

Preface

Humans have been designing processes for millions of years. The process for creating a cutting instrument by striking a hammerstone against another rock to create a sharp-edged flake is perhaps two million years old (Encyclopædia Britannica Online, 2011a). If it is particularly useful, a new process is added to the cultural repertoire of a society and passed on to successive generations. The gradual accumulation of such processes over many years has created today's civilization. This development of a societal endowment of processes was intertwined with the development of information systems. In order for processes to be used within one generation and inherited by another, there needs to be a means of communicating a process from one person or group to another.

Gestures, a strong candidate for the first form of information system, appear to be innate to humans (Tomasello, 2008). When in a country where we don't speak the language, we revert to pointing and posturing to communicate. Thus, we can imagine one person using gestures to show another person how to use a hammerstone, much as we would do it today. When speech emerged some time after the origin of gesturing, humans would have found it easier to communicate processes, and might well have combined gestures and spoken commands to achieve process transfer. Early process management in a subsistence economy was focused on cultural transmission. Better processes (e.g., how to make fire or cook meat) increased a tribe's survival prospects. Though there were seemingly cases where a society became so small it gradually lost its ability to transfer processes. For example, the evidence suggests that when they became separated from mainland Australia, the Tasmanian aboriginals over generations forgot the process for making fire (Richerson & Boyd, 2004).

The emergence of agricultural economies layered a new dominant concern, production, on top of survival. Farmers created a new set of processes centered on production of crops and animals (e.g., how to plant a seed, how to care for a cow). Writing paralleled the emergence of agricultural economies, as farming societies needed to record and collect data to manage their affairs. Processes (e.g., astronomical observation) were also developed to create calendars, a critical information system for deciding when to plant a crop. Thus we see that new

processes create a demand for supporting processes, and the accumulation of processes multiplied. There is evidence of the earliest writing scripts being used to record processes, such as medical procedures (Encyclopædia Britannica Online, 2011b).

This pattern of process accumulation continues throughout the agricultural era and gained significant impetus with the arrival of industrial economies, beginning in the United Kingdom in the eighteenth century. The focus still remained on production, but the shift was from growing food to manufacturing goods, and we saw a flourish of new production and transportation processes. Society had already recognized the value of new processes. As early as 1421, a patent had been granted in Italy, and the U.S. Constitution authorized Congress to establish a national patent system (Encyclopædia Britannica Online, 2011c). The process of patenting inventions is perhaps the beginning of the systematic process management. Society had established a public way of describing processes and products.

As the industrial revolution accelerated, new information systems, which can be thought of as bundles of integrated processes for conveying information, emerged. Accounting, a set of processes for recording financial transactions and establishing the value of assets and liabilities, is one of the new systems to materialize early in the revolution, with the first chartered accounting society being established in Edinburgh in 1854. Production is still a dominant societal issue, and today we see elaborate process management systems in the form of Enterprise Resource Planning (ERP) and Project Management Systems, among many others, that make today's production systems highly efficient.

Advanced economies are now ensconced in the service era, with for example over 75% of U.S. workers employed in this sector. Service has become the dominant logic for many firms (Vargo & Lusch, 2004). High quality service requires the reliable execution of multiple processes over thousands of encounters by many customer facing employees (e.g., a fast food store, an airline, a hospital). Consequently, process management has grown in importance, and gained considerable attention in the mid 1990s with the surge of interest in business process reengineering (Hammer, 1990; Hammer & Champy, 1993). The field has prospered, and the breadth and depth of scholarship on business process management (BPM) is readily apparent in a recent compendium (vom Brocke & Rosemann, 2010a, 2010b).

As well as serving existing customers, firms are very concerned with how to create new customers. There is an oversupply of many consumer products (e.g., cars) and companies compete to identify services and product features that will attract customers. They are concerned with determining what types of customers to recruit and finding out what they want. As a result, we have seen the rise of business analytics and customer relationship management to address this dominant issue.

We are in transition to a new economy, sustainability, where the dominant issue becomes one of assessing and mitigating environmental impacts because, after several centuries of industrialization, atmospheric CO₂ levels are causing temperatures to rise, oceans to acidify, and icecaps to melt. Furthermore, we have to learn how to use the limited resources of one planet to meet the needs of six billion people with some level of equity within and across generations.

As a result, a new class of application is emerging, such as environmental management systems, energy informatics (Watson, Boudreau, & Chen, 2010) and UPS’s telematics project (Watson, Boudreau, Li, & Levis, 2010). These new systems will also include, for example, support for understanding environmental impact through simulation of energy consuming and production systems, optimization of energy systems, and design of low impact production and customer service systems.

The preceding discussion is summarized in the following figure. Notice that dominant issues do not disappear but rather aggregate in layers, so tomorrow’s businesses will be concerned with survival, production, customer service, and sustainability. Consequently, a firm’s need for BPM never diminishes, and each new layer creates another set of process needs.

Table 1 Societal focus (Source: (Watson, forthcoming))

Economy	Subsistence	Agricultural	Industrial	Service	Sustainable
Question	How to survive?	How to farm?	How to manage resources?	How to create customers?	How to reduce impact?
Dominant issue	Survival				
	Production				
	Customer service				
	Sustainability				
Key information systems	Gesture Speech	Writing Calendar	Accounting ERP Project management	BPM Analytics CRM	Simulation Optimization Design

As we prepare to meet the demands of the sustainability era, it is very appropriate that this book is published. It is one of the first books to recognize that BPM has a critical role to play in creating a sustainable society. Society, across the various types of economies, has shown an increasing concern for managing its processes, and now it needs to be even more attentive to processes. We have learned that well designed processes contribute to the efficient utilization of scarce resources. We have also learned that processes can be redesigned to make dramatic reductions in the use of resources. For example, U.S. based carpet manufacturer, Interfaces, shifted from selling to leasing carpet, and a concomitant redesign of its business processes led to recycling of discarded carpet rather than dumping it in a landfill (Anderson, 1999). We have to learn how to redesign many aspects of contemporary life to become a sustainable economy, and BPM will be a critical driver in this redesign. Indeed, we need a set of meta processes for applying BPM to sustainability problems. This book is an essential step in that direction.

I warmly applaud Jan, Stefan, and Jan for their foresight in seeing the critical connection between BPM and sustainability, and taking action to advance scholarship on this linkage. We can thank them for their perspicacity by applying the many sound ideas in this book to create a greener society.

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