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ANALYZING E-GOVERNMENT
AS A PARADIGM SHIFT

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ABSTRACT

This paper analyses e-government and attempts to show that it is a major paradigm shift in the way that government and public administration are to function. To shed light on this major breach, an analysis is performed regarding the types of information that have been produced and used by the state through time, as well as the methods employed for information processing and dissemination of information in three stages: tribal, massive and configurational. The paper reviews the effects of information technology on general organization by structuring these effects in four stages: islands of automation, automated process chains, business reengineering through IT and total reinvention. It then analyses the fourth stage as it applies to government and public administration in particular. The major changes brought upon government and public administration through IT in this fourth phase appear to have profound effects forcing even a reconsideration of what public administrations should produce and why. For this new era, an organizational, information systems and political paradigm for public administration is proposed.
INTRODUCTION

The relationship between Information Technology and organizational change has been extensively analyzed in the private sector. (Davenport 1992), (Varun Grover and William J. Kettinger (eds) 2000) (Huber and Glick 1993) (Galliers D. Robert -W. R. J. Baets (Eds) and Bob Galliers (Contr) 1998). Some of these findings have been carried over to the public sector as well, e.g. the flatter organization with less hierarchical levels, the capability of decentralized operation based on revolutionary communication technologies, the transformation of hierarchical structures based on networks, the creation of new horizontal and strategic autonomous agencies etc. (Milner 2000).

A series of questions can be posed which address the relationship between I.T. and Public Administration. For example:

Are the consequences of I.T. similar in both the private and public sector? Are there any particular, industry-defined characteristics of Public Administration that must be specifically taken into account?

If the change introduced by I.T. to the public sector is viewed not only as an internal factor which provides new means and tools to perform the role of Public Administration more effectively and efficiently, but considered also from an external viewpoint as an enabler for the newly emerging Information Society, should the exact roles that Public Administration and the State are to play in this emerging society be questioned?

Trying to answer questions such as the above, this paper presents some initial thoughts and raises some questions that must urgently be addressed. After discussing the relationship between social information and the state within an evolutionary three-stage framework and presenting the notion of e-government, we propose a general four-stage schema regarding the impact of information technology on organization. The nature of the fourth and final stage is stressed. Finally, we apply this model and more specifically its fourth stage to the domain of Public Administration and analyze e-government as a paradigm shift.

1. SOCIAL INFORMATION AND THE STATE

A central hypothesis of this paper is that the passage from the industrial state paradigm to that of the information society may be much more than a quantitative expansion or even a qualitative increase of the constituent elements of a particular stage of human development. This evolution has to be considered as a major breach in the linear historical progression.

The potential validity of this hypothesis can be perceived through an attempt to reclassify the periods of social development according to a different criterion. Extensively used social development classification schemes divide temporal evolution of human societies in major phases centered on the predominant way of production. Following this method one can distinguish three clearly demarcated phases (although chronologically overlapping and partly coexisting): Primitive tribal societies, surviving upon food gathering (non cultivated fruit and crops). Agrarian societies producing and exchanging goods based mainly on land cultivation and exploitation of natural resources, with a minimum of simple transformation processes. Industrial societies producing and exchanging goods based on extensive and complex transformation of raw materials.

Approaching social evolution not through the predominant mode of production, but through the type of information produced and used, and the methods of information processing and dissemination, offers a different perspective and permits a new kind of classification of social development.
The following Figure 1 highlights the successive stages of social development according to the informational criterion while also aligning these stages with those of the classical classification scheme:

**Figure 1: Social development according to the informational criterion**

<table>
<thead>
<tr>
<th>Tribal</th>
<th>Massive</th>
<th>Configurational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>Digital</td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>ICT</td>
<td></td>
</tr>
</tbody>
</table>

**Tribal**                    **Massive**                   **Configurational**

**Primitive**  **Agrarian**  **Industrial**

We use the term *information* to indicate all kinds of knowledge transfer of a descriptive and/or a quantitative nature. The kind of information used as a base for social development classification is termed as *social information*. By this term we perceive information referring to legitimate behavior patterns and skills considered as prerequisites for the achievement of specific results necessary for social reproduction and development. By social reproduction (Barel 1973) we consider the temporal extension of cultural, institutional and production models as well as the power structure of specific social systems and sub-systems. While social development refers to the upward movement of social systems towards higher levels of energy, efficiency, quality, productivity, complexity, comprehension, innovation and accomplishment (Jacobs G. Macfarlane R. Asokan N. 1997). Social information flows heavily involve public action and the State.

