

# An Adequate Base for Theorizing E-Government Change in Africa: The Promise of Critical Realism and Complexity

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**Abstract:** Africa is absorbing new socio-technologies such as eGovernment while simultaneously building basic norms and institutional frameworks for governance. This paper addresses the absence of adequate philosophical and methodological bases to theorize complex technology change in a postcolonial context. In this ongoing research, we evaluate Bhaskar's Critical realism and associated writings as a robust analytical framework in the light of contemporary African philosophy and the notion of society as an open system. Societal openness is an axiom of critical realism; some researchers argue that in the light of empirical findings from complexity theory many natural systems are open severely limiting philosophies such as logical positivism. Secondly, by committing the epistemic fallacy, both positivism and interpretivism have limited analytical capability and only provide an impoverished account of reality.

ICT discourse in Africa is dominated by the World Bank's development for progress agenda that has received widespread criticism. Nascent alternatives to development movements are insufficiently grounded philosophically to mount an equal ideological challenge, despite divorcing themselves from Marxist and essentialist origins in post-colonial writings. Critical realism together with Complexity may provide an ontological and epistemological basis for such alternatives, with potential to shift discourse from the present non-productive focus on instrumental progress. Some challenges discussed include some problems with critical realisms account of the ontology of social systems, how to model and interpret complex contexts, and the interpretation of complexity theory models. For now, the challenge in Africa is ideological rather than practical, the new proposals have the potential to shift discourse to a more productive base for information systems change theories.

**Key words:** eGovernment, critical realism, complexity theory, African philosophy, development discourse

## 1. Introduction: Philosophy in Information Systems Research (ISR)

Information Systems (IS) are *socio-technical* systems reflecting their dual nature and location between human organizations and applied computing. Evaluating their risks and benefits is beyond the 'calculable behavior' of policy makers, *new conceptual vocabularies* and *epistemological fundamentals* for the phenomena are called for. (Avgerou, Ciborra et al. 2004) Currently we have competing paradigms and methodologies with differing assumptions. To Weber(2004), the war between positivism and interpretivism is based on spurious allegations that reflect a lack of communication or awareness of others actual practices. Justifying research outcomes for any approach is crucial as he indicates. This calls for more than appeals to reasonableness and commonsense for it touches on logic, value preferences and ethics implied in the way a given approach carves up and communicates the world. Adequate philosophical construction becomes inescapable and the final recourse in scientific explanation. (Cilliers 2000)

Validation of claims to knowledge has implications central to individuals' sense of identity and claim on societal resources (e.g. research grants). In the absence of an algorithm for theory choice, no side can hope win without recourse to contestable value judgments.(Okasha 2003) Positivism dominates especially in the US, and is a favourite straw man for some possibly envious interpretive researchers.(Silverman 1998) The a-contextual interpretation of empirical statistics in the search for universal imperatives would result in culturally unworkable systems.(Avgerou 2001) Conversely, Olsen and Morgan (2005) distinguish between empirical and analytical statistics to show that the latter could be used in a critical vein. So simplistic criticisms of positivism are disingenuous.

Interpretive and critical philosophies inform qualitative research to address the large contextual and interpretive gap in empirical statistical research. Habermas Critical Social Theory (CST) has gained acceptance owing to its emancipatory character and ethical imperative in the development of normative frameworks. (Klein and Huynh 2004) Foucauldian discourse analysis challenges the core concepts of CST to shed light on the history of power relations in their social, historical, economic and ideological context. (Stahl 2004; Thompson 2004; Wilcocks 2004) Giddens' Structuration theory and Latour's Actor Network Theory (ANT) attempt a rapprochement between positivism and interpretivism.

(Orlikowski and Robey 1991; Heeks 2001) These are evaluated in the next section with critical realism.

