The Great Theory Hunt: Does e-government really have a problem?

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Abstract

A persistent leitmotif of the e-government literature in the last decade has been a degree of angst about the absence of theory in the field. Some scholars have argued that until such time as this deficiency is remedied, e-government will never be recognized as a proper discipline. In addition to being under-theorized, it is has also been contended that the e-government literature is over dependent on the descriptive case study or case history.

This paper examines the validity of the claim that e-government is under-theorized and explores the counter-argument that, far from being short of theory, a great deal of good and valuable theory can be found in the e-government literature if one looks in the correct places. The meaning of theory and problems with defining it are discussed and the implications of these problems for assessing the state of theory in e-government are explored in this light. The parallels between this discussion and problems associated with theory in the wider fields of public administration and information systems are briefly considered. From this it is conjectured that concerns regarding the absence of a coherent body of theoretical knowledge in the field of e-government may be overstated.

Note: This is a working draft and not for citation. Apologies in advance for the length, but there is a lot of ground to cover. The next version will be shorter!
1. Introduction

In the 1980s and 1990s one of the major fields of information research was IS evaluation and value, with several hundreds of papers, articles and books being published on this topic over this period. After Solow’s famous (or more accurately notorious) statement that “You can see the computer age everywhere, but in the productivity statistics” academics and professionals alike went into overdrive trying to establish the returns from investment in information and communications technology (ICT). The late Barbara Farbey colourfully described this phenomenon as “The Great IT Benefits Hunt” (Farbey et al., 1994).

In a similar manner, the field of public administration has been engaged over many years in what might be called a great theory hunt (Mainzer 1994; Lalor 2000; Marmon 2006). Theory is central to academic research and to the academic world. Submission of a research paper without any theoretical content to a top social science journal is an almost certain recipe for a revise and resubmit response, if not for an outright rejection. One reason for this is that theory provides rigor. A second reason is that good theory can help explain and assist understanding. The best theory can be used to forecast how a given set of initial conditions is likely to evolve. Theory can provide a framework for discussion and can be used to identify patterns and even ‘laws’ in the complex area of human, social and organizational behaviour. Some would claim that it distinguishes scholarship from practice. It is claimed that in the absence of a good theoretical base, not just a paper, but entire fields of study and research will be weakened and may even flounder.

Within the past decade, a similar hunt has started to emerge in the field of e-government. A number of scholars has criticised the poor quality, methodological weaknesses and lack of theoretical rigor in e-government research. It has been suggested that e-government will not be taken seriously as a discipline, even within public administration, until it develops a solid body of its own theory. These claims are the focus of this paper and will be considered in depth in section three. The research questions addressed in this paper are twofold. First whether this concern about the lack of theory in e-government research is well founded and second to what extent problems with theory in e-government should be a matter of concern?

This paper is about theory. This point is stressed because criticisms of e-government research encompass other shortcomings in the body of research notably problems with definitions, failure to engage with the complexities of public administration and politics and methodological weaknesses (Yildz 2007). While these are all important issues, they remain matters for another paper or perhaps a series of papers.

This paper is divided into five parts. Section two contains a discussion of the nature of theory in information systems (IS) and more broadly in the social sciences. This is followed by an examination and review of the critique of the absence of, or weaknesses in, theory in e-government as asserted by a number of authors since 2000. The actual state of theory development and deployment in e-government is explored in section four. The paper concludes with some reflections on the question of theory in multidisciplinary fields.

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1 “We’d better watch out”, New York Review of Books, July 12th, 1987, p36
2 Defining Theory

Academic scholarship is, amongst many other things, about both precision in use of language and research that is grounded in and/or informed by theory. Yet the meaning of the word ‘theory’ in academic writing is often unclear. Ask a group of academics to define theory and one is likely to get several subtly different answers. Theory is often classified into different types: descriptive, explanatory, predictive and so on and it can appear in different guises, for example as models, conceptual frameworks, taxonomies or mathematical equations. As a considerable amount of fuzziness surrounds the definition of theory, before any critique of the absence of theory in e-government can be presented, it is first necessary to establish a working understanding of what is meant by theory and theoretical rigour.

2.1 Problems of Definition

The problem of defining theory can be readily illustrated by seeking a definition of what it is. Starting from a dictionary definition is a well-known undergraduate ploy, but is nonetheless helpful in this context. The Oxford English Dictionary definition is as follows:

“A supposition or a system of ideas intended to explain something, especially one based on general principles independent of the thing to be explained.”

This defines theory as a system of ideas that explain some phenomenon. It is only one view. Other definitions include the following:

- “An ordered set of assertions about a generic behaviour or structure assumed to hold throughout a significantly broad range of specific instances.” (Sutherland, 1976, p9)

  In this definition, theory comprises assertions about behaviour.

- “A theory may be viewed as a system of constructs and variables in which the constructs are related to each other by propositions and the variables are related to each other by hypotheses” (Bacharach, 1989, p498)

  Here theory is defined as propositions about variables and constructs and the relationships between them.

- “A theory is a systematically related set of statements, including some lawlike generalizations, that is empirically testable” (Rudner 1966, p10)

  In this case theory is defined as a set of related statements some of which are akin to general laws.

These definitions are all similar, but not quite the same. The problem of defining theory is encapsulated, at least for IS, by Gregor (2006, P611) when she writes:

“...there is limited discussion in IS forums of what theory means in IS and in what form contributions to knowledge can made.”
What emerges even from this cursory examination of definitions is that there are different understandings of the meaning of the word ‘theory’. As will be demonstrated, there are different types of theory some of which are not universally accepted as such. As Abend (2008) notes, there are many senses of the word ‘theory’ and no real referent or true meaning; the many things that the word ‘theory’ is used to express differ considerably and the ontological, evaluative and teleological questions in their customary form are problematic. These issues are discussed in the remainder of this section.

2.2 The Nature of Theory

Theory arises as one form of human response to patterns of behaviour. This is just as true of the behaviour of subatomic particles as it is of the behaviour of Amazonian tribes. The Higgs boson is just one of a series of particles, theories or conjectures put forward to explain what is observed in particle physics. Over the years many new particles have been theorised. The existence of many of these is now accepted (e.g. quarks, neutrinos); the existence of others remains disputed (e.g. tachyons). Similarly theories of tribal behaviour may invoke religion, culture, history, environment or even genetics. In all cases a behaviour is observed and the purpose of theory is to attempt to put some sort of shape on this in order to further understanding of that behaviour.

