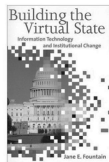Stithorn Thananithichot[1]

The Technology Enactment Framework:
Building and Managing Virtual States

Fountain, Jane E. Building the Virtual State
(Washington D.C.: The Brookings Institution, 2001).

Garson, G. David. Public Information Technology and
E-governance: Managing the Virtual States
(London: Barlet Publisher, 2006)

Today public agencies around the world not only have official websites but also sponsor moderated chats, blogs, digital video clips, e-learning, and virtual tours of national landmarks. In the book entitled Building the Virtual State: Information Technology and Institutional Change, Jane E. Fountain outlines an analytical framework for technology enactment (p.91). Fountain uses the term enactment as organization theorists do; that is, "the selective attention paid by individuals to environmental stimuli; the propensity to represent, act out, or enact institutionalized (or routine) performance processes and standardized organizational arrangements; and the construction of organizational life that results from

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conflicting, competing, and sediment enactments" (p.89). Thus, technology enactment, according to Fountain, is the result of institutional arrangements, including cognitive, cultural, structural, and political embeddings. These institutional arrangements shape individuals' perceptions, interests, and behaviors, while the most important influences on technology enactment come from the context of use; here organizational forms, which include bureaucracy and networks. Fountain argues that bureaucratic form, whose logics (particularly standardization, the primacy of rules, hierarchy, jurisdiction, and stability) remain robust, exhibits some changes due to technology. In contrast, networks follow different internal logics, that is — trust versus exchange, social capital, interoperability, pooled resources, and access to knowledge. Some network forms, for this reason, appear to offer greater flexibility and adaptability than bureaucracies. Regarding these relationships, in which the institutions influence and are influenced by enacted technologies and predominant organizational forms, where institutions enter the technology enactment framework in the form of cognitive, cultural, socio-structural, and formal embeddedness, the outcomes of technology enactment are therefore indeterminate, multiple, unanticipated, and influenced by rational, social and political logics (see, Figure I).
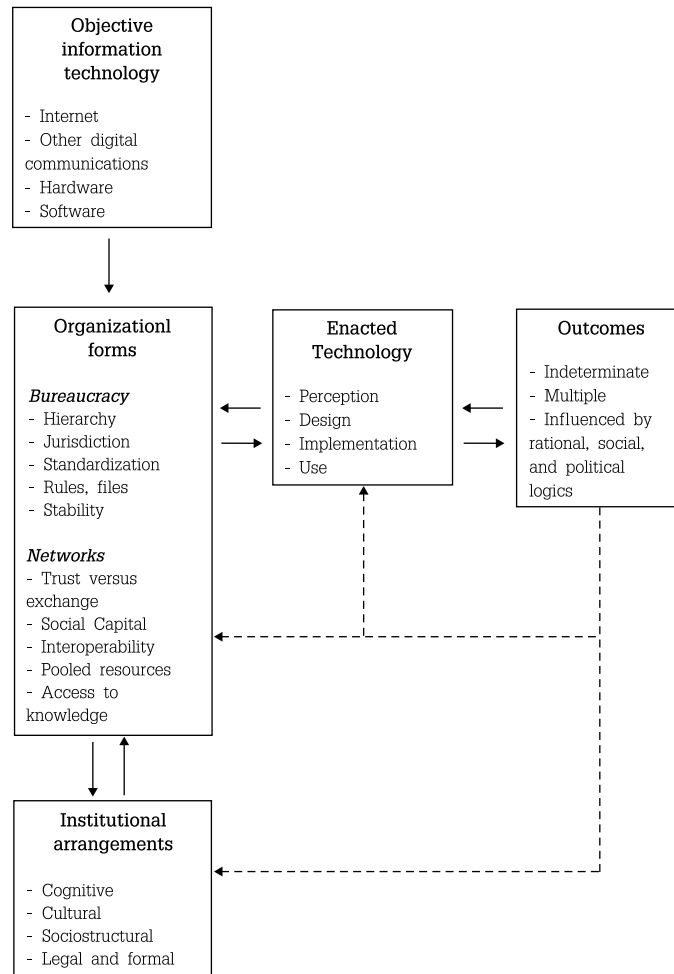
Objective
information
technology

- Internet
- Other digital
communications
- Hardware
- Software

Organizationl
forms

Bureaucracy
- Hierarchy
- Jurisdiction
- Standardization
- Rules, files
- Stability

Networks
- Trust versus
exchange
- Social Capital
- Interoperability
- Pooled resources
- Access to
knowledge

Enacted
Technology

- Perception
- Design
- Implementation
- Use

Outcomes

- Indeterminate
- Multiple
- Influenced by
rational, social,
and political
logics