## 2. ISR in Tricontinental states<sup>1</sup>

Context is often cited in Africa and LDCs as the most important factor in the persistence of ICT projects failure, more so in the public sector (Madon 1994; Korpela 1996; Berman and Tetley 2001; Heeks 2002). Four approaches have been identified, and all address project failure in some sense. First is the eclectic approach of earlier studies through case studies and surveys without an overarching integrative framework. (Odedra-Straub 1993; Oyomno 1996) They were first attempts to characterize a new research area given the paucity of IS research in Africa even today. (Heeks 2002) Findings are presented predominantly in the negative; "lack of" particular resources as reasons or causes for failure. But such resources were never there in the first place; rather it points to conception and design weaknesses. The dominant positivist outlook is maintained by default despite the identification of its shortcomings. Second is the risk management perspective exemplified by Heek's (2003) ITPOSMO framework. Though empirically verified, it fails to engage local contexts by concentrating on design-reality context gaps, with the design context evidently western. The issue however ought to be appropriate conceptualisation and design for *each* context; retention of the western/other dichotomy with the west as aspiratory standard is regrettable. The third is even worse from a post-colonial standpoint, IS performance assumed to depend upon the 'big man' in a classic paternalistic bureaucracy. (Peterson 1998) The 'big man' idea was a colonial construct to facilitate indirect rule for stretched colonial powers. Most African societies had complex socio-economic systems that are irreducible to the one dimension of autocratic power. (Coquery-Vidrovitch 1988) Finally, in the interpretive tradition, Waema and Walsham (1990), and Bada (2002) provide serious attempts to grapple with context in Africa. It brings to light many new insights within organizations. Nevertheless, higher order contextual factors such as political economy (dependency and underdevelopment), historical and social formation, individual actors, organization of the domestic economy, and the heterogeneity of developing countries defy inclusion. (Waema 1996) Bottom up contextualized theory building now in progress is seen in Korpela, Hanmer et al. (2005).

Wilson (2004) notes that in times of change, reliance on conventional models brings depth at the expense of breadth, missing critical new interconnections. His model of global ICT diffusion is broad and draws from political economy. The almost certain possibility of eclecticism and lack of rigor in such broad approaches is seen as part of intellectual tradeoffs. This does not have to be so with the sophisticated philosophical and sociological contributions of critical realism with complexity that link individuals to structural outcomes. For example, researchers frequently reduce complex internal and external change factors into advantages and disadvantages or something similar for strategic action. From a realist perspective, it amounts to treating constraints and enablements as intransitive, whereas they are transitive since they require mediation by subjective agents. Even where these are rooted in "hard" structure, adoption by agents is subjective and cannot be imputed to everyone. Reference to agential subjectivity, "however flawed" becomes inescapable in discussing how structure conditions agency. (Archer 2003:134) In LDCs, preoccupation with failure and a negative orientation as reflected in 'lack of...' as reasons, compromises agents' reflexive capacity. (Archer 2003)

## 3. The challenge and promise of critical realism with complexity theory

Critical realism is the putative heir to positivism's hegemony in ISR if we consider recent summative contributions to the paradigms debate. (Dobson 2001; Mutch 2002; Mingers 2004b; Panther and Rimenyi 2004) It avoids atomism and responds to relativisms challenges to traditional claims of science on the complexities of representation because it is dialectical. (Smith and Open University 1998) Mingers (2003) evaluation of philosophical assumptions in operations research/management science and concludes that most approaches can be subsumed under critical realism. As a critical philosophy, it examines the categories we bring into the world. Its emphasis on ontology qualifies it as realist, while it is critical because the realism is arrived at through an internal critique of a transcendental question. (Bhaskar 1978; Bhaskar 1998; Cruickshank 2002)

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<sup>1</sup> Africa, Asia & Latin America

### 3.1 Development discourse, critical realism and complexity

Orthodox economic development theory has been criticized from complexity and critical realist perspectives for its linearity assumptions and ontological deficiencies. (Lawson 1997; Rihani and Geyer 2001; Rihani 2002) Critical realism allows us to link the discursive space with concrete outcomes in complex environments as shown in Morgan's (2003) linkage of the East Asian financial crisis to orthodox 'Washington consensus' economic policies. Orthodoxy itself was shown to be a constituent of social reality, and a causal factor in the collapse. A similar approach has been employed in the analysis of global poverty and to problems of economic development. Disentangling discourse and effects as reflected in social reality is necessary in developing country contexts due to their late incorporation into well-established systems of global governance. For postcolonial states Frantz Fanon's popularity and relevance continues unabated forty years after his death for:

"...Uncompromisingly illustrating that politics and epistemology, metaphysics and culture, psychology and technology, ontology and medicine, and the racial and gendered dimensions of social life are deeply intertwined." – (Goldberg 1996)

How can we make sense of this complex milieu? Contributions to development theory in the form of a critique and reformulation by Rihani and Geyer (2001) and Rihani (2002) are pointers. They propose a non-linear view of development as an ongoing complex adaptive process. Critical realism together with complexity theory can form a robust basis for contextualized IS theory development. (Byrne 1998; Harvey 2002) A Critical realist philosophical stance provides the basis for managerial awareness of transition and emergence that may lead to theoretically defensible insights. Such a sociologically aware reading of complexity is less burdened by implicit technical rationality and moderates extremes in the use of complexity as a metaphor (Introna 2003; Lewin and Regine 2003).

