INTRODUCTION

What is TE?

In a world where technology progresses more rapidly than the ability of society to master it, social and ethical consequences have become core components of technological advancement. The concerted effort to study the ethical aspects of technology in life and society have nurtured in the field of Technoethics. The term, technoethics was first coined by Mario Bunge in the 1970s (Bunge, 1977) when fighting for greater moral and social responsibility among technologists and engineers concerning their creations. This concern for ethical aspects of technology evolved into a field of study under this same name. According to the Handbook of Research on Technoethics:

"Technoethics is defined as an interdisciplinary field concerned with all ethical aspects of technology within a society shaped by technology. It deals with human processes and practices connected to technology which are becoming embedded within social, political, and moral spheres of life. It also examines social policies and interventions occurring in response to issues generated by technology development and use. This includes critical debates on the..."
responsible use of technology for advancing human interests in society. To this end, it attempts to provide conceptual grounding to clarify the role of technology in relation to those affected by it and to help guide ethical problem-solving and decision making in areas of activity that rely on technology (Luppicini, 2009, p. 4).

What is STS?

Questions surrounding the role of science and technology in society have also spurred academic interest and debate under the general umbrella of Science and Technology Studies (Bijker, 1995; Ellul, 1967; Winner, 1993). As an interdisciplinary field of academic study and research, Science and Technology Studies (STS) focus on science and technology issues. It deals with the interrelation of social, political, and cultural variables within the advancement of scientific and technical innovation (Barnes, 1974; Hackett, Amsterdamska, Lynch, & Wajcman, 2007; Pinch, 1986). As is the case of most (if not all) interdisciplinary academic fields, Science and Technology Studies (STS) has diverse intellectual roots emerging from various areas of academic scholarship. In the case of STS, intellectual roots are grounded in the history of science and technology (Mumford, 1934), philosophy of science (Kuhn, 1962), philosophy of technology (Mitcham, 1994; Hickman, 2001), technocritical and feminist studies (Feenberg, 1991; Haraway, 1991), and sociological studies of science and technology (Bijker, 1995; Woolgar, 1991). The roots of STS differ in terms of epistemological assumptions, conceptions of what is valuable and interesting, and by the manner in which they approach academic practices. These differing intellectual roots and values can lead to schisms which can threaten the future of STS.

University degree programs and research are at the nexus of this academic field research and represent a training ground for future STS professionals. Degree programs in STS are currently offered at universities around the globe with various specializations and orientations. As will become apparent in this article, academic training on ethical aspects of technology study is lacking from the core of most Canadian academic programs in STS.

BACKGROUND

STS Roots

One main branch of STS has been traced to mid-20th century Philosophy (Philosophy of Science in particular) and the realization that science cannot be understood from a single disciplinary perspective. Seminal works, such as Thomas Kuhn’s *The Structure of Scientific Revolutions* (1962), helped to broaden philosophical views about the limitations of studying science solely in terms of facts and logic. This led to the spread of programs in history and philosophy of science which eventually included the study of science and technology (Fuller, 2005). A second main branch of STS grew out of the Social Sciences and concerted efforts to make the study of science and technology useful to society (Bauer, 1990). This second branch was driven largely by developments in Sociology and the study of scientific knowledge, which eventually expanded in scope to focus on science and technology (Woolgar, 1991). In particular, the sociological study of science and technology nurtured the development of STS through sociological critiques of science and technology (Latour, 1996), and influential writings on applications of science and technology grounded in social constructivism (Matthews, 1998). The branch of STS based in Philosophy is highly theoretical in orientation, whereas, the branch grounded in the Social Sciences has more of an applied focus (Griere, 1993).

STS at a Crossroads in Canada?

The global interest in STS programs is mirrored in countries like Canada, where there is evidence of an emerging academic field of STS. Programs in STS have been created at nine Canadian universities with orientations various specialization areas. Despite the apparent importance of STS and adequate access
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