

CRITICAL REALISM:

A PHILOSOPHICAL FOUNDATION FOR RESEARCH IN INTEGRATIVE CALL

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ABSTRACT

Underpinning each methodological approach there lies a series of assumptions about the nature of reality that, in turn, ground and limit knowledge about what exists. The foundations of integrative CALL investigations—that is, research situated within networked environments and focused on social interaction—arguably run along the continuum between positivism and social constructivism. Neither of these two endpoints, however, provides a satisfactory ontological and epistemological basis for justifying and evaluating methodological choices.

Critics argue that positivism promotes a naive view that knowledge directly corresponds with truth; as for social constructivism, critics find flaws in that such a view only sees truth as relative to a specific framing within a particular community of practice. Critical realism, however, provides a way to examine social phenomena using an objective ontology (that reality can exist independent of the researcher) and a subjective epistemology (that criteria for evaluation are not neutral). Critical realism addresses the flaws of classical realism and postmodernism approaches by engendering both positivistic and interpretivist techniques.

The aim of this paper is to introduce critical realism as a viable philosophy to underpin integrative CALL research. To achieve this aim, we first discuss two major failings of Social Constructivism and suggest how their significance in constructing a transdisciplinary framework within integrative CALL research. Subsequently, we elucidate the core principles of Critical Realism and discuss the application of these principles in resolving these posited weaknesses. By adopting a critical realist stance, we argue, CALL researchers can better recognize the interaction between structure and agency in analyses of computer usage within integrative pedagogies.

INTRODUCTION

Integrative CALL is situated within networked environments with a primary focus on social interaction (Warschauer & Kern, 2000). Philosophically, it can be argued, research in integrative CALL runs the continuum from objective empirical positivism to relativist paradigms, such as Social Constructivism. Neither endpoint, however, provides a satisfactory ontological and epistemological basis on which to justify methodological choices in Integrative CALL. Critics argue that positivism, for example, promotes a naive view that *knowledge directly corresponds with truth via the ontology premise of causal relation* (Hume, 2001; 2003); as for the relativist paradigm, critics point out that such a view is limited in that it only *sees truth as relative to a specific framing within a particular community of practice* (Kukla, 2000).

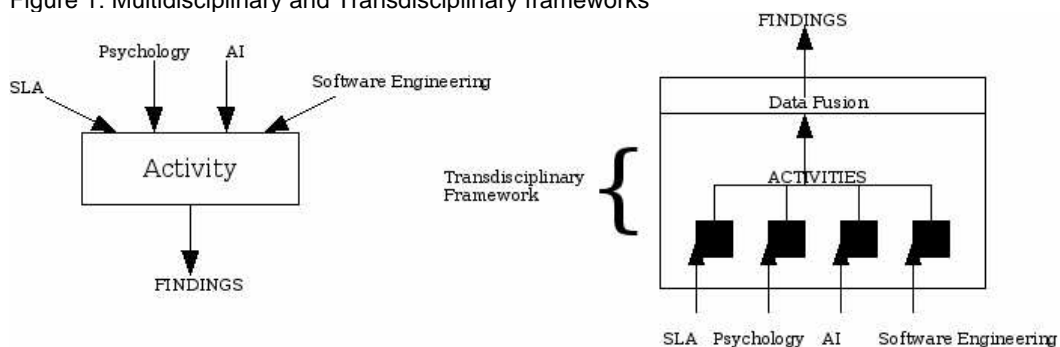
To date, differences in the philosophical basis of a CALL study have not been of major concern. However, as CALL research agendas become more complex, greater interaction between seemingly incongruous paradigms will expand. Such discordance is frequently experienced by practitioners attempting to integrate empirically based paradigms of research, for examples, as those found in many *Computer Science* investigations, with the naturalistic tendencies of the social sciences, such as those often found in Applied Linguistics. The lack of a robust transdisciplinary research model that can accommodate both paradigms will limit current Integrative CALL research practices.

In this paper we first distinguish *transdisciplinary* research from multidisciplinary research. We then argue that Critical realism provides a promising way forward to ground transdisciplinary practices. We submit that Critical Realism's examination of social phenomena using an objective ontology (that reality can exist independent of the researcher/observer) and a subjective epistemology (that criteria for evaluation are not neutral, and subject dependent) overcomes current difficulties in conceptualising the acquisition and transference of research findings across the (post) positivistic/relativistic divide. As an exposition, we present the core principles that underpin the Critical Realist framework and discuss how these address the flaws of relativistic philosophical frameworks, most notably within Social Constructivism, and satisfy our established requirements for transdisciplinarity.