Main actors of social reproduction are public organizations formalizing and coordinating a multitude of economic, institutional, political and cultural processes. Organizational structure in general and the structure of public organizations more specifically, are always duplicated by a parallel informational structure. Organized action means organized information and most workflows may be viewed as purely communication flows both towards the external and within the internal organizational environment. Therefore we can easily conclude that close interaction between social information and public organizations has always occurred.

The evolutionary process of this interaction between social information and public organizations can be subdivided in correspondence with the major stages of social development, as they where defined herein according to the information criterion.

1. **Tribal structures**

During this stage, the following characteristics apply to production (Malinowski, 1921), social, information and “public” structures:

- Production processes are highly individualized. Although cooperative practices are common, individuality and singularity largely prevail over standardization and centralized coordination.
- Production outputs are limited. Social reproduction equals survival. Neither development nor growth is feasible. Scarcity of goods and the absence of surplus do not permit the development of exchange and commerce. No stocking and storing functions are needed.
- Social action is constructed and conceived as a compilation of singular events, not composed of mechanically repetitive processes and massive outcomes.
- Communication and information functions aim to develop skills not to monitor quantified data.
- Communicative and informational timing is more diachronic than synchronic. Information channels disseminate knowledge towards the future (next generation) rather than data towards present time actors.
• Information is collected, processed and disseminated mainly by elders. The senior members of the community are at the same time, and precisely for this reason, possessors of political power. Information already constitutes a power resource but at this early stage no distinguished function is established: informational expertise is diluted in the political and religious functions.

• Productive, social and informational processes are highly localized: they take place within a limited spatial frame.


What anthropologists and economists named, following Marx, “Asian way of production” referring to the Mesopotamian agrarian societies (McLellan, 2000) (Godelier, 1981) (Steward, 1972) is the first productive mode heavily depending on and massively producing- data. Complex hydraulic networks for irrigation purposes, management of surpluses, commerce and logistics created a necessity for detailed quantitative information and generated complicated informational processes. The management of these processes led to the establishment of complex organizations. The scarcity of the wealth-producing resources, at that time, made production and commerce, political issues and, thus, gave a public nature to these complex organizational structures. Information processes were, therefore, strictly linked to power and public action. This informational situation, namely large-scale organizations producing massive outputs remained, more or less, unchanged since then. Despite the historical variety of political legitimacy foundations and processes, the greatest part of social information was produced through, and used for public action. The main attributes of these massive informational structures remain generally speaking, intact until now:

• Quantitative data are extensively used, prevailing over qualitative and descriptive content
• A great amount of informational flows remain relatively synchronous: they are used for short and medium term action purposes
• Social information is focused more on repetitive and standardized events
• Only a few representative events and concepts with a descriptive and narrative dissemination format and a symbolic use become part of social information. These value-transferring flows become formalized only at the top, decision-making level communicative practices, while mid and low-level implementing actors disseminate this type of content informally (orally, indirectly).
• Collecting, processing, maintaining, searching and disseminating information gradually becomes an extremely complicated procedure requiring great amounts of working – time and a minimum level of specialized knowledge of information processing methods (handling of communicative and informational codes and techniques). Only very powerful collective actors were capable of mobilizing the necessary resources for that, thus, informational processes became highly centralized.
• Information gathering processes require a degree of authority to assure the cooperation of potential informational resources and the validity of the incoming data. Only the State had this legitimate capacity.
• Decision-making processes requiring considerable quantities of data were mainly linked to public action.

The above-mentioned factors brought the State to the core of the social information processes. The State organized itself and its social and economic environment following patterns derived from informational practices and needs. Monopoly of information and authoritative control over information and informational processes determined power relations and structure both at the top and the bottom level. Informational content became more and more linked to expert knowledge and high-ranking organizational roles. While informational processes, requiring manual repetitive and mechanistic activity, were performed by low-level, less-specialized personnel. Thus, informational structure heavily affected the organizational structure as well as hierarchical and power relations within it.

