



Open prosperity: How latent realities arising from virtual-social-physical convergence (VSP) increase opportunities for global prosperity



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ABSTRACT

Virtual technologies, social technologies, and physical technologies are often considered separately. By contrast, there has been little consideration of virtual-social-physical convergence (VSP) in the literature. Moreover, there has been little, if any, consideration of latent realities brought about by VSP. Latent realities are realities that exist, but are neither directly observable nor easily described by a single measure. In this paper, it is explained how VSP latent realities open up opportunities for global prosperity. Four contributions to the literature are made. Firstly, virtual-social-physical convergence (VSP) is explained in terms of convergence theories. Second, VSP latent realities are described in relation to relevant theories such as ecosystem edge effects. Third, VSP latent realities are related to international prosperity goals in terms of Resource-based Theory, Knowledge-based View, and Transaction Cost Economics. Fourth, it is argued that latent realities arising from VSP can be more important for increasing prosperity than physical realities arising from previous waves of technological convergence. VSP latent realities are related to practice in terms of macroeconomics and microeconomics. In addition, methodologies and foci for future research are discussed.

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1. Introduction

Increasing prosperity is a global priority. In this paper, it is explained how latent realities arising from virtual-social-physical convergence (VSP) open up opportunities for global prosperity. VSP adds the read-write functionality of Web 2.0 and associated social media to virtual-physical convergence involved in, for example, advanced digital manufacturing. Although VSP is an enabler of trends such as collaborative consumption and Third Wave Do-It-Yourself (DIY), there has been little consideration of VSP in the literature. Rather, new virtual technologies, new social technologies, and new physical technologies such as bio-inspired materials are often considered separately in terms that lead to

cycles of hype and disappointment. At the same time, there has been little, if any, consideration of the latent realities brought about by VSP. Latent realities are realities that exist, but are neither directly observable nor easily described by a single measure. Well known latent realities include, for example, age discrimination, business confidence, and personal intelligence. VSP introduces new latent realities that can open up new opportunities for global prosperity.

Prosperity encompasses financial wealth, physical health, spiritual well-being, and general happiness. In 1776, for example, Adam Smith advocated nations become wealthy by dividing production activities into repetitive actions of monotonous labour. In the same year, Jeremy Bentham put forward his greatest-happiness principle of right and wrong being judged by the degree to which an action achieves the greatest happiness of the greatest number [1]. More recently, there has again been increased emphasis on happiness.

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For example, the notion that Gross National Happiness (GNH) is more important than Gross National Product (GNP) arose recently in Eastern countries where prosperity is considered more in terms of spiritual well-being than financial wealth. The notion of GNH is spreading to Western countries as dissatisfaction with long working hours increases, and positive links between happiness and health are explored [2–6]. Whatever the particular composition of measures of prosperity, there is increasing emphasis on opening up the creation of prosperity to all people irrespective of their geographical location. One phrase to encompass efforts to achieve this goal is Inclusive Growth [7,8]. However, at the same time, it is argued that economic growth is not sustainable and is not necessary for prosperity [9,10]. Accordingly, Open Prosperity is concerned with opening the creation of prosperity to all, without reliance on economic growth [11,12].

Detailed rankings of countries relative prosperity are available including the Legatum Prosperity Index. This index encompasses a wide range of prosperity variables, which is appropriate for providing comprehensive definition of prosperity. Within the index are prosperity variables including: expectations of the economy; perceived job availability; business start-up costs; belief that working hard gets you ahead; confidence in financial institutions; confidence in the judicial system; possibility to voice concern; ability to express political opinions without fear; confidence in honest elections; primary education enrolment; secondary education enrolment; tertiary education enrolment; satisfaction with education quality; perception that children are learning in society; satisfaction with freedom of choice. Such prosperity variables are concerned with the availability of options for creating financial wealth; for enjoying personal freedom; and for having education. Such variables do not measure actual financial wealth etc., but measure to what extent there can be positive perceptions of prospects for prosperity. Variables within the Legatum Prosperity Index are similar to those in other conceptualizations of prosperity. The Legatum Prosperity Index is widely referred to [13,14]. Hence it is used in this study.

