Adaptation, Resistance and Access to Instructional Technologies: Assessing Future Trends in Education

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Chapter 13
Using the 3V Model to Explore Virtuality, Veracity and Values in Liminal Spaces

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ABSTRACT
Adaptation and adoption of immature emergent technologies for instruction fails to account for the challenge to, and creation of, new concepts of self, identity and community both in real and virtual spaces. New insight is necessary to develop social policy responses, including those of educational systems and institutions, to the consequences of these new conceptualisations. This chapter presents an original theoretical model which aims to assist in the interpretation of existing theory, exploring the interrelated dimensions of values, virtuality and veracity disturbed by the adaptation of emergent technologies. It invites an exploration of existing theoretical and methodological instruments available within the broader Social Sciences to examine emerging notions of identity. The emergent theoretical model visualizes a set of complex assumptions within the concepts of the “real-virtual” interface created by emergent technologies; the 3V model represents one means of explore internal structure to this liminal space and invites further empirical study.

INTRODUCTION
The fear of change that appears to pervade our education systems is perhaps rooted in a fundamental lack of comprehension. What is technology? How do we recognize it, measure it, evaluate it? Even within the nation state there are huge variations across educational sectors, and within sectors, across differing social geographies, in the adaptation and adoption of technology. There is a need to provide policy makers and practitioners with explanations, and methods of comprehension, although these are undoubtedly problematic. Technology adoption patterns in all societies, developed and developing, are complex and difficult to represent. Socio-economic, gender, ethnic and

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educational differences suggest digital citizenship is a multi-faceted and complex phenomenon.

In this chapter, we draw on our own academic development and pedagogical practice with emerging technologies and associated practices. We propose a new model for describing and researching cyber behaviour. This model may even, we venture to suggest, provide the basis for new insights at an institutional level into how technologies affect change.

Web 2.0 emergent technologies offer students and staff new opportunities to explore new concepts of self and identity. These tools and services are creating, recreating and evolving new communities both in real and virtual spaces. Existing social theory is struggling to accommodate these changes and social policy responses, including those of educational systems and institutions, and we need new models to account for these new conceptualizations. An original theoretical model, the 3V model (Atkinson & Burden, 2007) described here, aims to facilitate interpretation of existing theory, provide a context for the evaluation of learner and staff conceptions of identity in new liminal spaces between the ‘real’ and ‘virtual’ worlds. There are a range of well developed and well tested theoretical and methodological instruments within Social Science research and many of these can be applied to, and integrated into, the 3V model. What the 3V model aims to do is provide a framework for a set of complex assumptions concerning the concept of the ‘real-virtual’ interface; it seeks to provide a visualization of these liminal spaces and offers a framework for further empirical study.

Despite anecdotal evidence, there is little substantive evidence to indicate how cyber behaviour, specifically that relating to Web 2.0 community applications such as Myspace, Bebo, Facebook, Flickr, YouTube and Voicethread, changes the social practices, personal behaviour and socio-cultural expectations between individuals. As educators in tertiary institutions in two English speaking countries at opposite ends of the globe (New Zealand and the United Kingdom), we are interested in understanding this behaviour. Our institutions advocate ‘lifelong learning’ and provide tertiary level programmes for Early Years (Kindergarten) practitioners through to professional development programmes for established practitioners in Higher Education. In our work, the concept of ‘digital literacy’ is a contentious point of professional discourse. That the real impact of technology adoption on learner performance, expectations and behaviour is poorly understood is evidenced by the lack of appropriate policy responses across the educational sectors within a single national state’s education system. As the commercial sector laments Universities’ inability to provide graduates with appropriate skills, Universities themselves are struggling to provide flexible and effective access to digital support for learning. There is a pressing need for education at all levels to understand the fundamental shifts in the norms of inter-personal communication and patterns of user engagement, and what the consequences of this change might be.

These shifts are fundamental and ill-defined. There is a requirement to define what we mean by ‘emerging technology’. It is, at times, difficult to distinguish between the emergence of a new technology, and the fusion of various disparate technologies into single devices. An example of this is the convergence of previously disparate devices, telephone, video player, music player into a single portable unit. Researchers must also be clear about the socio-cultural and socio-economic contexts in which claims about technology are being made. There is a real danger that we talk of emerging technologies and societal impact from a ‘Developed World’ perspective. This Occidental bias in much of the published literature needs to be accounted for in our theorizing. Finding models that apply to all societies, at whatever stage of technological sophistication, will be a challenge.
A RICH HERITAGE OF RESEARCH PERSPECTIVES