Some argue against the employment of complexity theory on the grounds that its mathematical/physical representation is ontologically incommensurable with social reality. (Introna 2003; Stewart 1999) But it can provide conceptual scaffolding for IS research if linked to an adequate philosophy. (Merali 2004) Complexity theory is thus a rich source of potential mechanisms for the microstructure of emergence, and a tool for managerial evaluation through agent based simulation modeling. (Merali 2004; Middleton-Kelly 2003) For example networks are a predominant structural form within society that easily generate complex behavior. Sudden change may imply that some systemic threshold has been transcended. (Walker and Meyer 2004) Other complexity forms such as self-organization, adaptive tension, order creation, path dependence and attractors are available to theorists. (Middleton-Kelly 2003) Presently there is little by way of empirical research in social complexity to inform debate. Henrickson and McKelvey's (2002) synthesis of complexity, transcendental realism and a postmodern ontology provides some direction.

We examine this dual framework's comparative strengths and weaknesses for ISR in Africa based on assumptions about people and organizations, time and nature of reality, geo-political space and identity, and methodology and research conduct.

#### 3.1.1 *On people and organizations in time*

The technology/social interface is necessarily governed by factors beyond the immediate context, any approach should give due consideration to both structure and agency. (Kallinikos 2004) Structuration theory and ANT fit this criteria and have been widely adapted for IS research. (Orlikowski and Robey 1991; Heeks 2001; Jones, Orlikowski et al. 2004) However both suffer serious conceptual inadequacies in concrete situations. Giddens is accused of making only oblique references to organizations. (Rose 1998; Ackroyd 2000) His conception conflates structure and agency in a timeless abstraction with greatly diminished analytical capacity. (Archer 1995; Archer 2000) ANT pays attention to time but fails to make ontological distinction between people and inanimate objects, resulting in a 'flat ontology'. In practice it is too tied to textual analysis to be effectively distinguished from interpretivism, with the text analogous to a scientist's laboratory. (Mutch 2002; Latour 2004) Some attribute its preference over critical realism in ISR more to better story telling, and the generally difficult writings of critical realism. (Mutch 2002) The critical realist paradigm on the other hand relies on analytical dualism whereby structure and agency are analyzed independently but in dialectical relationship. (Willmott 1997) It has been elaborated into workable social frameworks such as the

Morphogenetic Approach, Transformational Model of Social Activity (TMSA) and Methodological Realism. (Archer 1995) They are dynamic models that explicitly include time to generate complex structural and social entities through emergence within which we can substantively theorize the relationship between people, information systems and organization.

### 3.1.2 *The nature of reality*

Deep ontological commitment is one axiom of critical realism, "...It is by virtue of an emergentist ontology that social theory per se is possible. To deny a stratified world is to deny the very possibility of social theory." (Willmott 1997:101) A depthless ontology such as Giddens' is said to preclude methodological analysis. Such commitment is warranted for additional reasons drawn from complexity theory. Developments in physics, biology and chemistry in the form of non-linear dynamics indicate that reality is not simple; it is open, emergent and structured. (Prigogine and Stengers 1984; Kauffman 1995; Capra 1997; Capra 2002; Middleton-Kelly 2003; Merali 2004) For example we cannot tell anything about an organism's behaviour on the basis of its chemical composition, the biological level is an emergent property with its own powers of causation, and is irreducibly complex in relation to the chemical level. Harvey (2002) and Byrne (1998) show that critical realism is consistent with such a world view in the social sciences. Both positivism and relativism accept Humean causality and a Newtonian world view with a monistic ontology. (Bhaskar 1998) As it has been superseded with better understanding, it follows that Bhaskar's rejection of both approaches was timely.