Theory is also a word that attracts adjectives. Some of these adjectives carry implicit or explicit value judgements. Examples of such are ‘strong’, ‘weak’, ‘useful’, ‘scientific’, ‘rigorous’ and ‘prescriptive’. Some adjectives are more neutral. Thus, ‘theory’ can be preceded by words such as ‘descriptive’, ‘explanatory’, ‘predictive’, ‘testable’ and so on. Other classifications of theory found in the literature include normative, emergent, substantive, formal, mid-range, relational and grand theory. The idea of weak and strong theories, has led in turn to the idea that types of theory can be positioned in a hierarchy (an example of one such can be found in Gregor (2006)).

Before discussing types of theory, it is worth asking when a theory ceases to be a theory and becomes a law? Some scholars and philosophers argue that once causal mechanisms are known and proven something ceases to be a theory (Dubin 1978) the reasoning being that a theory is only one possibility amongst other possibilities. There are sometimes several rival theories to explain why a phenomenon occurs. Once a causal explanation is definitely established, the phenomenon ceases to be one that needs a theory. Thus, for example, Ohm’s law is not a theory. On this criterion, the (special) theory of relativity is arguably not a theory unless one argues that it has to be so as it is based on two postulates. The limitation of this line of reasoning when it comes to the social sciences is that there is rarely a single cause for any phenomenon. Even well established ‘laws’ such as the law of supply and demand have to admit of exceptions due to confounding factors. Causality is, of course, itself a major question in philosophy, but is well beyond the scope of this discussion.

2.3 Types of theory

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2 These being that the speed of light is constant for all observers and that the laws of physics are invariant in frames of reference moving at a uniform speed relative to each other.
Different scholars have tried categorising theory in a number of ways. In the field of IS, a widely cited article is Gregor (2006). She differentiates between five different types of theory, namely theory for:

1. analysing;
2. explaining;
3. predicting;
4. explaining and predicting (EP theory);
5. design and action.

In the field of informatization, van de Donk and Snellen (1999) discern (to use their word) four different forms of theoretical knowledge, which are:

1. Concepts;
2. Statements;
3. Empirical generalizations and
4. More or less mature theories.

Wacker (1998) takes a broader viewpoint and claims that academics consider theory to be comprised of the following four parts:

1. Definitions of terms or variables;
2. A domain where the theory applies;
3. A set of relationships of variables;
4. Specific predictions (factual claims).

Doty and Glick (1994, p233), consider that the minimal definition of a theory involves the following key criteria:

1. Constructs must be identified;
2. Relationships among these constructs must be specified;
3. It must be possible to test these relationships.

There is insufficient space in this brief overview for a detailed discussion of these and other classifications of theory. For the purposes of examining contributions to the e-government literature the following categorization, which is an extended version of that proposed by Gregor, will be adopted.

The most basic form of theory is descriptive theory. Descriptive is a problematic word; Gregor uses the word ‘analyzing’, which is better, but less widely used. Van de Donk and Snellen use the word ‘concepts’ for this type of theory. Descriptive theory comes in a number of forms including conceptual frameworks, classifications, taxonomies, typologies and conceptualisations. In some fields (such as botany and zoology), taxonomies are fundamental to the field. In the social sciences, this type of theory provides the foundations upon which other types of theory can be built. This may include identifying constructs or concepts that other theories can then employ to build up propositions about the relationships between them. Descriptive theory is often regarded as weak theory and in fact some
scholars do not consider this to be theory at all (see below) as it is argued that such theories often add nothing of importance to knowledge. Testability is not normally relevant for this type of theory.

A second type of theory is *explanatory*. The use of the word ‘explanatory’ is also problematic for both semantic and conceptual reasons and needs some elaboration. As used by Gregor, explanatory theory is neither causal nor predictive. Semantically, the word explanatory implies some account of causation and it is quite hard to envisage a theory that can explain a phenomenon, but not be usable for prediction. As a consequence, in IS at least, it is difficult to find examples of theories that fit in this category. The meaning normally given to this type of theory is that the causality is itself theoretical or conjectural. Thus, the belief that the sun rising, going across the sky and setting is Helios riding his chariot is a form of explanatory theory and, it could be argued, does not provide any basis for predicting on causal grounds that the sun will rise tomorrow (Helios might decide to stay in bed). Theories of this nature are often found in one off case studies when a non-generalisable explanation is of events is suggested. This type of theory is also, for fairly obvious reasons, regarded as limited, particularly where it is not generalisable, though it is still a valid type. Testability is not normally applicable with this type of theory.

A third type is *predictive, but non-explanatory* theory. Such theories are quite common. In the social sciences (and often in the natural sciences) they are typically based on statistical models accompanied by the implicit understanding that correlation does not imply causation. It is common for such theories to be accompanied by an explanatory component, which may range from a religious belief or a scientific hypothesis. A successful predictive theory will often lead one or more explanatory theories and in some cases may eventually lead to a causal law. The latter is particularly the case in the natural sciences. The *statement* type of theory as proposed by van de Donk and Snellen falls within this category. This type of theory is, by definition, testable.

The fourth type of theory is the *explanatory and predictive* theory. This is perhaps what most people understand or mean when they talk about theory. In the social sciences, prediction is nearly always in probabilistic terms because the number of variables is large and not all variables are measurable (or even known). These theories equate to what van de Donk and Snellen call “more or less mature” theories. They comprise:

“*a set of logically interdependent, in particular non–conflicting, statements, opinions and concepts related to a sphere of reality, which are formulated in such a way that testable hypotheses can be derived from them.*”

(De Groot, cited in van de Donk and Snellen, p5). Theories of this type characterise a mature and cohesive field of scholarship.