Researchers risk ignoring much that predates the Internet at our peril. Earlier theoretical constructs that underlie our collective efforts are extremely diverse and have much to offer. Political Science’s interest in power and representation, Elitism and Pluralism, through to Computer Science’s interest in Actor-Network Theory all shed light on behaviour in unique ways. So does anthropological and sociological study from Georg Simmel’s notion of ‘stranger’ (Simmel, 1949) and Alfred Schütz’s exposition of ‘intersubjectivity’ in the field of phenomenology, the notion that shared cognition is essential in the formulation of ideas, notably in the process of meaning-making (Schütz, 1967). Cultural-Historical Activity Theory and, more latterly, the concept of ‘knotworking’ developed in the work of the Scandinavian Activity Theory movement, specifically the development of a hypothesis on co-configuration expansive learning (Engestrom et al., 1999) also provide useful starting points for acknowledging the familiar in the apparently novel. In this chapter, we will situate our reflections in the work of Communications and Media Studies from Innis’ space-time considerations (Innis, 1951) to Michael Cole and Jan Derry’s assertion that we are the technology we apply (Cole & Derry, 2005).

LIMINAL SPACES

There is a point at which a technology becomes established, moves from being emergent to new, and from new to ‘matter of fact’. These stages vary depending on context, but each might be said to have moments at which they stand as neither being in one state or the other, neither emergent nor established. As this is true of the technology itself, it is also true of human’s adoption of that technology, and of its deployment. Our usage moves from novice to expert, from self-conscious activity to unquestioned behaviour. As usage evolves so do we, as the technology can be said to be in a ‘liminal state’, so can we be described in these terms.

Liminality (from the Latin limen, meaning ‘a threshold’) denotes a state of being between two different existential planes, on the ‘threshold’. The ‘liminal’ is a concept much explored in anthropological theories concerning ritual when societies develop mechanisms for the passage of the individual from one social status to another as in many rites of passage (Gennap, 1960). The liminal state is one in which uncertainty and indeterminacy defines the position of an individual; the identity of the individual is acknowledged as being in transition from one recognised state to another anticipated state. Where the individual fails to complete the transition and is held in between these states, people might be said to be permanently liminal.

Differences in individuals’ status and in social hierarchies are often suspended during these ritual transitions, such as during religious pilgrimages where the status of ‘pilgrim’ obfuscates all other differentiations. A new social structure, however temporary, is created, that of ‘communitas’, in which a shared endeavour sustains relationships through the liminal state. Liminality in anthropology might also be said to occur when one is exposed to the unfamiliar as well as the new. Unfamiliarity in a given social situation creates a sense of ambiguity, uncertainty as to how to act, how to represent oneself and what manifestations of oneself others will see or expect to see. There is something inherently ‘liminal’ about our use of emerging technologies.

Examples of this liminal state in Western societies might be considered the ‘space’ between being a single person and being married, so that ‘engagement’ could be termed a liminal state, or the period between finishing one’s University exams and graduation, or perhaps more complex a notion such as the period between the end of childhood and recognised adulthood, perhaps ‘adolescence.
is a liminal state’. Societies introduce alternative rules for these liminal spaces in which individuals are recognized as operating outside the usual social constraints. The acceptance of behaviours in Carnival that would be unacceptable the day before or the day after, the kiss under the ritual space defined by hanging mistletoe provides ‘ritual cover’ for an act that may be prohibited at other times, in other spaces.

Beyond the social realm there are other liminal spaces. Dusk and dawn, twilight, represents a liminal ‘zone’ between night and day. These are observable liminal zones, but others might be considered the threshold of midnight, between one day and the next, or 31st December in the western calendar as a threshold for a year. Increasingly, dispersed families live this liminal festival annually as relatives in New Zealand move into the New Year while geographically distant families celebrate the end of the previous year. The Scottish tradition of ‘First-Footing’ in which good luck is brought to the house if the ‘first foot’ across the threshold in the New Year is a dark haired male bringing symbolic coal, shortbread, salt, black bun and whisky is a ceremonial acknowledgment of this liminality.

Physical space also has its liminalities, ‘no man’s land’ and other disputed territories, as well as places where one is simply going from somewhere to somewhere else such as airport terminals, train stations and hotels. Spaces in myth that are transitional such as purgatory represent spaces that are ‘in-between’ and are useful metaphorical depicitors of liminality. An exclamation that the long wait for a decision is ‘like being in purgatory’ is more common place than ‘I am in a liminal state’, but amounts to the same thing. Physical spaces in our natural landscape can also represent thresholds and suggest liminal spaces. In our built environment these liminal features are doors, windows, crossroads, junctions and bridges. In the natural environment they might be identified as springs, caves, shorelines, rivers (as boundaries), volcanic features, river fords and mountain passes. These natural features become mythic portals to esoteric knowledge and ideas of passage to some ‘other space’. Liminality is often sacred and frequently dangerous.