For thousands of years, information processes remain within the same technological, organizational and political paradigms. Manual massive processing and centralized control are the main features.
As social complexity increased, strong and predominating, over the long run, values such as effectiveness were found to depend on extensive and massive results reflecting on quantitative data. Evolution towards result-oriented public action made public organizations more dependent on adequate information. At the very moment that manual processing reached its organizational limits, technological evolution permitted the digitalization of information and data. The quantity and speed of processing and dissemination increased dramatically. Social information and public action entered the I.T. era. The main features of this digital-massive period are:

- Concentrated communicative processes consisting of the incoming of disparate data and its transformation to comprehensive and qualitative information.
- Exclusion of end-user contacts –both within and outside the state structure.
- Compulsory submission of information by citizens and businesses.
- Discretionary supply of feedback to the users with the processed information.
- Codified informational interfaces requiring specific skills are needed in order to enter the closed communicative domain of social information.

It becomes obvious that, although the systems applied in the Islands of Automation and the Automated Process Chains (see above), transform radically the technological paradigm, they do not affect the organizational and political models in depth.

2. Configurational structures

Following James Fleck’s definition of configurational technology (Fleck 1994), (Williams R. and Edge D. 1996) and extending its application to the full range of productive, social and informational processes, we conceive as configurational every system constructed by a complex array of standardized massive and individualized singular components.

The integration of information (IT) and communication (CT) technologies creates ICT, an extremely dynamic technological hybrid, capable not only to increase to the utmost degree the speed and quantity of information processing but also to establish effective direct communication channels between individual participants (as end-users). This evolution reshapes radically not only the communicative but also the organizational and political structure. By permitting the customization of standardized processes, ICT creates equilibrium between massive and individual elements facilitating the survival and effective handling of exceptions, complexities and nuances (Kling R. 2000), thus introducing, through configurability, flexibility.

Configurational structure generates radical changes regarding social information and relevant public action. These developments destabilize partly the existing power relations within the state and between state and society:

- On-line interaction becomes feasible.
- A centralized structure is no longer an absolute technical prerequisite for the effective functioning of social information systems.
- A great part of intermediate informational functions and relevant structures become useless.
- Public personnel in charge of information delivery, loses its discretionary power over the effective release of data and information. The application of the formal information and communication processes and standards becomes compulsory and therefore transparency is increased.
- Feedback can be used in an ample manner facilitating accountability.
- Delocalized informational and transactional activities permit, through decentralized access to large data and knowledge bases, the relocalization of social action.

By resetting social and state patterns, configurational information structures open the discussion on questions of crucial importance such as:

- Where will the border between public and private action be established and what will the new meaning of such a distinction be.
- How will administrative space be delineated.
• How will centralized and decentralized administrative functions be assessed
• How will the local level be defined from an administrative point of view and how will the principle of subsidiarity be applied

2. DEFINING E-GOVERNMENT

The introduction of ICT in Public Administration and the new administrative practices that these technologies introduce have been described as e-government. The e-government idea has a relatively short history of about five years. The word has been coined according to the more general practice of employing the “e” prefix to stress the electronic way of producing and distributing services. (e-commerce, e-learning, e-business, e-economy etc). Interestingly enough the term has found global use regardless of cultural, economical and geographical diversity (3rd Global Forum Conference Proceedings 2001). Coming upon the numerous definitions that exist in relevant literature one can easily conclude that there is no one definition enjoying broad acceptance. From a semantic point of view the “e” prefix stands for the electronic type of governance. The definitions that are encountered usually focus on the change of means that administrations employ (Caldow 1999) (The Gartner Group 1998) (European Commission 2000). According to this, governance turns to “e” when “…it digitizes its processes and the way of communicating both internally and externally” (Enterworks Inc 2000). Or “…(e-government) is the usage of I.T. by the administration to improve accessibility and distribution to the services produced for the citizens, businesses as well as for PA employees” (Deloitte Consulting and Deloitte&Touche 2000).

By defining e-government in this way we restrict the potential and the effects of moving from “non-e” to “e” to only the means that are employed by government. However, is it only the way by which governance is executed that is different in e-government? To address this question we revisit in the next section the issue of how I.T. affects organizations in general.

3. I.T. AND ORGANIZATIONS: FOUR STAGES OF INTERACTION.

A straightforward dependency can be noted between the maturity level of the I.T. employed by an organization and the influence that I.T. exercises upon it. The more advanced the I.T. employed by the organization, the more it affects the organization. Describing these evolutionary stages of the I.T. effect on organizations, we purpose a four-level schema, as described below.

1st Stage: Islands of Automation: Organizations continue to function and produce as before having just automated a small fraction of their processes. I.T. is used for automating existing operations. In this category we could include the first attempts of computerization that were introduced mainly in accounting departments. Organizational changes were minimal at this stage. This minimal organizational change although compatible with the automation and modernization current of the past, is currently obsolete. No organization can utilize I.T. unless it performs at least a minimal adaptation to its processes. The phrase “making the same old mess run faster” summarizes this approach.