Institutional
arrangements

- Cognitive
- Cultural
- Sociostructural
- Legal and formal

Figure 1. Fountain's technology enactment framework

Source: Fountain (2001: 91)

Although Fountain views both bureaucratic structure and the behavior of key actors as important players in determining technology enactment and outcome, this assumption was not visible in her framework. In the article entitled "Extending the Technology Enactment Framework,"

Alexander Schellong addresses one of the most critical critiques made by scholars such as Norris (2003) and Grafton (2003), arguing that Fountain's framework ignores the relationship between technical system (i.e., equipment and processes) and social system (i.e. people and relationships). In this regard, success or failure of technology enactment depends not only on the ways in which organizations apply new technologies but also on human factors, e.g. people who use those technologies and relationships among them. Schellong, in his article, thus proposes to add citizens and businesses as further important actors in the "Technology Enactment" framework. Additionally, other scholars, such as Hirokazu Okumura, have revised this framework when translating it into Japanese by adding the multiple roles played by career civil servants, information technology decision makers, and consultants in government technology enactment (see Fountain, 2004).

However, systems theory (which emphasizes the drive for integration as the essential dynamic of information systems), such as Fountain's framework, and socio-technical theory (which emphasizes the critical roles of human factors in technological change), such as Schellong's and Okumura's revision, are not all perspectives for considering information technology in the public sector. In his book Public Information Technology and E-governance: Managing the Virtual States, G. David Garson presents other two theoretical perspectives of public information technology, (1) technological determinism, which gives primacy to technology as a force for change in its own right; and (2) reinforcement theory, which sees information technology as a tool. Instead of determining what the best theory looks like, Garson presents a balanced view by applying each

of these theoretical perspectives to policy issues, such as e-democracy (Chapter 3), information equality and digital divide (Chapter 4), freedom of information policy (Chapter 5), security policy (Chapter 7), and taxation (Chapter 8). In the chapter "Implementation Success Factors," Garson also argues that information technology projects may fail for several reasons. For example, they can become too large and complex; they do not get good commitment from the organization's stakeholders; they are run by poor business plans, unrealistic assumptions about the program, and/ or inappropriate methods; and they are implemented under a turbulent environment and with inadequate support, training, and incentives for end users. Among these reasons, actors are the most important factors involved in the processes concerning the implementation of a project.

For this reason, in order to make information technology project implementation a success, according to Garson, organizations should consider both internal and external factors. Internal factors include: (1) management support, the support that is active, with ongoing involvement and follow up, and that advocates the project; (2) stakeholder motivation, the interactive work by top management and project managers to ensure that all stakeholders will receive benefits from successful implementation; (3) goal clarification, setting realistic goals that are clear and that inform all involved people; (4) support for organizational culture, initiating projects that can retain and reinforce the existing organizational cultures; (5) participatory implementation, bringing all members in the project decision-making process together; (6) adequate budgeting and time horizon, providing adequate budgeting of money as well as budgeting of time; and (7) good communication, having an effective internal communications

system in place. External factors consist of: (1) partnerships with strategic partners, seeking partners that can provide knowledge resources for the project; (2) independence from vendors, avoiding dependence upon vendors by increasing in-house expertise and keeping core IT competencies in-house; and (3) accountability to the political layer, considering the creation of effective project evaluation.

These two critical books in the e-governance field may provide scholars with several ideas regarding how what both authors call "virtual states" can be appropriately made and effectively managed. However, the issue that both authors rarely touch on is the discussion of the concepts of utopia and dystopia as regards e-government. In other words, it may not be an overstatement to say that both of them stand on the utopian side, which sees network technology as a tool that is breaking down the barriers between citizens and government authorities, both at the central and local level. As Fountain notes in her volume, when governments implement technology, they also get improvements in terms of virtual agencies and, cross-agency and public-private networks. Unfortunately, there is evidence indicating that in practice, projects that aim at introducing new network technologies to improve process, data or knowledge sharing sometimes fail completely. Katz and Rice (2002: 106) address a report from the Congress Online Project, showing that over 80 million e-mail messages were received by U.S. lawmakers in 2000, but most of them were ignored. The amount and nature of such massaging seems to frustrate Congress and to increase citizen dissatisfaction rather than provide an improved dialogue between government and citizens. In addition, while governments can save money when implementing some

e-government projects, there is evidence suggesting that governments have to spend a lot of money to keep the system secure. For example, in U.S.A., the Computer Security Institute has estimated that losses from computer viruses alone in 2001 and 2002 totaled nearly $50 million (West 2005: 15). These examples from the dystopian side suggest that successes or failures of information technology projects must be considered from the point of view of outcomes as well as processes, and these outcomes can be either positive or negative. Despite these minor criticisms, Building the Virtual State and Public Information Technology and E-governance: Managing the Virtual States are critical contributions to information policy and e-governance literature.

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