The individual’s context, prior experience and expectation define the liminal space. The airport worker and the airplane passenger experience the space of the airport departure lounge very differently, as does the hotel guest and the chambermaid. This notion of the liminal space is important in considering how emerging technologies are seen as shaping and forming new relationships, new identities and new conceptions of self. The degree to which an emerging technology creates or mitigates against liminality, whether an emerging technology creates a divide or a bridge, is important in our ability to respond as policy makers and educators.

**NETWORKING AND CONNECTIVISM**

Manuel Castells’ social theories regarding the ‘networked society’ and George Siemens’ development of these, and related, ideas in the realm of education in the form of ‘connectivism’ both merit further elaboration.

Manuel Castells’ academic lineage, in the fields of urban sociology, organisation studies, social movements, the sociology of culture, political economics and the Internet suggest a strong association with notions of space. His seminal works in developing the concept of the ‘network society’ began before the exponential growth of the Internet in the 1990s with the advent of the World Wide Web. Castells’ observation of changing forms of complex commercial networks and his recognition of evolving social structures in response, namely ‘The Fourth World’, denoting that sub-population of the socially excluded in a global society, have been frequently cited.

From a background in French academia, within the discipline of urban sociology, Castells began in the 1980s to explore the role of new technolo-
gies in reshaping economic patterns of organisation. He recognised the need to acknowledge the immaterial, as well as material, elements that underpinned the economic activity on global information networks. This gave rise to the term ‘space of flows’, the ‘space’ in which real-time, long-distance communication shaped economic activity. Castells’ The Rise of the Network Society (1996), The Power of Identity (1997), and End of Millennium (1998); published as a trilogy and subsequently revived have had significant influence (Castells, 2000; Castells, 2004a; Castells, 2004b).

Castells recognises the interdependence of three social dynamics; production, power, and experience. The means by which societies organize their economy, the organs of state and their institutions, and the ways in which individuals create personal meaning through collective action, are the irreducible sources of these social dynamics. These elements must be understood, both as discrete and inter-related entities. This ability to see the inter-relationships and co-dependences of geographically dispersed networks led to his examination of the development of the Internet as a complex confluence of the roles of the state (manifest in military and academic forms), social movements (notably computer ‘hackers’), and commercial enterprise. The conflicting interests of these disparate groups identified the economic structures that allowed the Internet to flourish. In The Information Age, his seminal trilogy, Castells states:

*People increasingly organize their meaning not around what they do but on the basis of what they are, or believe they are. Meanwhile, on the other hand, global networks of instrumental exchanges selectively switch on and off individuals, groups, regions, and even countries, according to their relentless flow of strategic decisions. There follows a fundamental split between abstract, universal instrumentalism, and historically rooted, particularistic identities. Our societies are increasingly structured around a bipolar opposition between the Net and the self. (Castells, 2000)*

Castells’ thesis of organisational networks, contrasted to the self as defined against a background of social flux, has been a powerful interpretive concept for exploring the impact of the Internet. If a network can be simplified as denoting to connected entities, be they individuals or organisations, then the multitude of bipolar relationships afforded by the Internet is clearly a network. A network creates opportunities for information to flow, but it also creates dependencies, and disruptions to the network have an impact beyond any two points. A point within a network, a node, may be privileged or relatively insignificant depending on the degree to which failure at that node disrupts the effectiveness of the network. Successful nodes, those to which other parts of the network ‘seek’ a connection, become more successful, more privileged. One simple illustration would be the network of citations in journal articles and written book chapters. Each author, in creating a journal article (the node), cites the work of others (other nodes) and in doing so might be said to create a network of citations. The more a specific node is cited, the more successful it becomes. If a very privileged node (frequently cited work) were to fail (be uncovered as plagiarism, for example) the impact on the network would be more significant that if it were a very minor (less cited) node.

Nodes could be tangible products such as the example just given or something less physical like a concept or idea, or a community or belief system. The resulting networks can be flexible or fairly rigid but less established networks, where new nodes are formed more easily, provide opportunities for spontaneity and originality, creativity and innovation.

These ideas have been explored by George Siemens in his notion of ‘connectivism’. Siemens suggests that learning, “defined as actionable knowledge”, exists outside the individual, within a network or nodes within a network. Being part of,
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or indeed ‘being’, a network that connects these significant nodes is what allows the individual to learn.

