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Opportunities and challenges created by terrorism

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Abstract

Besides being pushed by technical development and pulled by the demand for hi-tech products, technology is also often influenced greatly by the sudden impacts from other external environments. As shown by the aftermath of the 9/11 attacks (2001), Bali bombings (2002, 2005), Madrid bombings (2004), and London bombings (2005), some technologies have been fundamentally affected by terrorism, especially those concerning globalization, infrastructure, corporations, education, and individuals. Using system dynamics (SD) methodology, our paper first examines the causes of terrorism and why the United States was chosen as the target for the 9/11 terror attacks. The concept of SD helps analysts realize the variation of a complicated system and perceive how an internal feedback loop within a system impacts the whole system's behavior. After suffering the 9/11 attacks, the American-led coalition carefully considered how to study and develop effective methods for anti-terrorism strategies. These anti-terrorism efforts will have a major impact on technology development, and many opportunities and challenges are likely to arise from such development. Based on the qualitative analytic approach of causal loops, this article explores in detail the opportunities and challenges for technology development prompted by terrorism. The contribution of our study lies in appropriately analyzing links between terrorism and technology development in order to explain the present relevant technology situation and to initiate a discussion of future technology development trends.

Keywords: Terrorism; Technology development; System dynamics

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1. Introduction

1.1. Terrorism and international affairs

Although a plethora of typologies and theories have been developed to understand terrorism, one lucid explanation overshadows the many others. Terrorists, according to Roskin et al., committed believers in political causes with grudges, use violence to weaken a hated authority, fostering terrorism mostly in countries struggling to modernize [1].

Terrorists mainly exercise unpredictable destruction to attack the citizens of governments they oppose, causing uneasiness and fear in those societies. From a different perspective, however, the activities of these people may be on behalf of striving for justice or fighting for freedom. China has tried to treat Xinjiang's and Taiwan's independence movements as terrorism, while Taipei would like to associate the threat of military force from Beijing with international terrorism. The purpose of both is to deprive rationality and legitimacy from the other side to strive for global approval and support.

In order to understand effectively what causes terrorism and how technology and terrorism interact with each other, this article employs the system dynamics (SD) approach, devised by Jay W. Forrester [2], in particular with causal loops to depict current international affairs headed by the United States. The SD approach begins with understanding the system of forces that created and continues to sustain a problem [3]. A formal model is then developed as relevant data are gathered from a variety of sources and a rudimentary measure of understanding is achieved. This model initially uses the format of a set of logical diagrams showing cause-and-effect relationships. On the diagram (as in Fig. 1), each arrow represents a cause-and-effect relationship. The polarity of the link (+/−) indicates the direction of change that a change in the cause induces in the effect. A positive sign indicates change in the same direction (increase/decrease induces increase/decrease) while a negative sign indicates change in the opposite direction (increase/decrease induces decrease/increase). Depending on the polarities of causal links

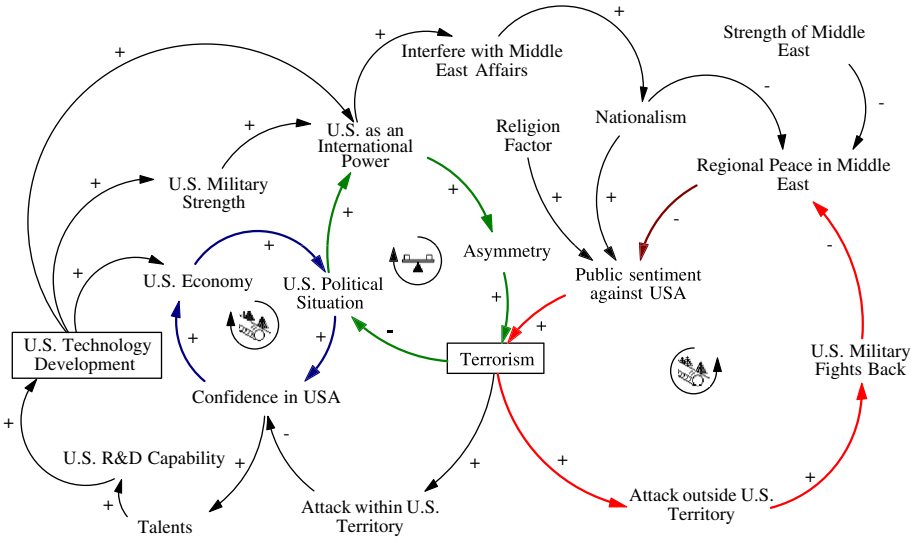

Fig. 1. Causal loops depicting current international affairs.