2nd Stage – Automated Process Chains: Organizations produce the same products and services as before but with changes in the way the organization functions. At this stage we have a minimum of re-engineering accompanying I.T. introduction: some roles acquire new characteristics, while some other may become obsolete. In addition, some processes are simplified and various steps are replaced by the usage of I.T.. But generally these changes are shallow. They do not affect the overall workflow of the enterprise neither the underlying structure. This second phase, that was prominent during the 70’s and 80’s, is also considered to be “out-of-fashion” as it does not allow the utilization of the full potential of I.T. as it leaves intact the foundations of the way work is organized.
These two first stages were linked at the technological level with the development of legacy systems. These were vertical, closed and introvert systems. Each department autonomously developed its own and consequently there was no concern for achieving internal communication. As a result these systems were unable to communicate not only with the external environment of the organization, but amongst them as well.

3rd Stage – Reengineering through Information Technology: Organizations produce the same products and services as before but in a completely innovative way that affects all internal functions, information flows and structures. At this stage, reengineering is extended. Major changes occur in:

a) the processes that the organization executes (process reengineering),
b) the way that communications occur both internally and with the external environment (information systems reengineering)
c) the way tasks and power is distributed inside the organization
d) the way all the above-mentioned are mapped into new organizational structures (organizational redesign)

A fundamental change occurs in the way each organization produces its services and the value that secures its very existence. While the main objectives of the organization remain the same at this stage, there is a radical change in HOW the organization produces, but not in WHAT it produces. The organization, private or public, earns its survival – through financial profit for private or serving the “society” for public organizations – by producing the same services and products that were produced before the usage of this type of I.T.. This approach is summarized under the phrase “Reengineering through Information Technology” (US Government Information Technology Services 1993). It is also completely compatible with the Business Process Reengineering (BPR) rhetoric.

The operation of information systems at this stage is mainly internal and internal integration seems to be the main objective of this approach. The required integration at the organizational level becomes equally meaningful and possesses additional characteristics. The organizational integration of these potentially e-organizations, has proven to be a difficult undertaking with obstacles difficult to overcome. Organizational integration is a prerequisite for a successful technical-informational integration, and must be addressed as a task that needs a unified design and implementation.

At the technological level, this stage coexists with the development of the Enterprise Resource Planning (ERP) systems. The main difference between these systems and their predecessors (legacy) lies in the fact that it was the first time that Information Systems offered a global and integrated support to the organization, through an accessible to all, one system. ERPs aim at covering the whole organization- horizontally, by supporting all organizational units and sub-units and vertically, by covering all functions from transactions to decision support (Laudon and Laudon 1999).

4th Stage – Total Reinvention: Organizations restructure the meaning of their existence and all their internal and external relations: WHY, WHAT and HOW to produce their services or goods. This stage started with the massive expansion of the Internet (Nua Internet Surveys 2000) and the maturity of relevant technologies. The fourth stage has started during the late nineties. During this stage, the revolutionary development of all relevant technologies has created a domino effect by introducing changes in almost every aspect of organizational life. The external environment has been changing at a dramatic pace, while I.T. provides completely new capabilities to both organizations and citizens, creates new opportunities, recasts new relations and alliances, creating in fact a new type of society which has been called Information Society.