Connectivism is driven by the understanding that decisions are based on rapidly altering foundations. New information is continually being acquired. The ability to draw distinctions between important and unimportant information is vital. The ability to recognize when new information alters the landscape based on decisions made yesterday is also critical. (Siemens, 2004)

The skills required to function in this shifting, continually evolving, knowledge landscape include, according to connectivism, the need to embrace diversity, remain open to new ‘connections’, nurture existing connections, recognise disparate ideas as potential nodes, value currency in ideas and being prepared to revise one’s decisions based on new knowledge.

Siemens places the individual at the centre of the connectivist model of learning. The individual has personal knowledge made up of a personal network (the individual node), which belongs to a larger network (nodes comprising a learning set or social group), which in turn belongs to an extended network (an academic discipline). Knowledge flows through and back across this network ensuring that the individual has access to current, live and relevant, constantly updated knowledge. Blogging and tweeting represent contemporary manifestations of these Mandelbrot style networks of nodes.

Our ability to learn what we need for tomorrow is more important than what we know today. [...] As knowledge continues to grow and evolve, access to what is needed is more important than what the learner currently possesses. (Siemens, 2004)

Castells identified early in the information age the radical shifts of information exchange, hermeneutics and power with the imbalances in society that would result, suggesting a fluid and dynamic network of knowledge creation and exchange. Siemens extends this notion into the realm of learning to suggest learning is no longer an individualistic activity but one which takes place within these dynamic networks. The tools one uses to engage with these networks impact on the user and the network, and indeed act to modify the tool itself.

The tools, or technology, used to maintain our learning networks might most easily be conceptualised as hardware in communications and information technology, electronics and digital computers and communications devices. Technology might also be seen in all manufactured materialism, in packaging, cars, planes and physical constructions of all kinds. This conceptualisation of technology is highly limited and Cole and Derry argue this it is inadequate, suggesting that technology and intelligence are indivisible. They propose a broadening of our definition of ‘technology’ beyond the ‘tools’ to incorporate the social context of deployment (Cole & Derry, 2005). To build on the analogies promulgated by Castells and Siemens, one can see how the tools as nodes are indivisible from network that is the social context, the collective intelligence. There is no node without a network, and no network without nodes.

Moving beyond the ‘social construction of technology’ after Latour and others, who suggested that technology is not so much a determinate of human action, but that rather, human actions serve to shape technology, the Cultural-Historical Activity Theorists have advocated that technology is social milieu. Cole & Derry propose that technology can be conceptualised as forms of ‘tool-mediated social practice’. The degree to which the node and network create each other warrants further research. An examination into the use of the abacus in mathematical reasoning has shown different brain processes being developed between those who are expert users and those who are non-expert, suggesting the possibility
that nurture becomes nature through the use of specific tools (Hanakawa et al., 2003). This raises the interesting question as to whether engagement in the plethora of online social networking tools will change the way people think.

How then does one identify these nodes and networks, these ‘tools as social-milieu’ and recognise these liminal spaces where technology emerges and new user identities are forming? How does one plan for educational activity in spaces where the conventions of communication are evolving? Are actors in the virtual spaces of Facebook (www.facebook.com) or Second Life (www.secondlife.com) entering liminal spaces where cultural values differ from those in the real world? Do the technologies and tools act as socially mediated practice, through which new ‘generations’ (irrespective of age) are learning to deal with changing value constructions?

**A RESPONSE: 3V MODEL**

The ‘3V’ model seeks to illuminate these complex assumptions concerning ‘real-virtual’ interfaces as mediated through our experience of technology. The model visualizes internal structures to this realm, these liminal spaces, and provides a framework for further empirical study. We aim to share with colleagues from all social science disciplines a conceptual framework that allows them to invest their specialist traditions, investigative models and theoretical approaches.

The intention of the 3V model is to facilitate enquiry which is flexible enough to cope with a range of new emerging technologies as they originate and those that are evolving into different convergences. It aims to be a model of enquiry suitable to all social contexts. It is possible within the model described to select one emerging tool and study it with reference to a number of different cultural contexts, just as it would be possible to take a single cultural perspective and concentrate on the comparison of a dozen specified tools. The 3V model aims to identify the nature, position and impact trajectory of technologies on three axes, the first V is Virtuality, the second V is Veracity and the third V is Values.

**Virtuality**

Liminality offers a utopian moment in which the weight of limiting social regulations is lifted. Liminality is crucial to the adaptive powers of a culture. Liminal zones are virtual environments or spaces. (Sheilds, 2003)

The concept of virtual or liminal spaces, the in-between, where social and interpersonal communication has different potentialities is one crucial element in the 3V model, which we define in terms of virtuality. The degree to which one is ‘present’ in the spaces one occupies form key elements of an individual’s identity.

