

# Location Enabled Body Worn Camera Technologies In The Education Sector<sup>1</sup>

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<sup>1</sup> The original title for this research in 2009 was *The Application of Location Enabled Body Worn Technologies In The Education Sector*. Considering the sectors and wider domains of interviewees a change in research title in 2010 to *The Socio-Technical Applications Of Body-Worn Video Recorders In The Education Sector* was deemed necessary. A further change in 2011 to the research title occurred during preliminary literature review activities that better elucidates the core focus of *The Socio-ethical Implications of Body-Worn Video Recorders: An Ethnographic Study*

## Abstract

The intensification and diversification of surveillance in recent decades is now rapidly being considered within a contemporary theoretical and academic framework. In essence an embodiment of all veillances, in totality, is Uberveillance<sup>2</sup>.

The emergent concept of Uberveillance presents as:

“...an omnipresent electronic surveillance facilitated by technology that makes it possible to embed surveillance devices in the human body.” - *M.G. Michael and K. Michael (2009)*.<sup>3</sup>

At it's core, an apex of composites - a triquetra - that of surveillance and all it's nuances, that of dataveillance and its multitude of feeds and that of sousveillance with it's manifestations of recalcitrance.

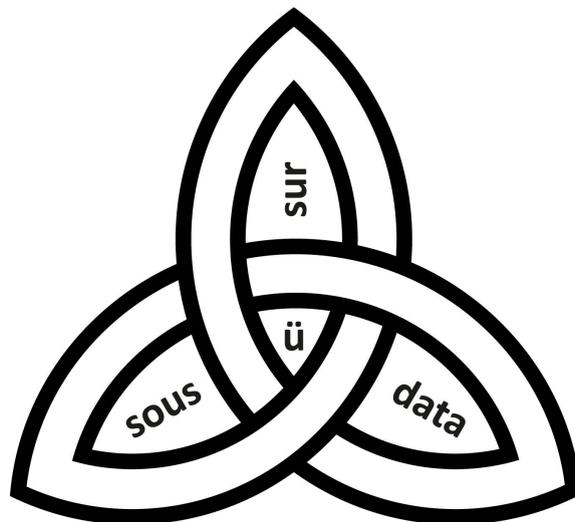


Figure: 'Uberveillance Triquetra' - Hayes (2010)

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<sup>2</sup> Refer to <http://www.uberveillance.com/ethos>

<sup>3</sup> "Uberveillance: Definition" in ed. S. Butler, Fifth Edition of the Macquarie Dictionary (Australia's National Dictionary, Sydney University), p. 1094

This paper explores the socio-ethical implications of location-enabled technologies in an education & training context drawing upon case studies, project examples and client testimonials including the Australian Federal Police, Northern Territory Fire Police & Emergency Services as well as projects funded in 2011 under the Australian Flexible Learning Framework (AFLF). This paper is based upon the initial application for admission to the PhD higher degree by research program at the University of Wollongong submitted and accepted in early 2010.

A focus on the use of location enabled point-of-view (POV) body worn camera (BWC) technologies will be explored in this paper, referencing cross-sectoral and inter-disciplinary thoughts as to the perceived benefits of the technology and the socio-ethical implications of these pervasive technologies.

### **Problem Under Investigation**

Body-worn location-enabled camera technologies (BWC) are readily available from a myriad of globally accessible commercial producers and suppliers often enabled for complementary location based service provision. Rapid deployment of these technologies across a wide range of personal, social, socio-political and workforce settings is evidenced by data uploaded to online public social networking sites that transcend all geographical boundaries.

The problem under investigation is focussed upon:

1. Identifying the implications and risks that exist for organisations, educators and learners who use these technologies
2. Quantifying the extent to which these technologies are now considered as part of an authentic networked learning ecosphere
3. Informing a methodological approach that an organisation can pilot and employ these technologies in an informed education context
4. Engaging with the human users of these technologies, to document the proposed and applied use of these technologies in an Australian education context for sustained socio-ethical consideration.