In this tumultuous environment, where Information Technology has become the main agent of change at all levels, organizations question not only HOW to produce but WHAT and WHY to produce. Even the vision of the organization is in question, as societal needs change and new characteristics emerge in all fields (economy, society, etc). Demand for new kinds of services has arisen, while services provided until recently become obsolete, and their production must be decreased or even ceased.
At the technological level, we witness the merging of information and communication technologies, the further development of networks that exceed organizational boundaries linking internal and external worlds (other organizations in the same industry, suppliers, customers, public sector, etc). All organizations actively participate in various external networks (extranets) and their Information Systems communicate. Installed ERP systems reach their limits, as their organizational view is mainly introvert, focused on internal functions. After the Y2K, financial resources have been switched from ERP systems to applications that exploit the Internet. This set of applications is framing the e-business trend. What characterizes them most is the fact that they are focused on external relationships as they support relations along the entire value chain (suppliers, customers, competitors, etc). A gap that is identified here is in their communication with installed ERPs. This forces the organizations to use ERP systems for internal support (accounting, personnel, logistic etc) and e-business applications for external functions (selling, service provision, marketing, etc). Bridging this gap requires the development of a new generation of Information Systems that would succeed in merging both internal and external functions in a unique system. Their extroversion and capability to support inter-(instead of intra-) organizational collaboration are the basic innovations introduced by these systems that have been named ERP II (Jimenez 2000). From a technical point of view what differentiates these systems from “traditional” ERPs is their capacity to communicate with and combine a large number of diverse informational sources (other systems, web pages, etc). Such systems manage to aggregate and process information coming from diverse systems, providing the end-user with a simple interface (web-based usually) making the underlying technical and informational complexity transparent. Their development however is considered to be a very complex and demanding task with many conceptual and technical barriers to overcome. Several methodologies and technologies have been deployed in this respect. Some of the most promising are Ontologies (Farquhar A. 1997) (IEEE Intelligent Systems 1999), Object-Oriented Business Analysis and Modeling with the use of the Unified Modeling Language (UML) (Mecella and Battini 2000), Generic Process and Data Modeling (Stecher 1993; Scheer 1994; Tarabanis et al. 2001), Semantic Web (Berners-Lee et al. 2001), Middleware solutions with the use of Enterprise Java Beans, XML, RDF and CORBA, and Enterprise Architectures (CIO Council 1999).

The meaning of this stage extends beyond the boundaries of the organization (Ashkenas et al. 1998). It is in this dimension that ERP II systems are unique and innovative. As a result, a new possibility emerges: integration in industries such as banking, insurance, retail, chemicals, etc. Such industry integration gains particular importance when the industry to be integrated is Public Administration. Diversity and complexity problems in this industry are prominent, and the derived consequences readily apparent.

4. E-GOVERNMENT AND THE FOURTH STAGE

The introduction of new extrovert oriented information systems in public administrations creates a dynamic situation that far exceeds the previous notion of automation. What happens to PAs at this fourth stage of “Total Reinvention”? To better understand the impact of Information Technology to PA, we employ a descriptive three-layer schema (fig.2). These layers are:

- the political layer where the mission and the goals of PA are specified,
- the organizational-administrative layer where the services are produced
- the technological layer that once provided a supporting role alone, now influences determinatively the two previous layers.

Referring to the four-stage schema, it could be noted that significant influences from the technological to the organizational layer began when the third layer of “Reengineering through Information Technology” was introduced. It was then for the first time that Information Systems exerted pressure for certain organizational changes as described above. These changes altered the way PA functioned (HOW), but not the final product itself (WHAT). Only the political level was legitimized to answer the WHAT question and the impact from the technological level to this level was slight. Moving towards
the fourth stage however this impact becomes stronger. As PAs have to operate and face new challenges in a new societal environment they must reconsider WHAT to produce and WHY. These questions are political in nature. In parallel, the classical approach for the second level, the organizational layer, seems to reach its limits. During the nineties a new concept (Tetenbaum 1998) has defined a new epistemological paradigm for organizational theory: Chaos and Complexity.

Figure 2: The impact of Information Technology to Public Administration

![Diagram](attachment:image.png)

Political Level (Vision-Mission)
Organizational Level (Management)
Technological Level (Technology)

The prevailing paradigm that reigned in organizational theory throughout the 20th century is under doubt. Until recently the organization was based on ideas such as normality, efficiency and determination. But in the new environment characterized by instability and rapid change, the tools and methods for interpreting reality that were used by Taylor’s and Fayol’s “scientific management” (Taylor 1947) (Fayol 1949) – a heritage of 19th century prevailing trends of positivism and empiricism – are not as suitable and effective any more. The same also holds true for concepts that were introduced after the 2nd World War like Simon’s “bounded rationality” (Simon 1947), the “garbage can” model (Cohen et al. 1972) and social psychology (Katz and Kahn 1978). All these concepts cannot understand and explain the newfound internal organizational complexity and the interaction with a constantly changing external world.