The relationship between spaces and personal behaviour was explored by Georg Simmel (1858–1918), a pioneer of ‘social structure’, who suggested that there were significant differences between life patterns of urban and rural people, that the pedestrian pace and long-term physical association with ‘place’ in rural contexts allowed the development of deeper connections than was possible in urban settings, but encouraged a narrow and conformist tendency in social thought which stifled originality and personal expression. Urban life, in contrast, was one of the indifferent stranger, oblivious to each other’s patterns of behaviour, allowing individual expression but encouraging a dispassionate attitude to the overwhelming amount of activity that surrounds one, sometimes leading to isolation. Simmel idealises the nature of Man’s sociability as natural and free of constraint, as creating social realities through the accumulation of individual interactions. This has particular contemporary relevance to our understanding of how Web 2.0 tools suggest an ability to create effective peer networks (Simmel, 1949).
This has interesting relationships with the work of the political economist H.A. Innes on the ‘centre’ and ‘periphery’ in communications theory and the idea that space and time are directly related to the patterns of communications within specific traditions. Innes sought to develop a grand theory of history that examined culture’s relationships to space and time. His thesis was that less technological, non broadcast means of communication, typified by oral cultures, placed their emphasis on the relationship with time, the preservation of knowledge and the perpetuation of close traditional relationships. More technologically sophisticated, broadcast based forms of communication encouraged an emphasis on spatial reach, and considerably less on time related concepts (Innis, 1951).

Taken together, Simmel and Innes, in different fields, languages and contexts, describe a pattern of cultural development in which stable physical, peripheral and ‘narrowband’ communication amongst the familiar, contrasts with the urbanised, technologically sophisticated ‘broader-casting’ to ‘strangers’. However, within the environment of social networking tools such as MySpace or Facebook, there is precisely a blend of these two domains. Innes’s question that the relative stability of a culture is dependent upon the balance and proportion of their media is one with obvious implications for the study of the Internet.

Veracity

The concept of veracity develops from the work of cyberculture theorists such as Nakamura that explores an individual’s sense of personal identity development (Nakamura, 2002). In the 3V model, we are concerned with the concept of veracity in so far as it supports the development, both individual and collective, of identity. Whilst the printed text has established conventions, of recognisable fonts denoting ‘gravitas’, of processes of authority and peer-review, and the industrial complexity of publishing houses, the value of the world-wide web as a source of information remains highly contested, not least amongst academics. The 3V model is not directly concerned with the factual accuracy of individual elements of information placed on the web, although this is indeed of significance as new patterns of interpretation, assignment of authority and new concepts of credibility and authorship emerge. Rather the model seeks to illuminate the ability of the individual to suspend their externally imposed boundaries of space, time, gender, ethnicity, age and social status and to express themselves independently of the real-world.

Marshall McLuhan proffered the notion of the ‘global village’ (McLuhan, 1965) before the advent of the personal computer. This concept captures succinctly the contradictions of a spatially diverse ‘territory’ without boundaries suggesting visions of ‘idle gossip over the white picket fence’. Levinson provided a fuller expansion of McLuhan’s concepts updated for the advent of the Internet and suggested that not only was McLuhan correct in his assertion that the communications technologies of his time had become extensions of the human sense, but that new emerging technologies have developed into a virtual nervous system for humankind (Levinson, 1999). Mass communications research into shifting perceptions of truthfulness and reality, as experienced by the individual, is vital to a proper understanding of the Internet as well as to what it now means to be an individual.

Values

The concept of values, perhaps the most contested, is the third element in the 3V model. There has been considerable interest in the development of instruments to measure cultural values, notably with a view to establishing commonalities across geographically dispersed peoples as well as sub-groups within single political states. Tools such as the Kluckhohn-Strodtbeck Value Orientation Preference Model (VOM) (Kluckhohn & Strodtbeck,
1961) attempt to identify common value references across otherwise disparate groups. The VOM identifies responses to questions concerning basic human nature (good-mixed-bad), the relationship to nature (dominate-harmonious-subordinate), the sense of time (past-present-future), activity orientation (being-becoming-doing) and social relations (hierarchical-collateral-individual). Responses to these orientations produce a values profile in which homogenous groups display high degrees of correlation. Social Psychologist Milton Rokeach, also in the 1960s, developed a more projective model, focussing on the ‘desired’ rather than the notion of ‘orientation’. Rokeach designed a 36 point instrument requiring respondents to prioritise statements in order of importance as life’s “guiding principles”, 18 elements defined as terminal values and 18 as instrumental (Rokeach, 1973).