The research addressed the questions: what types of latent realities, if any, arise from virtual-social-physical convergence (VSP); and how, if at all, can VSP latent realities increase opportunities for global prosperity. The research comprised review of convergence theories and virtual-social-physical convergence (VSP); identification of latent realities arising from VSP; comparative analysis of VSP latent realities and international prosperity goals in terms of Resource-Based Theory (RBT), Knowledge-Based View (KBV), and Transaction Cost Economics (TCE); relating VSP latent realities to practice goals and research techniques. Four contributions to the literature are made. Firstly, virtual-social-physical convergence (VSP) is explained in terms of convergence theories. Second, levels of VSP latent realities are described in relation to relevant theories. Third, VSP latent realities are related to international prosperity goals. Fourth, it is argued that latent realities arising from VSP can be more important for opening up prosperity than physical realities arising from previous technological convergence.

The remainder of this paper comprises five sections. Next, different theoretical perspectives of convergence are described, and examples of VSP are provided. Then, three levels of VSP latent realities are defined. Subsequently, it is explained how VSP latent realities open up prosperity opportunities. Explanation includes examples related to economics, education, governance, freedom of choice, and overall prosperity growth. Explanation makes reference to three theoretical perspectives: Resource-Based Theory (RBT), Knowledge-Based View (KBV), and Transaction Cost Economics (TCE). In the penultimate section, implications are discussed for practice and for research. In conclusion, it is argued that VSP is fundamentally different from previous technology convergence

because of its introduction of latent realities, which address multiple aspects of prosperity.

2. Virtual-social-physical convergence

In this section, different theoretical perspectives of convergence are described. Subsequently, examples of virtual-social-physical convergence (VSP) are provided and related to theoretical perspectives.

2.1. Convergence

The Oxford English Dictionary defines the word, converge, as follows: come together from different directions so as eventually to meet; come from different directions and meet at a place; gradually change so as to become similar or develop something in common. Technological convergence involves two or more sectors, which are unrelated by industrial sector classification or consumer demand categorization, coming to share a common technological base [15,16]. There have been several perspectives of technological convergence. One of these is the production/product perspective. Within this perspective, technological convergence occurs when technological innovations that are commercialized in one sector begin to change production and/or products across other sectors [17,18]. This, however, does not inevitably lead to convergence of market offerings. Rather, companies continue to have differentiated market positions because of their different customer bases, core competencies, value networks, corporate cultures, etc. [19–21]. For example, separate advances in production technologies such as refining, smelting, casting, and milling converged to be shared by sectors as diverse as bicycles and munitions. Technological convergence in diverse products can be seen in, for example, the graphic user interfaces and touch screens that are common across an increasing wide range of goods from cars to washing machines.

Another perspective of technological convergence is that it can be technical or functional [22]. Technical referring to the ability of an infrastructure, for example the Internet, to transport any type of data; and functional referring to integration of a variety of functionalities, for example within mobile phones. The European Commission in its Green Paper on Technological Convergence [23], defined technological convergence with this technical/functional perspective as follows: The ability of different network platforms to carry essentially similar kinds of services, or the coming together of consumer devices such as the telephone, television and personal computer. Again with the technical/functional perspective of technological convergence, it is apparent that convergence of market offerings is not inevitable. Rather, the Internet is deployed by a very wide range of companies offering diverse goods and services. Also, the coming together of consumer devices, such as the inclusion of digital cameras and digital games in mobile phones, does not result in the end of separate cameras and consoles. This is because of, for example, the complexity of multi-functional devices and the superior performance of separate consumer devices [24].

A detailed perspective of convergence considers substitutes and complements on the supply-side and on the demand-side [25]. Convergence of substitutes occurs when different products begin to share features that will make them interchangeable for customers. A supply-side convergence of substitutes occurs when different technological capabilities, such as biotechnology and pharmacology, become similar and can satisfy the same needs. A demand-side convergence of substitutes occurs when the needs of different consumer segments become similar through, for example, globalization. Convergence of complements occurs when different products begin to work better together than separately. A supply-side convergence of complements occurs when different

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