Under these pressures during the nineties a new generation of management and organizational approaches has appeared. According to these approaches, organizations are not static entities where change is considered to be a problem rather than an opportunity, but are considered as a live, self-organizing and self-regulated, complex system with both internal dynamics and a continuous interaction within a rapidly changing environment. This approach uses concepts from the theory of Chaos (Gleik 1987) and Complexity (Waldrop 1993), fuzzy logic (Zadeh 1965) and fractals (Mandelbrot 1983). A number of scholars attempt to carry over similar ideas to administrative (Dimitrov ; Lissack ; Mayer-Kress ; Phelan ; Vaill 1991; Kiel 1992; Stacey 1992; Ambrose and Amado 1995; Hurst 1995; Kiel and Euel Elliot eds. 1996; Stacey 1996; Wheatley and Kellner 1996) and political science (Dobuzinskis 1987). Even ideas from diverse fields such as quantum theory and mechanics are tested in organizational theory (Danah 1990; Overman 1996) and political science (Becker 1991), while in decision making, fuzzy logic has provided some interesting insights (Kickert 1979; Smithson 1987; Zimmerman 1987). Although these trends are far from becoming mainstream in administrative science, the metaphor of the organization as a chaotic, complex autoacting system has fertilized contemporary management theory and practice (Morgan G. 1997).

The basic prerequisites for the successful functioning of an organization according to this model are (Peristeras 2000):
1. Capacity of information collection, processing and storage and knowledge creation.
2. Creativity, innovation and easy adaptation.
3. Controlled disorder in order to avoid standardization and decline of sources of creativity.
4. Collaboration and focus on outputs and outcomes.
5. Internal differentiation and requisite variety.
6. Autonomy backed up by strong unifying values that permit coordination mostly through internal self-regulation.

In the discipline of Public Administration there is a very interesting transfer of the self-regulation idea to public organizations (Elliott and L. Douglas Kiel (Editors) 2000). While more traditional approaches perceive stability as the cornerstone of efficient functioning of a public organization, now the idea of “limited instability” is introduced as an absolute prerequisite for surviving in a turbulent external environment (Kiel 1994). This idea of the “limited instability” is completely incompatible with the hierarchical, bureaucratic controls that are implicit in the classical Weberian model. This type of instability is the supportive ground for increasing efficiency and enhancing organizational learning and thus must be consciously safeguarded and promoted by managers.

At the practical level, the advice coming from these new concepts for every day management are very close to the trends of Total Quality Management, New Public Management, BPR, Learning Organization and Reinventing the Government: flexible work allocation to ad hoc groups aiming at specific quantifiable goals, less hierarchical levels creating a more flatter organizational chart, devolution of decision making moving it closer to the citizen and empower lower level management, better information flow and communication, flexibility and culture of change, etc.

The table that follows summarizes all the above-mentioned concepts.

<table>
<thead>
<tr>
<th>IS PARADIGM</th>
<th>IS IMPLEMENTATION</th>
<th>ORGANIZATIONAL PARADIGM</th>
<th>VALUES</th>
<th>POLITICAL PARADIGM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainframe</td>
<td>Legacy, Dumb Terminal.</td>
<td>Weberian Bureaucracy, Vertical Stovepipes.</td>
<td>Hierarchy, Tradition, Obedience</td>
<td>Industrial State</td>
</tr>
</tbody>
</table>

Table 1

Three horizontal phases exist.

- The first includes the two first stages of IT-organization interaction. It is characterized by mainframes and legacy systems at the technological level, the Weberian bureaucratic organizational paradigm, based on a system of values that emphasizes hierarchy, tradition and obedience.
- The second describes the “Reengineering though IT” trend, which may be prove as a transitional period. The political paradigm remains the same but a new set of values forces new organizational interpretations: efficiency and quality are considered to be crucial for surviving and I.T. is utilized towards this direction. IT is used as a tool for organizational optimization.
- The third presents the “Total reinvention” phase that we are just entering. Technological innovation can no longer be seen as a production byproduct not even as a tool but rather as the catalyst for non-linear and unpredictable societal change. Organizations have to survive in a rapid and constantly changing environment. Flexible, reconfigurable, open and semantic based interoperable Information Systems are indispensable at the technological level and new ethos and practices compatible with the new environment are tested at the organizational level. But for the first time changes reach the upper level of the political system and question the function of the State.
5. CONCLUSION

This paper attempted to analyze e-government and to show that it is a major paradigm shift in the way that government and public administration are to function. From this particular point of view the periods of social development are reclassified according to the type of information produced and used and the methods of information processing and dissemination. Within the final stage of configurational social information and the information society paradigm, evolving technology is viewed to affect radically public organizations not only by reengineering current processes and structures but also by inducing fundamental changes to the State’s strategic role. The major changes brought upon government and public administration through IT in this fourth phase appear to have profound effects forcing even a reconsideration of what types of outcomes public administrations should produce and what kind of interrelations with civil society actors should maintain in order to fulfill their essential social functions.

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