Terminal values are those where desirable “end-states of existence” are envisaged and instrumental values are those which denote “desirable modes of conduct” (ibid, p7).

Whilst we use the term ‘values’ in much the same way as Kluckhorn and Rokeach, we have some reservations about both of these instruments that have been focussed on a priori cases of defined ‘cultures’ or established notions of individualism. We are interested in newly emerging cultures and personal identities and are seeking to measure changes in cultural value systems which are often poorly understood, or where the very existence of a ‘culture’ is disputed. We use ‘values’ applied to the broader concept of ‘cultural values’, and in doing so must acknowledge that there is disagreement as to both the definition and usefulness of the term and concept of culture. In the English language, the term ‘culture’ and ‘cultivation’ were, until the 19th Century, largely coterminous and the development of the well cultivated individual as a ‘well-cultured’ one naturally gave rise to the notion of the well-cultured group, the civilised as opposed to the barbarian, the cultured and the uncultured. As the term developed to capture the inter-generational shared practices of all social groupings, it acknowledged that all societies, even, and perhaps particularly, the colonised, had a culture of sorts defined by differences. The values thus associated with these cultures were also consequently defined by differences. The Internet era presents an interesting challenge to the assumptions, and vocabulary, of ‘differences’ in cultural values. Heterogeneity and homogeneity are no longer easily assessed with reference to spatial boundaries and the range of formative experiences to which individuals are experienced, and which informs their sense of self and other, is growing at a phenomenal rate.

**AN OPERATIONAL MODEL**

Existing models applied to the learning context directly, such as the 4-E model cited by Collis (Collis & Moonen, 2001), suggest how one may measure the effectiveness and likelihood of adoption of a given technology. It does not assist in the understanding of what impact the adoption of any given technology may have on users. Existing models acknowledge the importance of the range of environmental factors, but do not illustrate how the environment itself might be directly affected.

The ability of the 3V model to represent the relative position of technologies in a longitudinal form is also seen as valuable. It would be possible, for instance, to plot the emergence of say, ‘Instant Messaging’ (typified by, for example, MSN messenger), both in terms of its different impacts in different contexts, and its evolving impact in one context over an extended period of time. Whilst it may not appear significant that one can plot a single technology, the ability to plot a multitude of technologies offers the prospect of being able to look at similar patterns of societal adoption for previously emerged technologies, and therefore suggests an ability to forecast what may happen to as yet unimagined technologies. The model itself is visualised as a cube with the virtuality
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and veracity dimensions plotted on the X and Y axes and values on the Z axis.

The model, illustrated in Figure 1, creates a three-dimensional space for theorising the impact of existing and emerging tools. Tools can usefully be evaluated in terms of these three dimensions, virtuality, veracity and values, along a continuum of ‘virtual-real’, ‘trustworthy-uncertain’, ‘stable-disrupted’, respectively. The emergence of new forms of social mediation is the result of ‘rupture’, or ‘disruption’, and we should therefore look to assess the degree to which a tool defies, contradicts or alters existing patterns of interaction.

Data might be gathered on one or more of the dimensions of the matrix. Early practical workshop experiments suggest that respondents understood the concept of virtuality and veracity with considerable ease, but struggled with the concept of values as represented. This is unsurprising, since values are regarded somewhat differently across a range of social sciences and the terminology is inexact. However, the model does seek to identify the degree to which the value assumptions, however defined within a given culture, are potentially disruptive or threatened by a particular emerging technology. Value disruption will be relative within any given culture. The significance of this relative disruption, and how the 3V model can help to illustrate it, might be illustrated with reference to the mobile phone, or portable telephony. There is significant anecdotal evidence that mobile telephony is changing the way that people relate to each other, shifting people’s concepts of time, personal space and privacy. In plotting in the 3V model, the different responses of various socio-economic or socio-cultural groupings recording their perceptions of mobile telephony, one can begin to see how technologies impact differently across society.

We have already indicated that even within one language, namely English, the terminology varies between academic disciplines when describing similar or equivalent concepts. The continuums described here, are therefore mutable, and this is likely to be an area of further refinement should specific academic fields of enquiry wish to adapt the model.

Illustrated in Figure 2 are two tools from a given socio-cultural context. ‘A’, is an avatar engagement in Second Life, where it is suggested the

Figure 1. The 3V model as a three dimensional space
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degree of virtuality is nearly total (although less so arguably than text based fantasy), where the veracity of representations cannot be guaranteed as there is little or no opportunity to verify the truthfulness of representations made, and where the value systems are too new, given the recency of the technology, to be known. By contrast, ‘B’ might be used to suggest the position of a face-to-face encounter in the classroom, where the sense of the real is determined by presence, where the truthfulness of the messages transmitted are measurable and familiar and where the established conventions render the value disruption minimal.