Against ontology, following Wittgenstein, Kivinen and Piironen (2004:238) argue that "...ontology is a language game played by a certain breed of philosophers, most of whom call themselves realists....", and that it has no bearing on social science. Realists are accused of searching for 'truth', things in themselves that appears to be a misreading of critical realism's transcendental conception of reality. What is sought is a fallible account of reality, not some innate essence of the nature of reality. They see critical realism as the futile pursuit of the one correct description of everything, which must itself lie outside the set of all possible descriptions. Critical realism's account of reality is based on an immanent critique of empiricism, and is not a description. A similar argument by Fay (1990) is discussed in Cruickshank (2002). In a world that is arguably open, causality cannot be simple (Sayer 2000); neither can our account of reality whose effects are manifest.

### 3.1.3 *Geo-political space, ontology and identity*

Contemporary philosophy is unashamedly Eurocentric for historical reasons. Such are bound to fail somewhere to the extent that they embody their spatial origins. (Maldonado-Torres 2004) Hence while Heidegger's ontology of being was an advance from philosophy's focus on epistemology, it was essentially Germanic and Eurocentric. (Sheehan 1999) Maldonado-Torres (2004:36) further insists that "A historical vision that combines time and space is needed" to correct for the "sickness of the west" - the forgetfulness of coloniality. Western philosophies serve to sustain an historical amnesia that ensures invisibility for the oppressed, especially the formerly colonized.<sup>2</sup> (Goldberg 1996; Stevens 1996; Maldonado-Torres 2004)

In the absence of a historically situated ontology, critical intervention by human agents is not possible. Without ontological presence, Heidegger's 'being in time', and identity and reason as inherent in reality in the Hegelian sense, life itself becomes impossible. (Giddens 1995; Goldberg 1996) This may be the foundation for Africa's generalized malaise and incapacity in the face of opportunity in a world getting richer. (Goldberg 1996; Lewis 1996) Lewis focus is broader, approaching it from the Weberian tradition of historical sociology and the political foundations of economic growth. Similar themes may be identified in literature on the difficulties faced by African Americans in assimilation into US society (Shmitt 1996). The experience of racism, colonialism and slavery effectively "expelled" such peoples from history (Fanon 1986:106). Hence for ontological and identity recovery in postcolonial societies, overcoming internalized enslavement is the appropriate point of departure for contemporary African philosophy (and we may add scholarship):

"The hermeneutical tradition in African philosophy aims at reviving and appropriating the cultural and historical resources of the continent out of the needs and in the context of the present...an attempt to

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<sup>2</sup> Even critiques of Eurocentricism are said to be Eurocentric. Foucault and Derrida are placed in this camp by Maldonado-Torres (2004)

overcome, on the level of theory, the enslavement that still negatively and decisively marks from within contemporary African existence.” – (Serequeberham 1996:208)

So Mbembe’s (2001) non-apologetic writing from Africa for Africa, in a global context without recourse to grand narratives is prescient, it does not give valence to foreign discourses. His non-linear messy picture of contemporary African society resonates with themes in critical realism and complexity. Such alternative visions allow us to explore imperial conceptions of space with post-development from post-colonial theory.(Escobar 1995; Matthews 2004)

An adequate philosophy would of necessity be critical, with capacity to cope with discontinuities and radical change. Structuration theory or Habermasian discourse analysis have limited applicability outside their western contexts, and these only in times of relative stability. (Jones, Orlikowski et al. 2004) Post-modernism is only possible in societies that have enjoyed a sufficiently long period of satiety to disconnect themselves from basic wants. (Webster 2002) Development economics is the handmaiden of capitalist liberal ideology that effectively buries the history of coloniality in ‘empirical’ economic models in the pursuit of linear progress.(Biccum 2002) For Mbembe (2001) it is fundamentally flawed for it is merely one of the studies of alterity in western universities. Its models reflect atomism and methodological individualism consonant with liberal ideology (Fay 1996), and have been critiqued in Lawson (1997).

