**The Social Construction of Technology: Bicycles and Cell Phones**

The study of technology has become a prevalent topic as we head into the twenty first century, which includes the study of how specific technological artifacts become the norm in society. The sociology of technology helps answer this question by recognizing that there are choices on the part of the designers and users of certain artifacts that shape technology as it becomes prevalent in our world (Williams & Edge, 1996, p. 856). Basically, society decides which technology will survive. This introduces the Science, Technology, and Society (STS) concept called the Social Construction of Technology (SCOT).

The concept, SCOT, was first developed by the scientists Trevor J. Pinch and Wiebe E. Bijker who met at a conference for the European Association for Study of Science and Technology and began integrating the study of technology with the sociology of scientific knowledge (Clayton, 2002, p. 352). In the early 1980s scientific knowledge was “socially constructed,” as society determined what knowledge would be further researched, accepted, or rejected (Pinch & Bijker, 1987, p. 18). Since technology and science were so related by this time period, Pinch and Bijker believed the sociology associated with the sciences could also be applied to technology. Specifically, they took an up and coming approach of sociology called “social constructivism.” With this view, Pinch and Bijker (1987) analyze how the development of technology is based on society’s view of the artifact as opposed to the artifact’s individual attributes. Thus, SCOT is used to explain both the “success and failure” of certain technologies (p. 25).

In their collective essay, “The Social Construction of Facts and Artifact: Or How the Sociology of Technology Might Benefit Each Other,” Pinch and Bijker (1987) coined SCOT as “the developmental process of a technological artifact... as an alternation of variation and selection,” (p. 28). They recognized that with each technological artifact there were different developmental paths that artifact could take on its way to becoming prominent in society. According to SCOT, the first step in studying the specific “path” an artifact takes is defining “relative social groups” that have certain levels of interest in the artifact. Each group is made up of people who are concerned with the artifact in the same exact way (Pinch and Bijker, 1987, p. 30). Pinch and Bijker (1987) found that there may be multiple groups associated with each technological artifact because people of diverse cultures and values develop different uses and designs for technology. This concept, called *interpretive flexibility,* is a key aspect of SCOT because it corresponds with the idea that society makes choices that influence the development of certain technology (p. 40). These social groups serve as the backbone for the development of technology, as they dictate which desirable qualities should survive. Thus, it is necessary to research these social groups further and understand exactly how the group interprets the technology in order to precisely trace the development (Pinch & Bijker, 1987, p. 34).

Each social group will then have its own set of problems associated with the artifact, and with each problem there will be multiple solutions. Since each social group has its own interpretation of the technology, different solutions will be preferred by various groups. This will cause more issues between varying ideologies and even more possible solutions (Pinch & Bijker, 1987, p. 37). Pinch and Bijker (1987) found that as each social group tries out various resolutions to their own problems, the technology begins stabilizing until one form of the artifact becomes preferred by the social group in a process referred to as “closure.” Specifically, they showed two types of closure: rhetorical closure and closure by redefinition of the problem. Rhetorical closure occurs when an artifact stabilizes and the social groups think their original problems have been solved whether they really have or not. Furthermore, closure by redefinition of the problem occurs when the main issue of a group is transferred to another area, solving the problem for some, not all, of the social groups (p. 44). Overall, Pinch and Bijker developed SCOT to show how specific variations of a technology become prevalent based on their meaning to certain social groups.

The classic example that Pinch and Bijker used to explain the method of SCOT described above was the development of the safety bicycle. First Pinch and Bijker described two relevant social groups, young versus elderly men (Clayton, 2002, p. 353). The interpretive flexibility of the bicycle was shown by the opposing views that the two groups of males held towards the technology. While the youngsters wanted to bike to show off their youth with speed and fashion, the elderly wanted to use the bicycles for travel (Clayton, 2002, 353). The problems that each group faced with the bicycle included the elderly men’s concern with their safety using the new technology, and the young men’s concern with speed and looks (Clayton, 2002, 353). Different solutions could be considered for these specific problems leading to multiple types of bicycles to choose from. Over time, a specific bicycle that had “low wheels with a rear chain drive, diamond frame, and air tires” stabilized and became the norm for a safety bicycle (Pinch & Bijker, 1987, p. 39).