Each dimension of the matrix allows data to be plotted against it, independently of others. One does not need necessarily to collect and plot data in a single study against all three dimensions. Building a single, dual or three dimensional model will depend on the data collection methodology adopted. We believe that many existing instruments and theoretical approaches will prove compatible with this research model and we are eager to develop and adapt a range of data gathering means to populate and refine the 3V model.

One might, for example, make use of an existing and well-established anthropological instrument for identifying generalised value differences within contemporary cultural settings, namely the Kluckhohn-Strodtbeck Value Orientation Preference Model (Kluckhohn & Strodtbeck, 1961). Using this instrument to identify differing cultural perspectives between a ‘real-life’ cohort and that same group of individuals as a ‘Second Life’ cohort would provide useful data for the value dimension of the 3V model.

CASE STUDY

By way of illustration, a case study of a professional workshop response to the 3V model and its application is provided. The data was collected purely for the purpose of explaining the model and exploring its potential for visualising emerging technologies relative to one another.

At a presentation to 40 educational technologists, and learning technology related academic staff during a related conference in December

Figure 2. Situating two tools in a given socio-cultural context (hypothetical)
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Table 1. Scale values for 3V model axis

<table>
<thead>
<tr>
<th>Tool</th>
<th>Virtuality Real: Virtual</th>
<th>Veracity Trustworthy: Uncertain</th>
<th>Values Stable: Disrupted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>

2007, 20 A4 sheets detailing eight ‘tools’ were distributed to the audience. Working in pairs, respondents were asked to identify, on the three scales of the 3V model, each represented by a scale of one to ten, where they would opt to position each ‘tool’.

Each tool, listed in the left hand column of Table 1, had alongside it three columns representing the three axes of the model and in each cell of the resulting table the numbers one to ten. Not all respondents completed all fields in this proof of concept exercise, but 18 out of the 20 responses were returned. Face-to-face was included as an indicator of comprehension, given that the low value expectations for this mode of communication were predictable. One might reasonably expect the ‘virtuality’ response for face-to-face to be near to ‘one’ for real. Where a return gave a high value (in one case, ten) it was concluded that the data collection instrument had been poorly understood, rendering the results unreliable. Four responses were excluded from the aggregated results on this basis. The mean average for each reliable return (n=14) are in Table 2.

Simple as this small proof of concept pilot exercise is, it identifies a number of interesting issues related to technologies. There is, within this ‘community of practice’ a reasonable consensus regarding tools, which are highly ‘virtual’, and those that are not. Other observations include the suggestion that whilst World of Warcraft and Second Life were both seen as highly virtual experiences, the degree of veracity and value disruption diverge. This suggests that whilst superficially similar as technologies the perceived ‘purpose’ of them produces significantly different responses.

These results, tabulated above in Table 2 and selectively plotted within the 3V model provide an immediate visualisation of the relative placement of tools. In Figure 3, this is illustrated for three tools with A in the position of Skype, B of face-to-face and C of an Avatar in Second Life without voice.

Understanding the relative position of emerging technologies, and the shifting position of established technologies relative to emerging ones, is a useful insight for policy makers and planners.

Table 2. Results of ‘proof of concept’ exercise

<table>
<thead>
<tr>
<th>Tool</th>
<th>Virtuality</th>
<th>Veracity</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skype</td>
<td>3.0</td>
<td>2.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>1.4</td>
<td>1.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Mobile Phone</td>
<td>2.9</td>
<td>3.4</td>
<td>3.9</td>
</tr>
<tr>
<td>MSN messenger</td>
<td>5.6</td>
<td>5.2</td>
<td>5.3</td>
</tr>
<tr>
<td>Synchronous Chat</td>
<td>6.2</td>
<td>5.9</td>
<td>6.0</td>
</tr>
<tr>
<td>‘World of Warcraft’</td>
<td>9.0</td>
<td>7.2</td>
<td>6.7</td>
</tr>
<tr>
<td>Second Life (without voice)</td>
<td>9.2</td>
<td>7.7</td>
<td>7.4</td>
</tr>
<tr>
<td>Blogging</td>
<td>5.3</td>
<td>5.5</td>
<td>4.4</td>
</tr>
</tbody>
</table>
The 3V model offers one means by which a series of tools can be visualised within a three dimensional space which illustrates a variety of societal responses and impacts. The model itself is very flexible. Data might for instance usefully illustrate how two different cohorts, such as school-age children and senior-citizens, rate a number of tools in a similar socio-cultural context, so providing quantifiable data for different sub-cultures’ responsiveness to emerging technologies. The model might also be used longitudinally to plot how cohorts over a period of time might ‘reposition’ technologies.