TRANSDISCIPLINARY RESEARCH IN CALL

As the complexity of research in a field expands and interactions between research paradigms grow, transdisciplinary research becomes an imperative (Dickens, 2003). Clearly, there comes a point where the need grows for disparate disciplines to better fit within a holistic framework. Figure 1 below illustrates the differences between a multidisciplinary approach and a transdisciplinary one.

Figure 1: Multidisciplinary and Transdisciplinary frameworks



Unlike *multidisciplinary* research that attempts to assimilate the various theoretical constructs of disciplines into a synergistic whole, transdisciplinarity posits the need for continued separation of research aims amongst each of the contributing disciplines. That is, a transdisciplinary approach does not attempt to constrain the types of research activities usually conducted within different disciplines; rather, it seeks to enable each discipline to contribute findings and then integrates those into the body of knowledge relating to the contextualised problem. There are three key benefits of such an approach:

- a) Multidisciplinary research ultimately leads to a specific conceptualisation of knowledge as it applies to a particular domain. Transdisciplinarity removes this limitation by affording the *modelling of knowledge* at various levels of interest;
- b) Transdisciplinarity affords *greater research potential* as it necessitates the participation of specialised practitioners involved in each of the concerned domains;
- c) The fusion of findings (data fusion) produced from a transdisciplinarity effort does not come at the cost of *methodological richness*.

As a point of departure, we propose three core principles of transdisciplinarity in CALL:

- 1) *Knowledge must be seen as objective* if we are to benefit from the integration of each research disciplines involvement;

- 2) It must be possible to describe how *beliefs are justified* despite the possible lack of sufficient evidence; and
- 3) Research findings should be *socially relevant*, and describe their *relevance to social phenomena*.

These three core principles submit a view of reality that is both objective and subjective. However many philosophical models are unable to conflate these ideals with their fundamental conception of reality, including Social Constructivism.

THE PROBLEM WITH SOCIAL CONSTRUCTIVISM IN TRANSDISCIPLINARY RESEARCH

Social Constructivism has found favour in many of the social sciences for its reflexive ability to describe the ability of human agency to construct meaning (both at the social and discourse level) in a socially and culturally contextualised environment (Houston, 2001). Moreover, Social Constructivism is seen as a viable alternative to positivistic empiricism and untenable social realism. However, Social Constructivism itself cannot be conceived as a unified approach, but rather as a continuum of relativistic and post-modernistic (including post-structuralist) epistemologies that hold that scientific facts are constructed (Houston, 2001; Kulcha, 2000). Although it is undeniable that social constructivism has provided critical insight into the role of human agency in reconstructing social relations (Giddens, 1990; 1991; 1998), it is lacking in several key ways that prevent it from being applied effectively to transdisciplinary research.

According to Houston (2001), and more generally of all relativistic paradigms (Sturgeon, Martin & Grayling, 2002), social constructivism refutes the necessity of realism and as such rejects any conception of universal objective social structures. Moreover, in an attempt to overcome the inherent problems of induction in positivistic empiricism, social constructivism succumbs to human scepticism and follows this path to an unfortunate termination in subjective methodologies, giving rise to problems such as the incommensurable plurality of worlds (Collier, 1994; Sturgeon et al., 2002) and reflexivity in constructing historical facts (Kulcha, 2000).

In summary, we nominally highlight three critical weaknesses in Social Constructivism that inhibits its application in transdisciplinary CALL research:

- 1) It *succumbs to scepticism* resulting in highly subjective interpretations of reality. These plurality of realities render the integration of disparate disciplinary research highly complex and infeasible;
- 2) As examinations of social phenomena are seen as a relatively subjective experience, *it is difficult to analyse the justification of socially persistent beliefs*, true or false, without reference to some underlying objective determinant social structure.
- 3) The *denial of objective social structures* (which Houston (2002) refers to as a lack of ontological depth) *rejects the possibility of inherent structural mechanisms* with causal powers operating within social constructs. This denial limits the generalisability of research findings and minimises the importance of society as a change agent.

With these shortcomings in mind, we argue that Critical Realism provides a stronger foundation for transdisciplinary research model in integrative CALL.