Preliminary research activities will include an anthropological assay of Australian learning settings where it is critical or desirable to:

- a. Remain hands free
- b. Have the ability to record evidence using rich media technologies
- c. Be remotely accessed or connected to trainers and assessors in the field as a desirable service delivery attribute
- d. Submit data sets that accompany the 'human' connection as a validation of participation in a learning experience
- e. Augment authenticated sources for an individual's prior learning (experiential) validation

The lack of literature as to the applied use specifically of POV technologies in education and training suggests that there is also a lack of rigour inherent with a mobile learning solution policy inclusive of this technology, therefore suggesting a gap in literature.

## **Theoretical Orientation**

This participatory research will engage individuals and groups from select Australian education sector organisations in a cross-sector analysis of existing and proposed use of location-enabled wearable technologies. A contemporary pedagogical theory which focuses on learning as making connections, namely Connectivist learning or Connectivism, coined by Siemens (2005) will be used as a foundational benchmark from which to further expound a relevant theoretical orientation.

Considering the array of features and attributes these technologies avail, this research study will draw upon understandings evidenced in systems theory, constructivism as a precursor to a Connectivist theoretical framework and existentialism to reference the applied use of these technologies in a broader social and public context. Recent findings regarding the socio-ethical dimensions for body worn technologies with an Uberveillance potentiality in a

sea of federated identity by Micheals, K. & Michaels, M. (2010) will also be a constituent reference consideration throughout this research.

## **Research Implications**

The implications and socio-ethical dimensions for the 'shape' of learning as organisations come to grip with location enabled, body wearable and embeddable technologies forms a key outcome sought of this research.

Given the interdisciplinary nature of this research it is deemed necessary to consider a dual qualitative and quantitative methodological approach to articulate findings that emanate from case studies, anthropological assay, rich media samples, participant surveys and participatory action trial analysis. A challenge for the research team will be to synthesise complex data in order to inform reliable applied contexts for these technologies in an educational setting, to build policy that practically guides the dimensions of application and to summarise comprehensively what implications this technology may have on future educational arrangement.

## **Background To The Study**

This research aims to identify existing or non-existing junctures of organisational vigilance as these body-wearable nodes of connectivity move quickly towards an Uberveillance grid. Likewise, this research aims to build a body of evidence of current applied use of these technologies to inform critical debate that will influence policy affecting the educational purpose of these wearable and connected technologies. AUPOV (2009)<sup>4</sup> showcased the extent to which these technologies were already considered for mainstream application and ISTAS10 (2010)<sup>5</sup> afforded a macro level view on the social implications these technologies were and continue to present for the broader community.

Historical interrogation by Professor Steve Mann, mobile learning application in the tertiary sector by Professor Anthony and Jan Herrington as well as next

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<sup>4</sup> Conference hosted by Streamfolio Pty Ltd in Wollongong, NSW Australia

<sup>5</sup> Symposium hosted by Charles Darwin University, Darwin, NT Australia

social revolution activists Howard Rheingold, Joichi Ito and Danah Boyd provide a strong foundation for informing such connectivist notions. These networked human relationships according to theorists like George Siemens and Stephen Downes amongst many are evidence of the rise of connectivism, a preferential digestion of life based learning that is connection dependent and technology enabled.

### **Purpose Of The Study**

A substantial gap exists in research literature as to the implications that these networked technologies are presenting for organisations now and into the future as a greater range of educational organisations adopt an evidence-based approach to learning using these technologies.

This research presents an opportunity to rigorously investigate where the applied use of these technologies, data collection, authentication and validation of knowledge skillsets of learners using geo-locative enabled body-wearable technologies ie. POV are having an impact on learning.

### **Significance Of The Study**

This research study will examine the effects on learners and educators alike of emergent geo-location bundled 'validation' authentication for evidence based assessment, recognised prior learning process (RPL), recognised current competency (RCC) or general knowledge acquisition service delivery. As larger co-operations jostle for a place in the expanding learning management system and electronic portfolio marketplace, there is a distinct possibility that this research will provide valuable insight into policy needs for organisations seeking to employ such technology in conjunction with body-wearable location-enabled communication at the learning and teaching interface.

### **Aim Of The Study**

This research aims to analyse, define and describe praxis oriented methodology that informs the development of policy for utilizing body-worn

location enabled technologies as part of the greater networked engagement profile in an organisation.

## **Objectives Of The Study**

The objectives of this research are to build a body of evidence from situational, theoretical, applied and summative research findings and to compose articles that guide organisations utilizing body-worn location enabled mobile learning technologies.