Rhetorical Closure occurred for the elderly men when it was advertised that the new technology was “perfectly safe,” (Pinch & Bijker, 1987, p. 44). Thus, the public took this claim as fact and lost concern for this specific problem. Additionally, closure by redefinition of the problem was seen when the air tire was supposed to solve the safety problem the general public had with vibration in the rear tires (Pinch & Bijker, 1987, p. 45). The sports cyclists were not concerned with this issue at all; in fact, when the air tires were first introduced, the sporting cyclists gawked at the unattractive variation of the bicycle. However, once the air tires showed greater speed than had ever been seen, the sporting cyclists accepted the air tires with great enthusiasm. The intended purpose of the new tires was to solve the vibration problems for the elderly men wanting safe bicycles; instead they solved the problem of speed for the young cyclists. Thus, the problem was redefined and solved for the youngsters (Pinch & Bijker, 1987, p. 45).

An example of an artifact prevalent today that I thought could be applied to SCOT is the cell phone. If Pinch and Bijker took a look at the development of the design of the artifact, they would first begin the analysis of the cell phone’s evolution by naming relevant social groups associated with the technology. Two possible groups would be teenagers and businesses because each group shows the interpretive flexibility of the cell phone by applying different uses to the device. Teenagers primarily view the cell phone as a means of staying interconnected with friends and as an item that determines social status (Lenhart, 2012). On the other hand, businesses see the phone as a way to share ideas and information between geographically separated employees (Shire Websites, n.d.).

As consumers, the teenagers concern with social interactions and status greatly influenced the evolution of the cell phone. At first they were interested in phones that could be used to call their friends, and so were satisfied with the typical flip phone. But as text messaging became the most popular form of communication among the younger generations, the teenagers faced a problem as flip phones had inconvenient ways of typing these messages. This problem could be solved by placing QWERTY keyboards on the phones (Rodriguez, n.d.). After the rise in social networking sites, it soon became important for cell phones to have internet capabilities to provide teenagers with access to sites such as Facebook and Twitter that kept them more connected. Pinch and Bijker would notice that the teenagers now have stabilized their requirements to phones that have call, text, and internet capabilities. This stabilization is seen today as smart phones have become the norm amongst teenagers, while the development of these phones has begun to level off (Lenhart, 2012). As a consumer today, I have noticed that although cell phone companies continue improving internet speed and efficiency, smartphones still have the essential characteristics that the teenagers have demanded. If Pinch and Bijker analyzed the development of the cell phone, they may have classified its stabilization as rhetorical closure since the problem of staying interconnected with friends and family are disappering through the cell phones multiple capabilities of calling, text messaging, and providing internet access.

In terms of the businesses, companies also found internet access a necessity as it provided employees constant connection to work through email. Now it is typical for employers to provide their employees with cell phones, such as the BlackBerry, that have keyboards and email capabilities (DeWalt, n.d.). As workers are in constant connection to the office through attributes of the cell phone, the companies’ may believe they are solving a problem of employee communication. Like the stabilization of smartphones among teenagers, the emergence of the BlackBerry as the norm among businesses could then be seen an example of rhetorical closure.

Overall, SCOT is a method for showing how certain groups in society influence the development of technology. The process of SCOT is depicted by Pinch and Bijker’s analysis of the development of the bicycle and my interpretation of the change in the design of the cell phone. Overtime the social groups in each example found new requirements for the technology so that it fulfilled their specific needs. These new specifications changed the design and use of that technology. It is important to understand that society has the ability to influence the development of technology, especially as we head into the technological era.

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