A fifth type of theory is *design theory*. This has been described as ‘how to’ theory and is a form of prescriptive (though not necessarily normative) theory. Common examples of such theory relate to systems design and development or to IT management. The status of this as genuine theory is subject to debate. Design theory has clear significance for information systems and consequently for e-government, but its relevance to this discussion would be in the context of a design theory that was specific to e-government and not just to information
systems in general. However there are theories in the e-government literature that fall into this category (see section four).

A special type of theory is normative theory, theory that says how something should be done. This is sometimes a particular variation of design theory. A design theory does not need to be prescriptive; it can in effect say here is one way of doing this. A normative theory says that this is the correct or best way to do this. Politics is a field in which one finds such theories. Plato’s Republic (2000, original c. 380 BCE) is a good example of normative theory as is Aristotle’s Politics (1996, original 350 BCE) though normative theories are to be found in such diverse fields as public finance (Tresch 2002) or citing (MacRoberts and MacRoberts 1987). Normative theory may or may not be testable.

Finally there is the concept of a grand or unifying theory. This concept is itself a little vague implying that such a theory is sweeping in its scope and foundational for the field in some sense. As such, a grand theory is one that provides a theoretical account or basis for a whole field or study or for at least a large subsection of it. Transaction economics is a good example of a grand theory as is, say, contingency theory. In the latter case, the theory seeks to explain the nature of organisational forms and has given rise to a large literature and several daughter theories. A grand theory is a special case of an explanatory and predictive theory.

2.4 Metatheory

A special type of theory is metatheory, i.e. theory about theory. Klein and Jurich (1993) argue that it is useful for practitioners to occasionally pause and reflect on the work done in their field. They propose that an inventory of the field should take place. In practice this involves a process of analysis and evaluation of the research methods and theoretical models that have been employed to date and their efficacy in achieving their stated aims. They describe the theoretical aspects of this process by the term metatheory (1993, p32). In addition to analyzing and explaining the field, this metatheory process includes an identification of the strengths and weaknesses of the field as well as an evaluation of the nature of theoretical frameworks, thereby providing researchers with valuable insights as to what theories have particular relevance and what areas of the field require additional attention. Weis (1998) notes that metatheoretical analyses include several related activities such as the identification of major schools of thought or theoretical perspectives, critical evaluation of the meanings and structure of past and current theoretical explanations, examination of theoretical trends and assessment of the "rules" for theory construction that have developed in the field.

It has been suggested (Weis 1998) that there are two key reasons why a metatheoretical perspective is necessary for a full understanding of scientific theory. The first reason is that it assists us in reflecting on the meaning of ‘theory’ in different contexts. As previously noted, there is no consensus as to the meaning of the word ‘theory’ and it is frequently used to describe exploratory works that are not supported by empirical evidence. However, this interpretation of theory differs substantially from what scientists understand by the term.
The second reason why a metatheoretical perspective is necessary is that it helps to identify and evaluate different types of theory. A variety of theory types have been defined in the literature (e.g., explanatory or causal) and have outlined different approaches to constructing theory (e.g., grounded research, causal modeling). An example of this type of metatheory is structuration theory (Giddens 1984).

2.4 What is ‘good’ theory?

Wacker (1998) proposes eight qualities that are to be found in good theory, namely:

- Uniqueness;
- Conservatism (the theory can only be replaced by something better, i.e. it is currently the best theory available);
- Generalizability;
- Fecundity (it is a good source of hypotheses and possibly other theories);
- Parsimony (it does not have too many variables, constructs or relationships. It has the minimum number of assumptions);
- Internal consistency;
- Empirical riskiness (it must be capable of being proved wrong);
- Abstraction (it is independent of time and space).

Under these criteria, some of forms of theory described above, never mind specific instances of such theory, would have to be considered poor or weak. As noted, some scholars are dismissive of so-called descriptive theory and even of non-predictive explanatory theory or of theory that is not generalisable. Popper (1959) famously argues that to be ‘scientific’ a theory must be falsifiable.

Whilst the validity of different theory forms may be subject to ongoing discussion, what is not disputed is that a number of specific requirements are associated with the development of good theory and moreover that their absence can result in conceptual flaws that have the effect of diminishing the importance or impact of research that aims to build theory. These conceptual flaws are described by Wacker (2008) as:

- Poor literature integration;
- Poor formal conceptual definitions that cause non-uniqueness and irrefutability;
- Internal consistency for statistical significance and substantive significance;
- Simplicity and statistical overkill;
- Random samples obsession;
- Lack of implications to improve business practice.

Good theory builds on previous theory and papers should therefore be well grounded in the extant literature. Wacker (2008) is particularly critical of the failure to do this and in particular of the assumptions made by some authors that because their results do not confirm existing theory that they have to introduce a new theory. This violates the principle of conservatism (see above). Another problem identified by Wacker is poor underlying conceptual definitions. The absence of clear definitions and concepts causes problems with both testability and
refutability. This is a particularly relevant point in e-government where terms such as transformation, transparency and trust are often used in ambivalent ways.

Wacker further argues that what he called ‘substantive significance’ is more important that statistical significance. He criticises the latter on a couple of fronts, arguing that statistical relationships are directionless (correlation not implying causality) and suggests that statistical analyses rather than substantive discussion dominates research papers in far too many cases. A fifth and final flaw in poor research is its lack of relevance for practice. Wacker argues that good theory should translate into improvements in practice.

2.5 Summary

The purpose of this section has been to set out a frame of reference for examining the critique of the state of theory in e-government research and assessing the validity of that critique. The discussion has been necessarily brief and as a consequence a number of questions have been at best cursorily addressed and in some cases actively avoided as to examine them would require a paper in itself. However the categorisation and the measures of quality outlined, even if not entirely satisfactory, provide a basis for the remainder of the paper. The first part of this, the critique of e-government research, will now be described.

3 Critiques of e-Government Research

Although criticism of the problems of theory in e-government research is not a 21st century phenomenon, the criticisms discussed in this section derive specifically from this century. Since 2000, a number of scholars have been critical of either the lack of theory or the quality of theory in e-government research supporting the suggestion by Scholl (2006), Flak et al (2007) and others that e-government research is under-theorized. Several of these critiques will now be examined.