Critical realism arose from Bhaskar’s frustration while trying to explain underdevelopment within orthodox economics.(Norris 1999) Its commitment to positivist epistemology forbade discourse about ontology despite economics’ very material and real subject matter. It has been employed to explain economic crises and poverty in terms of causal relationships with dominant orthodox ideologies. Powerful discursive strategies are employed to elide history and maintain the status quo.(Munck 2000; Biccum 2002; Morgan 2003) Derivative sociologies from critical realism *require* synthesis of material realities and ideologies when confronting a messy non-linear ‘developing’ world.(Mbembé 2001; Maldonado-Torres 2004)

### 3.1.4 *Research practice and methodology*

Paradigm wars in ISR serve to keep the field unfocused and incoherent. Weber (2004) and Silverman (1998) advocate the pragmatic use of methodology to fit the problem without undue reference to divisive philosophies. In line with this, Mingers (2003; 2004b; 2004c) finds multi-methodology appropriate for IS research under the rubric of critical realism since it is compatible with most approaches. Some adopt a form of realism that combines constructivism with a modest conception of ontology (Tilley 2000), though even this format is objectionable to interpretivists and lacks the full explanatory power of critical realism (Kivinen and Piironen 2004).

## 4. **Some comments on criticisms of critical realism**

Bearing in mind that many confuse critical realism with naive objectivism, it may not always get a proper hearing and some criticisms are misdirected.(Sayer 2000) For example Kemp (2005) suggests that social science should take a cue from evolutionary biology other than physics or chemistry, while Bhaskar’s (1986) discussion of the TMSA specifically posits evolutionary biology as an analogy for social change.

More productively, Cruickshank (2004) turns one of its favourite tools, the immanent critique on critical realism itself with the conclusion that there is slippage between two ontologies, one on the transitive and the other on the intransitive dimension as it pursues its hegemonic project to “conceptually re-tool the natural and social sciences”. (Pg. 567) The critique does not entail dropping critical realism but is an invitation to dialogue on the status of social ontology. The critical value of Monod’s (2004) and Klein’s (2004) responses to Mingers (2004c) proposal for critical realism as underpinning philosophy for IS research was again limited by non-familiarity with realist literature.(Mingers 2004a) Monod (2004) vigorously defends Kantian idealism against critical realism’s audacity to challenge *The Critique of Pure Reason*. Klein (2004) however finds it is a better synthesis of the post-positivist tradition because it includes aspects of hermeneutics albeit with an outdated socio-theoretic base. He

agrees with Cruickshank (2004) on the need to clarify the dual ontology.<sup>3</sup> Paradoxically, Mingers (2004a) accepts 'ontological pluralism', that the world contains many different entities, which calls for clarification since ontology is a metaphysical concept. Other notable contributions are King (1999) in defence of hermeneutics, and Nash (1999) for an evaluation of realist concepts.

Evidently this is debate at its early stages and more time is required. Hegemonic aspirations without better definitions of terminologies; especially the ontological status of social entities may not be warranted for critical realism. Its proponents could avoid making unnecessary enemies by giving credit where due because it synthesizes or reformulates many earlier traditions. (Klein 2004) However, the criticisms do not undercut it sufficiently to deny it a place in IS research in the capacity of Bhaskar's 'underlabourer' when we consider the alternatives, and the other factors mentioned above. (Bhaskar 1978; Bhaskar 1986)

## 5. Conclusion

It is difficult to ignore the commonsensical appeal and the carefully constructed arguments of critical realism. (Dobson 2001) Its opponents acknowledge its success as a philosophy for the natural sciences. If as is apparent, the social world is open, critical realism's notion of emergence and a stratified reality provides a more promising framework to explore structure and agency, essential to IS. (Reed 1997)

Our shrinking world calls for philosophies divorced from geo-spatial origins. Critical realism provides a viable alternative that dispenses with the "sickness of the west" and restores people to history. (Hay 2001; Maldonado-Torres 2004) So far, its reception by IS researchers is largely positive, and can enrich IS research in Africa and shift paradigm wars to a more productive dialogue. Complexity theory provides the pragmatic base for building testable emergentist change theories, or at least based on robust metaphors. Empirical research is required to advance the critical realism-complexity synthesis. Complex IS contexts as found in Africa would then have a substantive, maybe adequate base with for theory building, beyond the positivist-interpretivist divide and their attendant 'development' discourses.

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<sup>3</sup> These issues were raised early in the debate. In the postscript to *The Possibility of Naturalism*, Bhaskar (1998) responds to some who acknowledge its worth but question some issues such as the ontological status and usage of the intransitive dimension.

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