Further research along these lines is ongoing and the visualisations promise to be rich and useful in understanding the relationship between virtuality and veracity and the degree of values disruption. Extending the principle of reusing existing research methodologies from across the Social Sciences, it is suggested that the interpretive and evaluative power of the 3V model would benefit from an anthropological instrument for identifying generalised value differences within contemporary cultural settings, specifically the Kluckhohn-Strodtbeek Value Orientation Preference Model (Kluckhohn & Strodtbeck, 1961).

The origins of the Value Orientation Preference Model (VOM) are in the work of the Harvard Values Project in the United States in the 1940s and 1950s, in which a team of anthropologists believed there was predictive potential in an instrument which could distinguish cultures based on their responses to five common human concerns. The five elements have been challenged and refined, however the original model still has merit. The VOM suggested there were three possible responses to each of the five contexts presented and that the ranking of these fifteen elements could define the ‘character’ of a given culture. These responses were described as ‘value orientations’.

The essential methodological instrument of the VOM is a survey, consisting of approximately 16 situations based around the basic five dimensions, sometimes more, with associated questions. Originally designed in a story/response format to aid those with differing levels of written comprehension, the instrument can be read, or listened to, and has therefore proved effective with both non-literate and literate respondents. The tool can
be applied to provide a research-focussed analysis of cultural differences, or as a developmental awareness-building tool to formulate social policy. For a fuller exposition of the original VOM see Kohls (1981) and Russo (2000). Whilst there is recognition that each culture will express all three possible responses at some time, a pattern of intra-cultural stability is theorised. Diversity within any given culture is acknowledged and acculturation is also anticipated. The VOM has been applied, and found to be useful in a wide range of disciplines where an interest in ‘value orientation’ persists, including in higher education with language students (Ortuno, 1991) and those in dentistry (Marino & Stuart, 2005).

Kluckhohn and Strodtbeck themselves were clear that they did not see the model as complete and that further requirements were encouraged. In reviewing the VOM in the light of the 3V model, it has been concluded that applying the spatial dimension as suggested by Michael Hills (2002) and others, has obvious applications in considering the values disruption of online communication tools. The concept of spatial responsibility as being an individual or collective endeavour is likely to have important consequences for cyber behaviours. Hills also suggests dimensions relating to work, gender and state-individual relationships. In subsequent iterations of the 3V models, use of the VOM will explore further dimensions to extend responses to the axes of veracity and virtuality.

**CONCLUSION**

We have introduced a new conceptual model for the evaluation of emerging technologies. This is in response to the apparent fear of change that appears to pervade our education systems. We suggest this fear is rooted in a fundamental lack of comprehension. Educators and policy makers have yet to develop effective language and mechanisms for identifying emerging and converging technologies, for measuring them and evaluating their potential impact. The 3V model suggests one means by which researchers might seek to clarify, problematise and comprehend new technologies using any number of data collection tools from existing social science methodology and visualise the results.

It is acknowledged that technology adoption patterns in all societies, developed and developing, are complex and difficult to represent. The socio-cultural context of adoption, its multifaceted aspects of socio-economic, gender, ethnic and educational differences suggest that ‘digital citizenship’ and cyber behaviour are highly complex phenomena. It is vital, however, that we work across the social sciences to build on research methodologies and pedagogical practice to develop new models for describing and researching cyber behaviour.

**REFERENCES**


KEY TERMS AND DEFINITIONS

3V model: The 3V model is a three dimensional representation of a given technology’s relationship to virtuality, veracity and values for the purpose of facilitating the visualisation of emergent technologies. Such visual representations are intended to provide an insight into the impact and trajectory of technologies.

Virtuality: Defines the extent to which a personal experience is deemed to engage one as a ‘presence’, the degree to which one is present or represented in a given space as one intends.

Veracity: Deals ostensibly with the notion of personal truth. The degree to which ones experiences might be said to be trustworthy and dependable within a personal frame of reference rather than any externally imposed set of criteria

Values: Values as used in the 3V Model explores the disruption to collective culturally references notions of belonging, shared space and
Using the 3V Model to Explore Virtuality, Veracity and Values in Liminal Spaces

shared time. Values here suggests those attributes which might determined a sense of membership within one given culture for the purpose of differentiating itself from another.

**Liminal**: Defines the space between any two defined and pre-determined states of being. To be between these states is to be in a liminal state or space.