3.1 European Critiques

The first significant critique of the state of e-government research in this period was by Grönlund. Grönlund has made a number of contributions to this debate, the first of these in a conference paper (Grönlund 2004) subsequently published in a modified form in the International Journal of Electronic Government Research (IJEG) in 2005. In this first critique, Grönlund examined papers that had been published in the proceedings of three large e-government conferences in 2003/4, namely EGOV (which was at that time part of the DEXA conference), the e-Government track at the Hawaii International Conference on Systems Sciences (HICSS) and the European Conference on e-Government (ECEG). This critique covered a number of aspects of the papers reviewed including methodological issues. Writing about theory, Grönlund (2004, p178) notes that:

“A scientific field in usually characterized by not just a common object of study, but also a set of theories which can be used to understand the general conditions of the field.”
Grönlund’s analysis was based on a review of 170 papers in total and found, *inter alia*, that most of the papers presented were case studies (or even stories) with little or no theoretical content. Theory generation and testing was “not frequent” while dubious claims were common. Grönlund concluded that e-government research needed to improve quality and rigor if it was to become a distinct research field.

A subsequent article by Grönlund and Andersson (2006) reviewed 80 papers published in EGOV 2005 through they extended this research in a subsequent journal paper (Grönlund and Andersson 2007) to encompass both EGOV and HICSS (ECEG was not included in this later study). Their rationale for confining the 2005 study to EGOV was that some effort has been made by the conference organisers to encourage more rigorous research, in part by restructuring the conference into two sections. In this second round the authors found some improvement in the quality of research, but that there was also an increase in the amount of descriptive research, something they hypothesised might have been a result of changes in funding models. There is little comment on theory *per se* except to note little change in the percentage of theory generating or theory testing papers.

In his most recent contribution to this debate, Grönlund (2010) reviewed a decade of e-government research and concluded that, while there is no lack of e-government frameworks, the extant research was too little informed by public sector values. He notes that there is

“...no explicit eGovernment theory, but there are several definitions.” (p14)

and concludes that there is a

“…need for new models to meet the contemporary and future challenges of eGovernment.” (p23)

While his reviews and conclusions are informative, Grönlund’s research has a number of obvious (and acknowledged) limitations. The three studies dating from 2004-2007 only consider conference papers, at a time when a number of domain specific journals were already available. For example, in 2003, *Information Polity* (IP) had been publishing four issues a year for eight years (although only since 2002 under that title). Similarly, the *Electronic Journal of e-Government* (EJEG) had been publishing since 2001 (and was also available free online). At that time there was already a reasonable body of work on e-government in the general public administration literature (see below). Furthermore, earlier work, including the published research in the informatization literature, was not considered by Grönlund. By 2007, several more journals were being published and a sizeable body of work had been built up in IP and EJEG as well as in other public administration (PA) journals. Consequently, the statement that:

“eGov related papers are beginning to appear in journals”

(Grönlund and Andersson 2006, p3) is something of an understatement, a point made by Andersen and Henriksen (2005, p34) when they wrote:
“This review challenges the findings by Grönlund, who argues that much research in e-
government is at a scientifically immature stage of anecdotal case stories, where the
research is characterized by a case description without including any strict data collection
procedures and where theory building and testing was absent”.

The subject of Andersen and Henriksen’s (2005) research was not theory (in fact in the
article they hardly use the word ‘theory’ at all), but on the content and focus of peer-reviewed
journal articles on e-government related topics published in the years from 1998 and 2003.
They identified 176 such articles and analysed a random sample of 110 of these. Their
findings and conclusion are discussed in the next section.

Arguably the most trenchant critique of e-government research in the first decade of the
century is that of Heeks and Bailur (2007). Their criticism is based on a content analysis of
84 papers drawn from three sources: Information Polity, Government Information Quarterly
and ECEG over a three/four year period. While the authors identify and discuss a range of
problems in e-government research, it is their observations about theory that are of
relevance in this context, though a problem with this article is that some of the types of
theory discussed in section two do not appear to be considered forms of theory by Heeks
and Bailur. Of the 84 papers they examined, only one used theory in their sense (and then
not fully) although many others used frameworks and models. They state that:

“The e-government literature has not yet been a generator or source of frameworks, let
alone theories; it currently provides other researchers with just models or lists, particular with
the four-stage web model of government.” (p255)

In conclusion, they suggest that e-government is at an early stage of development and has
not even begun to develop the characteristics required for a field to start building a body of
knowledge. One reason they adduce for this state of affairs is that e-government is largely
the product of two fields which are themselves theoretically weak, namely information
systems and public administration. This observation is discussed in section five.

There is a number of problems with Heeks and Bailur’s critique. They too use only three
sources, though these include what are arguably the two leading journals focusing on e-
government research at that time. More seriously, and as already noted not untypically, they
do not make it clear what they mean by theory. This creates a certain degree of confusion
as their concept of theory is clearly not the same as, say, Gregor’s or that of van de Donk
and Snellen. Heeks and Bailur do not appear to regard models or frameworks as theory. A
third criticism is that they appear to be of the view that theory can only emerge from primary
data. The idea that secondary data or even reasoning can be a source of theory is not
explicitly dismissed, but it is certainly dismissed by implication.

Finally, Bannister and Connolly (2010) reviewed nine years of ECEG papers. While in this
paper the authors were not primarily concerned with the presence or absence of theory, they
did detect certain trends over the period, in particular a decline in what they termed
conceptual papers and a rise in the number of analytic papers using numerical data and
case discussions as opposed to descriptions (the latter trend was also noted by Grönlund).
Bannister and Connolly suggest that this may indicate that, as Grönlund suggests, the field
is maturing, albeit slowly.
3.2 US Critiques

North American scholars have also examined the problem of theory in e-government research. The first article to address this topic, albeit obliquely, is by Delcambre and Guiliano (2005). The authors do not offer any critique of theory in e-government research, but note the problems within the field arising from the interdisciplinary nature of the research and in particular the culture clash (for want of a better term) between the worlds of computer science and public administration. Curiously, the term “information systems” only appears twice in the body of the text and then in ways not related to the argument. It is as if for the authors, information systems as a discipline did not exist.

