals still have a moral responsibility and a conscious.

Another technology that has undoubtedly had a great impact in history is the internet, a global computer network that emerged in the 1990s. It is arguably the greatest innovation in the communication field as it the only medium capable of combining modes of communication and links billions of devices across the globe. Technological determinists believe that the internet is an innovative and revolutionary force that has a profound impact in society. They argue that the internet generates new patterns of expression and communication. Perhaps one of its greatest features is that it is a form of escapism for those feel isolated. One may feel like an outcast in their everyday life but they are bound to encounter another individual who shares the same experiences. For technological determinists, the internet, like all technologies, is self-propelling and self-generating. This implies that humans have little or no choice in how they adapt to technologies. Marshall McLuhan famously stated ''the medium is the message... it is medium that shapes and controls the scale and form of human association and action''. McLuhan's views are compatible with that of a hard determinist.

Social determinists such as Chandler (2000) however, criticise the technological deterministic view that places technology in absolute position of power over society. They argue that this belief assumes that people are helpless and without agency. Technological determinism thus becomes a ''self-fulfilling prophecy'' in which individuals become pessimistic about their power in society. Chandler also suggests that there are plenty of other factors which contribute to social reforms such as ''political control, class interests, educational background and general attitudes''. He concludes that hence technological determinists adopt a ''reductionist'' approach in trying to separate cause and effect. This is idea is also seen in the work of White (1995) who purposes that 'a new device merely opens the door, it does not compel one to enter'', implying that the success of a technology is dependent on the attitudes of the public.

One of the benefits of the internet is that it has led to a greater democracy. Andrew Feenberg (2000) when discussing the power of the internet, states: "The real revolution occurred when the Internet became a medium for personal communication." He condemns the notion that people are passive consumers of information and highlights our role as producers. The internet has given citizens the ability to challenge and criticise politics and engage in debates. This is evident in the rising number of people who use social networking sites such as twitter (974 million users) and Facebook (more than a billion users) in which the majority use the internet for sharing their thoughts and views. Social media has proven to be an effective medium for bringing about democracy and social change, the 2011 Egyptian revolution being a crucial example. However, some argue that it still restricts freedom of expression. For example, many countries require an internet service provider (ISP) who control the pipes of information flow and gate keep content by authorities. However, the internet has created many unethical practices such as hacking and spamming. Because it is an open platform, it is difficult to control the content displayed on websites. This means there is an increased exposure to violent and pornographic content so much that we become desensitised.

Another issue that has risen in the past decades is anorexia and eating disorders. studies estimate that

''approximately half million teens struggle with eating disorders or disordered eating''. Some argue that this due to the rise of social media depicting beauty standards that are impossible to attain. As an informal model of information technology, social networking allows us to believe we have control over it as we have the opportunity to create an online persona and identity through personal profiles. However, this is arguably the overarching move towards a more self-conscious construction of our identity. The rise of ''selfie'' culture has resulted in an increase in narcissism and excessive interest in physical appearance.

In conclusion, technology has had a profound impact on society as it has the ability to overcome the obstacles of time and space. However, the excessive dependence on computing and robotics means that the human intellect is undermined. Technology is essentially man made and a product of society that expresses social goals and structures. Scholars rarely discuss any disadvantages of the printing press due to its impact on education, communication and literacy levels, however, some view it as one of the many tools used by those in power to control and shape our sense of self. Furthermore, the internet is one of the greatest inventions of the twentieth century due its ability to unite people; however, there is a rising concern among scholars about the increasing number of people who depend on it. Ultimately, the success or failure of a technological innovation is reliant upon its subsequent implementation and not upon its intrinsic characteristics.

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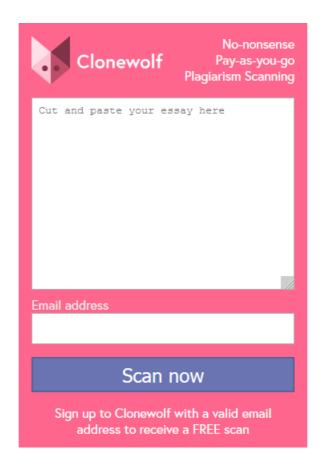
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