THE FOUNDATIONS OF CRITICAL REALISM

Credited to Bhaskar (1978), Critical Realism can be roughly situated somewhere between post-positivistic methodologies and social constructivism. Critical Realism represents a duality of philosophical approaches: transcendental realism and critical naturalism (Collier, 1994, xi). Bhaskar's conception of scientific realism is highly influenced by Kantian transcendental reasoning,

especially *transcendental realism* (see Kant, 1999). Yet whereas Kant used transcendental arguments in support of a philosophy of experience, Bhaskar's treatment concerns a philosophy of science (Houston, 2001). Second, Bhaskar's critical naturalism is an approach to relate his scientific realism to social phenomena, and in the process borrows to varying degrees ideas from Marx (1983) and Giddens (1991). Therefore, Critical Realism can be seen as an Objective ontology / Subjective epistemology.

As explained by Collier (1994, 7–8) the ontological premise of Critical Realism adheres to the basic tenets of realist theories:

1. Objectivity: the world is real whether known or not;
2. Fallibility: all claims concerning knowledge are open to refutation and elaboration;
3. Transphenomenality: Knowledge exists beyond what can be seen or observed, and the fact that some unseen properties outlive the perceived properties of the object; and
4. Counter-phenomenality: An understanding of the deeper causal mechanisms of reality may contradict the perceived appearance of something.

The impact of Critical Realism upon transdisciplinary research is arguably in its account of reality, especially counter-phenomenality.

When Critical Realism is used as philosophical basis for research, reality can be decomposed into three distinct levels: the *empirical level* which consists of phenomenal experiences; the *actual level* which consists of events; and the *real (or Causal)* level which consists of causal mechanisms and their powers (or properties) (Collier, 1994, 44; Houston, 2001, 850). This distinction is important for the following reasons:

1. *Causal mechanisms* in Critical Realism, in contrast to the Humean perspective, can be real, yet still unknown, and unquantifiable. Therefore, they exist only as part of the *Real* domain.
2. *Events* are the results of the codetermination of causal mechanisms and their powers. Events are *actual*, as they are the instantiation of powers exhibited by the structure of an indeterministic number of causally related mechanisms. However, events may be unobserved, and thus cannot be empirically determined. They are also *real*.
3. *Experiences* are the results of observing some event triggered by the properties of the causal mechanism and its structure. As such experiences are *real, actual* and *empirical*.

This three-tier representation of reality is intimately linked to Critical Realism's stratification of knowledge (Dickens, 2003), whereby knowledge is said to exist at specific levels, or strata, of knowledge (Bhaskar, 1978). It is argued in Critical Realism that knowledge is vertically ordered; in this view, knowledge proceeds from more basic levels of reality, such as found in physical objects, towards more complex and aggregate levels, such as those at the societal level (Dickens, 2003, 99). Knowledge and beliefs are therefore built upon previously determined substrata, although there is no linear constraint on this relation. That is, whilst knowledge is vertically constructed, its nature is *heterarchical* as opposed to hierarchical.

While it is true that each level builds upon information from more 'basic' levels of knowledge, it is important to assert that information itself is not reducible to any particular strata (Collier, 1994; Dickens, 2003; Downward, Finch & Ramsay, 2002; Bhaskar, 1978). This is a critical distinction that enables Critical Realists to refute claims of foundationalism and positivistic reductionism. This property is due to the complex codetermination of events that occur in an open-system which lead to the emergence of specific social properties that do not necessarily have structure. That is, in an open, natural system such as society, all evidential knowledge is codetermined by a myriad of

causal mechanisms. This complex interaction naturally leads to variations in behaviour as some causal mechanisms may or may not execute their exercisable powers (see Collier, 1994, 45). These *emergent* properties are also central to the Critical Realist resolution of the problems associated with induction. Table 1 summarises the key principles presented within Critical Realism and describes the purported benefit of their application.

Principle	Purpose
(Bhaskar's) Transcendental Realism	Overcomes realist and postmodernist skepticism. Extends upon traditional realist positions by admitting the possibility of structureless unobservable mechanisms – <i>emergent properties</i> .
Knowledge is generated in an <i>Open System</i>	Demonstrates weakness of a scientific realism (Hume) for scientific experimentation, and posits need for the exploration of social transformation of knowledge.
Structures, mechanisms and events exists at three levels of <i>reality</i>	Introduces objective structure into social systems, which impact social and human agents.
Causal powers need not always be exercised.	Overcomes problems of Hume's ontology and causal relations.
Emergent properties arise out of knowledge transformation and the co-determination of causal mechanisms. Emergent properties may be structureless.	Describes how events are not strictly determinant, as they can never be fully known (imperceptible). Responds to criticisms of reality theories from scientific relativists.
Knowledge is <i>stratified</i> and heterarchically ordered.	Whilst scientific inquiry may never fully comprehend a particular phenomenon, stratification posits the <i>possibility</i> of discovering the true nature of a <i>thing</i> via closed scientific investigation.
Objective knowledge is always subjected to social transformation, and thus necessitates naturalistic investigation.	Describes how objective knowledge must account for contextualised environments and how they relate to emergent, structureless, properties of a system.