A much more relevant critique is that of Norris and Lloyd (2006). Like Andersen and Henriksen, Norris and Lloyd confine their study to articles published in journals. They examine journals in both the fields of public administration and information systems covering the period up to 2004. They focused on 100 articles on e-government of which 57 had some empirical content. Like Heeks and Bailur, Norris and Lloyd examine these papers under a number of categories, several of which are directly related to theory and only consider papers with empirical content. The authors found that only 14 of the 57 articles formulated a new theory and the same number used theory testing. They note that:

“The absence of theory development and testing may suggest works that are less sophisticated or rigorous or that are less well connected to prior relevant scholarship that should inform this new field. This may also be indicative of the newness of the field itself.” (p48)

A slightly larger number (19) of the papers reviewed, formulated and tested hypotheses. The authors conclude that this is ‘...indeed a new field of scholarship that is just “getting its legs”’ (p51).

In studying papers in leading journals, Norris and Lloyd’s research is perhaps a better measure of the state of theory in e-government research than most of the other critiques discussed in this section. However it too has some limitations. The journals examined are predominantly US based and, as far as can be judged, IP and EJEG are omitted. Nonetheless, if American journals are representative of European (or other thinking) then their conclusions are significant, at least as far as 2004.

In a more focused study, Titah and Barki (2006; 2008) undertook an extensive review of the literature relating to e-government adoption and trust. This was, in the authors’ words, a more finely grained analysis than that undertaken in previous studies, but it encompassed a wider range of sources including ABI Inform, the ACI digital library, nine US based journals and three conferences. It also examined each paper in greater depth. The authors defend the US bias of their analysis base, claiming that their sources are reasonably representative, though this is claim is open to question. In total, they identified and analyzed 99 papers published between January 1990 and February 2007. With regard to theory, Titah and Barki found that, contrary to what Grönlund reports, but consistent with the findings of Anderson

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3 This was part of Titah’s doctoral dissertation and this review is drawn from the version in this.
and Henriksen (2005) and Norris and Lloyd (2006), theory testing was involved in a majority (59%) of the papers studied. Field surveys were used in 31% of the papers. However they also found that:

“…in the 99 articles that were identified, none were found to conceptualize the multi-dimensional and multi-level nature of e-Government adoption and acceptance or to systematically theorize and measure these interactions and complex relationships.” (p47).

While Titah and Barki’s conclusions are specific to one narrow, if important, aspect of e-government, there is a couple of points worth noting about their research. First, because it was in an area (adoption and trust) on which there is a large body of literature and a number of extant models (including the technology acceptance model (TAM), TAM2 and the unified theory of acceptance and use of technology (UTAUT) model, it is to be expected that these theories would be used in e-government papers on this subject. That 59% of papers were found to involve theory testing is not, therefore, that surprising, but their findings are probably not generalisable to most other areas of e-government. Secondly, their comments about the lack of a broader conceptualisation of e-government also relate only to this field. Nonetheless, their work does draw attention to the role of external theory in a substantial body of e-government research.

From a slightly different perspective, Coursey and Norris (2008) examined a number of models in e-government. Although e-government theory per se was not the focus of this paper, they make a number of comments that are significant. In their paper they examine five models (all dating from 2000-2001) a number of which (e.g. Layne and Lee (2001)) are discussed in the next section. Coursey and Norris observe that each of these models is both normative and predictive. In relation to predictive models (at least for American local government), the authors note that these models have not performed particularly well. Furthermore, they suggest that all of these models were “created in a vacuum”, i.e. they are not grounded in either data or other theory. They describe the models as “challenged”, by which they mean weak/questionable. Coursey and Norris propose three possible approaches to formulating theories for e-government: to use the traditional public information technology theory of reinforcement (Kramer, Dutton and Northrup 1981), to ground the theory in organisational decision making or to take a policy-making perspective. In summary, they conclude:

“Thus, while intellectually interesting, the models are almost purely speculative”. (p 533).

3.5 Summary

As noted, the above discussion does not include critiques written prior to 2000, nor does it include a number of more generalised commentaries such as Chadwick and May (2003) or Åkessan et al (2008). Within these limitations it encompasses, as far as it known to the authors, all of the critiques published so far. There are several strong messages suggesting that e-government research is theoretically weak, but there are others that challenge this picture. In the following section, the validity of these criticisms will be examined.
4. Theory in e-Government Research

4.1 Introduction

It is worth noting at the outset of this section that references to “e-government theory” are quite common in the literature (e.g. Schelin 2003; Niehaves and Ortbach 2010). When it comes to examination of what this means, there are three problems that need to be addressed in order to assess the state of theory in e-government research namely:

1. Differentiating between native theory and imported theory;
2. Determining what qualifies as ‘theory’;
3. Assessing the extent of theory usage in the literature/research.

The first of these will be handled by splitting this discussion into two parts. Imported theory will be considered first followed by a discussion of both native theory and what qualifies as theory.

4.2 Imported theory

The term imported theory is used to mean the adoption or adapting of theory from another field or discipline in e-government research. A researcher who, say, invokes structuration theory in the study of an IS or e-government phenomenon is using theory, but theory imported for the purpose from another field (in this case sociology). A native theory is a theory of e-government that is not just referent to the field, but which has been created or built within the e-government discipline.

There is ample evidence indicating widespread use of imported theory in e-government research. Such evidence can be found in two of the papers cited in section three namely Titah and Barki (2006) and Andersen and Henriksen (2005). The work by Norris and Lloyd (2006) also shows that theory in general is far from absent in e-government research, even more so if work before 2000 is included (Norris and Moon 2005, p66).

In order to test further the conjecture that imported theory is widely used in e-government research, a simple experiment was undertaken. A list of well-known theories from information systems and the broader social sciences was drawn up and a search for papers from the e-government literature that use the theory in question was carried out. In a number of cases an example of such a paper was already known to the authors. For the others Google Scholar was used to search for the name of this theory and the term “e-government”. When a paper was located, the abstract was first checked to see whether the theory in question was a core component of the paper. Where this was not clear from the abstract, the paper itself was downloaded and examined. Where this could not be established, either because the paper was not downloadable or there was insufficient use of the relevant theory, the paper was discarded and the next ‘hit’ examined. Only papers where the relevant theory is properly exploited (and not, say, simply referred to in the literature review) have been included in the table 1 below.
<table>
<thead>
<tr>
<th>Theory</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of planned behaviour</td>
<td>Kanat and Ozkan (2007)</td>
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<tr>
<td>Actor network theory</td>
<td>Stanford (2008)</td>
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<tr>
<td>Institutional theory</td>
<td>Reyes and Gil-Garcia (2011)</td>
</tr>
<tr>
<td>TAM</td>
<td>Hung et al (2006)</td>
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<tr>
<td>UTAUT</td>
<td>AlAwadhi (2008)</td>
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<tr>
<td>IS Success model</td>
<td>Hussein et al (2007)</td>
</tr>
<tr>
<td>Diffusion theory</td>
<td>Carter and Weerakkody (2008)</td>
</tr>
<tr>
<td>Contingency theory</td>
<td>van Veenstra (2012)</td>
</tr>
<tr>
<td>Theories of trust</td>
<td>Bannister and Connolly (DATE)</td>
</tr>
<tr>
<td>SERVQUAL</td>
<td>Wee et al (2008)</td>
</tr>
<tr>
<td>Prospect theory</td>
<td>Lee and Rao (2007)</td>
</tr>
<tr>
<td>Agency theory</td>
<td>No articles found</td>
</tr>
<tr>
<td>Administrative theory</td>
<td>No articles found</td>
</tr>
<tr>
<td>Cultural theory</td>
<td>Seng et al (2010)</td>
</tr>
<tr>
<td>Risk perception theory</td>
<td>Bélanger and Carter (2008)</td>
</tr>
<tr>
<td>Critical theory</td>
<td>Mosse and Whitley (2008)</td>
</tr>
<tr>
<td>Stakeholder theory</td>
<td>Scholl (2002)</td>
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<tr>
<td>Development theory</td>
<td>Ciborra and Navarra (2005)</td>
</tr>
<tr>
<td>Grounded theory</td>
<td>Lee and Kim (2007)</td>
</tr>
<tr>
<td>New Public Management</td>
<td>Homburg and Bekkers (2005)</td>
</tr>
</tbody>
</table>

A number of points are worth noting.

1. Despite the fact that the list in table 1 contains a somewhat arbitrary selection of theories, they are all reasonably well known and widely used theories, the sort of theories that one might expect to find applied in a field like e-government. The authors are aware of many more theories that could have been included (and in many cases of papers using these theories), but it was felt that the above list is sufficient to support the argument.

2. In only two cases (agency theory and administrative theory) were no papers found which could be said to be using these theories.

3. In all cases there was more than one paper using the relevant theory identified and in some cases (e.g. trust and the TAM) a large number of papers using a particular theory were found.

4. Several of the papers were published in journals outside both the mainstream e-government/public administration journals and conferences. Such journals included the *Journal of Strategic Information Systems* and *Information Technology & Behaviour*. 
This suggests that studies which are limited to e-government outlets (or even the wider public administration literature) are likely to be incomplete and miss relevant research.

(5) All of the papers except three were published after 2003.

From the cumulative evidence, it is clear that many theories have been and continue to be deployed in the study of e-government. Although the examples above are mostly post 2004, it needs to be borne in mind that the period before 2000 was deliberately excluded from the search. Were it to be included, there would be examples in several of the above categories from the 1990s or even earlier. The early criticism of the absence of any theory in e-government research may therefore simply reflect the nascent state of the field at the time the research was undertaken or the data set used in the research.

However, while a large and growing number of e-government papers use imported theory, establishing the percentage of papers that used such theory is a more difficult task. The volume of e-government research is large. A rough estimate of the number of papers published on e-government since 1995 is that it is of the order of 4,000 before allowing for duplication (see the appendix for this computation). With such a high volume of publications it is likely that there will be a considerable number of theory-free papers and a reasonably large number of papers of indifferent quality.

4.3 Native theory

While the critique by Scholl (2006), Margetts (2009) and others that e-government is under-theorised can be interpreted in the context of both imported and native theory, it is in native theory that the importance of this criticism lies. In this context, the question of what is meant by theory becomes relevant. If theory is broadly interpreted, i.e. as including concepts, frameworks and non-generalisable explanatory research, then there is evidence of a considerable volume of theory in e-government publications. For example, Bannister and Connolly (2010) and limiting their examination to conference data only, found that 141 out of 544 papers reviewed over a nine year period at ECEG (i.e. 26%) were ‘conceptual’ papers.

However it seems unlikely that it is theory at this level that commentators like Scholl, Margetts and Grönlund have in mind. When it comes to ‘strong’ theory, i.e. theory that is both explanatory and predictive and consequently testable, then it is not at all obvious that e-government research has generated much theory of this type. The same may be said of grand theory. Nonetheless, e-Government research is not complete devoid of native theory. In fact there are several theories that have emerged from e-government research both pre and post 2000. Of the latter, the only theory to gain traction in the sense of being widely cited and developed is the concept of a e-government stage or maturity model. There has been a number of these and they are discussed in the next section. There has also been a number of other proto-theories which have been less widely taken up. These will be considered separately.

4.4 Stage models

Stage or maturity models have a long history in ICT going back to Nolan’s work in the 1970s (Nolan 1973; Nolan and Norton 1979). Since the 1970s, a variety of such models have been
proposed (de Brí 2009; Beker et al 2010) including the two best known, the Capability Maturity Model Integrated (SEI 2011) and the Capability Maturity Framework (Donnellan et al 2011). Such models depict organisations (and more usually the ICT department) as going through a sequence of increasingly refined stages of development. These models may be descriptive, prescriptive or normative.

Since the turn of the century, a comparable series of stage models for e-government ‘maturity’ has been proposed. Two of the early models, from Gartner Group (2000) and Deloitte (2000), emerged from consultancy firms. Subsequently a number of stage models appeared in the academic and practitioner literature. In order these are Layne and Lee (2001), Hiller and Bélanger (2001), Scott (2001), the United Nations (there is a sequence of these running from 2001 to 2012), the World Bank (2002), Moon (2002) Netchaeva (2002), Accenture (2003), Rao Metts and Monge (2003), West (2004), Siau and Long (2005), Andersen and Henricksen (2006) and Kliewink and Janssen (2009). The number of stages in these models varies from three to six. Layne and Lee’s model has had the most impact as measured in terms of citations (1159 at the time of writing). More recently Valdés et al (2011) have proposed a non-stage maturity model that is more in line with the CMMI and CMF models. There are also several interoperability frameworks (Guijarro 2007). Most (though not all) of these stage models have been analysed by Lee (2010) who uses them to create a “common frame of reference for e-government stage models” (Lee 2010, p229). Lee’s framework has five stages with two perspectives, the client/service perspective and the operations/technology perspective, at each stage.