Table 1: Summary of core Critical Realist principles and their purpose

REFUTING AN EPISTEMOLOGICAL CHALLENGE TO CRITICAL REALISM

Despite the strengths of Critical Realism, two key objections may be raised when applying these principles to CALL research. These problems arise out of the fact that Bhaskar, like Russel (Russell, 1961, 773), refers critically to the epistemological turn as *epistemic fallacy* (Bhaskar, 1978, 36). Thus, entirely dependent upon a discussion of structures, emergent properties and emancipatory critique (Collier, 1994) in order to justify his claims, many see Bhaskar's framework as ultimately succumbing to foundationalism¹ and rationalism², which ironically represent the very antithesis of the Critical Realist approach. Firstly, critics argue that critical realism resorts to foundationalism through its adherence to stratification of knowledge, whereby all knowledge is constructed upon more basic levels or strata of reality. Second, it may be argued that any discussion that posits the existence of possibly unknowable structures in order to support a given conception of reality must resort ultimately to rationalism in order to justify such claims.

In the first instance, opponents of Critical Realism often cite the apparent foundationalist premise of Critical Realism, that is, that if knowledge is stratified and vertically ordered upon more 'basic'

1 The theory that all knowledge is based upon a finite set of indivisible, unique, and universal qualities – or knowledge (Sturgeon et al., 2002).

2 Refers to the theory that knowledge can be generated through pure reason, to which Kant and Hume were primarily opposed (Sturgeon et al., 2002).

objective facts, increasing or decreasing in elaboration as you move been the strata, then surely some final strata must be reached which fundamentally represents some singular objective truth. As foundationalism is held by most to be flawed in a number of respects (Sturgeon et al., 2002, 20–21), these same criticisms must also apply to Critical Realism.

However, such an objection fails to recognise the heterarchical nature of stratification. That is, whilst structures and their causal mechanisms may exist at a particular stratum of reality, a web of other causally related structures and mechanisms codetermines their form or characteristics. This analysis results in a 'chicken and egg' scenario, whereby one *may* argue for the primacy of one stratum over another, yet demonstrating this primacy in isolation is far more complex. We posit that despite a stratified representation of knowledge in *reality*, that given co-determination of causally related structures and mechanisms, that foundationalist reduction of knowledge in Critical Realism is irresolvable.

The basis for the second criticism resides in the contestation that if emergent properties do not possess knowable structures, and powers can be unobserved and unexercised¹, then how can we observe them and empirically justify their existence. Once again, it is difficult to conceive an answer for this question without resorting to a rationalist discussion of the physical properties of *things* in existence.

Whilst it is true that this argument poses some problems for the Critical Realist, it does so only if the debate continues to focus *material* structures in reality, and neglects the importance of *social belief structures*, as argued for by Giddens (1990). Our reading of Critical Realism submits that the ontological framework provides the means by which independent and objective empirical findings can be discussed coherently within a subjective and social framework. The position is best clarified by the Collier's treatment of the Transformational Model of Social Activity (TMSA) in Critical Realism (Collier, 1994, 141–151). The objective of the TMSA is to describe how knowledge is transformed through social processes and admittedly draws from elements of Weberian and Durkheimian sociology. The self-perpetuating transformation of social knowledge (social→human agency→social) described in the TMSA highlights how domain and context sensitive information plays a role in activating causal powers, how this phenomenon results in previously unobserved outcomes, and describes how we can *learn about* and *describe* some of these unknowable structures. Moreover, within this socially constrained context, it may be possible to analyse the nature and impact of these unknowable structures and powers through an application of mixed coherentism (Sturgeon et al., 2001, 21–24) and Bayesian Confirmation Theory (Papineau, 2002, 167).

CONCLUSION

Throughout our discussion, we have argued that the increasing complexity of integrative CALL research will result in a greater need for transdisciplinary interactions. The principles of Critical Realism provide the necessary foundation for transdisciplinary research in integrative CALL through the establishment of an objective frame of reference, support for distinct disciplinary inputs operating at various levels of knowledge strata, and finally a means of describing how knowledge enters and is transformed by social activity. However, we acknowledge the lack of a clear transdisciplinary research methodology, as necessitated by our approach, and signal this as an area for future research.

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