As a form of theory, these stage models raise a number of interesting questions. As already noted, Norris and Lloyd (2006) are critical of such models suggesting that they emerge from a vacuum and that there is no empirical evidence that they are correct. The idea of theory emerging from a ‘vacuum’ can be a deficiency, but not necessarily so. First, many of these models are based on observation, even if somewhat unscientific, and there is a long scientific tradition of theory emerging from thought alone (think of Einstein’s famous lift thought experiment which is the starting point for the theory of general relatively). Norris and Lloyd’s failure to find much support for these models in US local government is a more serious problem although it would be interesting to see if this would still hold if a repeat of their work were undertaken today. Furthermore, some of these models, notably the UNPAN model are functionally normative. By that is meant that they are used to benchmark the performance of government in implementing e-government (or e-readiness). They therefore provide an implicitly recommended roadmap or template for governments to follow.

These stage models provide a body of native theory that is descriptive, predictive and testable. Using the definitions of section two, this is a form a strong theory. The question remains as to whether it is good theory, i.e. will it prove to be robust. In particular will the predictions of the later stages of some of these models, particularly those which predict some sort of participate democracy as the ultimate outcome turn out to be correct (e.g. West and Siau & Lang).

Apart from the criticism that many of these models emerge ex vacuo, there are other difficulties with stage models as a form of theory. These problems include:
Stage and maturity models such as CMMI or CMF traditionally apply to organisations. Applying such a model to something as complicated as government is problematic; such models do not conceptualise e-government itself in any depth. e-Government is perceived in terms of the types of web based service provided. There is limited exploration of any transformational change in government as a result of this maturity in some of these models; there is little linkage into the wider public administration literature.

Lee’s (2010) synthesis seeks to address some of these problems and proposed what he describes (p220) as a:

“...conceptual frame for researcher to evaluate and understand the development of e-government”.

which certainly qualifies as a reasonably strong form of theory

4.4 Other native theories of e-government

There is a division in opinion as to what e-government is (Yildz 2007). For some scholars, e-government is the availability of government services on-line 24/7. Others (including the authors) consider e-government to cover all use of ICT in government or at least in the formulation of policy and the delivery of services. If one starts from the first of these definitions, then there is a modest amount of native theory beyond the stage models discussed in the preceding section. If one adopts the latter definition, then there is a not inconsiderable body of theory from the 20th century. Some examples of such theory are described given in table 2. Not all of these are presented by their authors as theory, but in the sense that they offer predictions about the development of public administration, they fall under the heading of explanatory and predictive theory.

<table>
<thead>
<tr>
<th>Theory</th>
<th>Some Contributors</th>
<th>Some Predictions/ Propositions Arising from the theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informatization</td>
<td>Frissen, Snellen, van de Donk, Taylor and others</td>
<td>Predicts that public administration will be changed in various ways by ICT</td>
</tr>
<tr>
<td>Infocracy</td>
<td>Zuurmond</td>
<td>Predicts changes in work processes and organisations resulting from ICT</td>
</tr>
<tr>
<td>Surveillance</td>
<td>Webster, Lips and others</td>
<td>Predicts that this will change the relationship between the citizen and the state</td>
</tr>
<tr>
<td>New forms of steering</td>
<td>Bekkers</td>
<td>Suggests that ICT will lead to new forms and modes of leadership</td>
</tr>
<tr>
<td>Over government</td>
<td>Bannister, Wilson</td>
<td>Predicts that government intrusion and regulatory expansion will be driven by ICTs</td>
</tr>
<tr>
<td>Reinforcement Hypothesis</td>
<td>Kramer, King and other</td>
<td>Posits that the impact of ICT on government is to reinforce existing power structures rather than empower citizen</td>
</tr>
<tr>
<td>Transparency</td>
<td>Meijer, Grimmelikhuijsen and others</td>
<td>Suggests, inter-alia that greater transparency does not lead to greater trust</td>
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<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Virtual Organizations/new organizational forms</td>
<td>Bekkers, Smith and others</td>
<td>Predicts the emergence of new forms of government organisations and networks</td>
</tr>
<tr>
<td>Transformative government</td>
<td>Grimmer, Weerakody, van Veenstra</td>
<td>Predicts that ICT will change the nature of government</td>
</tr>
<tr>
<td>m-Government</td>
<td>Kushchu, Misuraca and others</td>
<td>Predicts various changes including organisational forms and modes of information management.</td>
</tr>
</tbody>
</table>

Each of the above is worthy of some discussion, but for space considerations one will be chosen as an example. In introducing the idea of an infocracy, Zuurmond (1999) analyses the working processes of a social security agency. The impact of linking databases and systems together was a: “…strong change in the structure in some of the agencies researched” (Zuurmond 1999, p264). The new structure that emerged was fundamentally different from the traditional Weberian bureaucracy being flatter, decentralised, less formal and with changes in communications and work practices. Control has not so much diminished as changed. He describes the resulting structure as an ‘infocracy’ where control is exerted not through bureaucratic structures, but through the information infrastructure. Whatever its strength, this certainly qualifies as theory even under the more stringent criteria of creating testable propositions and sub-theories.

### 4.4 Summary

The question asked at the outset of this paper is whether e-government research was under theorised? The answer has turned out to be somewhat unsatisfactory in the sense that it begs the question – what is mean by ‘under’ in this context? It has been shown that there is a good deal of imported theory deployed in e-government research and a reasonable body of native theory. Nonetheless, the charge that the field still lacks a proper theoretical frame lingers. In the final section, this problem will be discussed.

### 5 Reflections

In their critique of the lack of theory in e-government, Heeks and Bailur (2006) observe that one possible source of this deficiency is the fact that e-government is itself the product of two fields which are themselves deficient in good theory, namely information systems and public administration. To discuss the validity of the latter assertion in any detail is beyond the scope of this paper, but it is certainly possible to argue that both IS and public administration suffer from a lack of theoretical coherence and these arguments will be briefly presented below. A more radical potential explanation for this deficiency is that e-government, as an interdisciplinary field, is inherently unsuited to substantive theory and
should be regarded as a form of praxis. This proposition will also be discussed below. First, however, the conjecture of Heeks and Bailur will be considered.

5.1 Disarray in the public administration?

Public administration (PA) theory is currently in a fragmented state and has been for some time. An analysis of the state of theory in PA is provided by Lalor (2000) and aligns with what Harmon (2006) describes as public administration’s standard narrative, i.e. that from the early 20th century the prevailing theory of public administration was that of the policy/administration dichotomy, but that after the second World War, this was widely rejected as being naïve (Mainzer 1994). Simon (1954) argued that the traditional principles of public administration were more or less useless and offered a theory of organisational decision making as an alternative framework. During the following two decades (as in contemporary e-government) a series of scholars criticised the current state of theory in the discipline. Mainzer (1994) concluded that public administration was a discipline in disarray, more a collection of disciplines than a single overarching one. To illustrate this chaos, Lalor lists a series of ideas and theoretical formulations that have been proposed and in some cases implemented over this period including performance gap indicators, bureaumetrics, new public management, informatization, next steps, cultural theory, implementation process theory, contingency theory and autopoiesis (to which may subsequently be added governance of networks and new public governance). Taylor and Williams (1991) discuss the contemporary ‘intellectual crisis’ in public administration theory including the search for a solution to the paradigmatic crises and link this to developments in ICT. They state that two significant impacts of ICT developments are the decline of the command and control bureaucracy and increased ‘professionalisation’ as professionals are freed from administrative tasks. Gray and Jenkins (1995) even went so far as to suggest that a discipline of public administration never truly existed.

A more recent critique of PA comes from Harmon (Harmon 2006, cited in Wamsley 2011) in which he argues that modern PA should be less concerned with theory and be more of an Aristotelian praxis. Harman is scathing of the ability of empiricism to produce meaningful theory in PA writing (p54) of:

“...empiricism’s failure for more than half a century to produce a single predictive law-like generalization.”

Something, he says, fails to cause its devotees “any noticeable embarrassment”. There is insufficient space to discuss the criticisms of Mainzer and Harmon (and others) here, but there is a sufficient volume of critique to raise questions about whether PA itself if under theorised and whether it the nature of theory in PA is different from the ideas of the academy. In this context it is worth noting Rocheleau’s (2007, p586) observation that:

“The systematic integration of publication administration theory and e-government theory and research remains a goal to be achieved”

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4 The exact meaning of the term ‘discipline’ is open to debate, but it is widely used in the literature. I use it here in the sense of ‘field of study’.
One wonders how two fields in disarray can be integrated?

5.3 Disarray in information systems?

Information systems too has struggled to find a core body of theory. Like PA, IS has created some widely discussed and used theories such as the TAM and the Delone and McLean success model, but a simple way to see the paucity of native theory in IS is to examine the Wiki currently maintained by Brigham Young university which lists theories used in IS research. Of the 85 theories listed on this page at most eight (being generous) can be claimed to be native to the IS discipline and none of these with the exceptions of TAM, UTAUT and possible the IS Success model can claim to be particularly important theories. This is not to say that there are not many theories in IS. Gregor (2006) lists a large number of examples in her article, but many of these are minor theories that have little significance for practice or have significance only at the margins of practice. Weber (2011) refers to the need for IS to have a “foundational core”, but it is not unreasonable to ask if a multidisciplinary field can ever have such a core. A recent comment on the state of the IS field in general by Walsham (2012) argues not for more theoretical coherence, but for an ethical agenda. Harmon makes a not entirely dissimilar point about PA.

5.4 A fool’s errand?

All of this raises the question of whether any multidisciplinary field can ever be adequately theorised? It may be that a field needs a narrow focus in order to have a coherent body of theory. As e-government is a multidisciplinary field that is itself a derivative of two multidisciplinary fields, the challenges to create a coherent set of theories is even greater.

This is not to say that theory is unimportant. There are many reasons why theory is important. Sahay and Walsham (1995) give four. Theory is a means for:

(1) Researchers to communicate with practitioners;
(2) Researchers to communicate with each other
(3) Accumulating knowledge and
(4) Legitimacy and recognition of the field as an academic discipline.


It is the latter in particular that continues to be a cause of concern for many scholars in e-government. As Weber points out, without a coherent body of theory, a question may even arise as to whether something is entitled to call itself a field. But if we apply Weick’s (1979) criteria for assessing theory, i.e. generalisability, accuracy and simplicity, it can be argued that all three of these are simultaneously unachievable in a field that draws on so many other disciplines. The problem may therefore be that this search for theory is a search for a counsel of perfection. There is, as has been shown, some validity in the claim that e-government is under-theorised, though the claim that theory is largely absent from e-government literature is not in line with the evidence. The claim that a substantial part of the e-government literature uses only a light form of theory is more tenable, but this is in part a

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5 http://istheory.byu.edu/wiki/Main_Page
reflection of the large level of output and the relative newness of both the field and of many of the researchers to it. There is also a body of native theory, albeit whither limited theoretical reach. Notwithstanding all of this, this may be as good as it gets. We may continue to hope for more theory in e-government, but a comprehensive body of theory may be unattainable.

One conjecture that arises from this paper, therefore, is that a deep theoreatisation of a multi-disciplinary field may not be possible. There is no evidence that this has been achieved in either public administration or in information systems, both disciplines with longer pedigrees than e-government. Proving this is a different matter. But even to state such a conjecture challenges theorists in the field to explain why there is reason to expect that a ‘grand theory’ of e-government or at least a body of theory which meets the broad criteria for what makes a good theory is possible. To use the well known English expression, the great theory hunt may be a fool’s errand. The question is, is it?

References


Accessed 29th July 2012.


Available at: http://pendidikansisteminformasi.wordpress.com/