Objectives can be broken down into six main areas:

1. *Review* - systematic review of literature in this and other fields of related matter;
2. *Investigation* - identify of existing policy and procedures governing the use of these technologies for educational purposes
3. *Assay* - qualitative and quantitative survey of identified project participants and groups
4. *Collection* – collection of media rich examples of existing use of body-worn location enabled mobile learning technologies as part of the greater networked engagement profile
5. *Analysis* - examine and report upon trial, control and collective data to support findings article creation
6. *Summary* - summation of findings to inform articles that build recommendations and guidelines for policy development.

## Research Questions - Hypothesis

The hypotheses of this research is that location enabled body wearable rich media learning technologies will have a profound impact on the shape of learning design and development. It also hypothesised that these technologies will become a popular and approved way to provide evidence of authenticated participation and evaluation in an educational context.

The study will prove that there is a need to define, describe, and interpret the current socio-ethical dimensions to the applications of these technologies in order to to better direct educational ICTs policy, not limited to:

- What are the implications inherent with the use of location enabled, synchronous, body wearable, rich media technologies ie. POV?
- Where do practical examples of synchronous learning sustainably employ location enabled body wearable learning technologies in an educational global context?
- Which socio-ethical considerations will guide the future use of location enabled body wearable rich media learning technologies in an educational global context?
- In what ways is geo-location a necessary validation attribute for augmented and/or synchronous technology assisted networked learning?

## **Literature Review**

This research study will reference theoretical frameworks to guide and form the foundation upon which concepts can be realized as an interrogative praxis with research participants.

Contemporary discourse in a cross-sectoral assay of education appears very divided as to the virtues and value of the institution versus its perceived demise apparent in current debates between adopting an OER or MOOC model for organisations building learner engagement as opposed or in conjunction with the use of the closed LMS - (Blackall, L. 2010).

## **A Praxis Approach to Knowledge Inquiry**

Given the rapid adoption of technology mediated learning, in some cases as the only mechanism for learner engagement, it is essential that theory which underpins the development of curriculum to suit differing education and learner needs must also reference the practical application of concepts in education and training settings.

This research aims to posit the theory of Connectivism developed by Siemens (2005) as a benchmark in the praxis approach to knowledge acquisition that embrace the use of technologies and social interaction associated. Some would refer to this as an advent of networked learning where the individual, the group and the network build social-sense making or a living literacy that embodies electronic connections amongst all other human considerations.

## **Chaos, Disruption and the Role of Network**

Global connectivity afforded by Internet provision and the extension of this connectivity through the use of mobile enabled technologies has challenged all manners of social, judicial and cultural disposition in the last decade on an immense scale.

The re-shaping has also afforded new opportunities for globally networked entities to be less inhibited by a geographical disposition and to embrace "know-where" as a key attribute of node in a networked entity. An extract of George Siemens seminal paper on the theory of Connectivism posits "know-how" "know-what" and "know-where" as crucial conduits in meta-learning, where networked unity is considered just as important as the learning itself.

Illich (1971) in his publication '*Deschooling Society*' purports that any attempt to institutionalize learning in a universal context, despite the proliferation of technology enhanced communication, will fall short of where humans transformation is most acute, that condition of acceptance of difference and the ability to impart social and emotional accord.

Considering this dichotomy the research may also reveal:

- Juncture between sound learner oriented educative arrangement and the need for creative exploration within certain constraints;
- Work / life orientation to knowledge building using these technologies as an element of strength based approach to workplace development (Weatherley, Jasinski & Staron 2006);
- Dimensions of risk analysis deemed appropriate to inform a learner oriented organisational context for employing these technologies;
- A "shelf-life" for wearable technologies as a hybrid form of rich media learning object creation;

## **Wearables - Technology As Bodily Function In Education**

Professor Steve Mann is credited with the creation of the human intelligence concept where the relationship between human and computer are inextricably intertwined, a theory of the wearer and the computer with its associated input and output facilities not as separate entities, but a synesthesia of wearer's senses and technology grid.

Mann is also credited with creation of mobile blogging (glogging) as part of an existential suite of human learning and is considered as a foundational references in a variety of contexts that have informed continued investigations of possibilities for networked learning using human wearable technologies.

## **Challenges - Ethics of The First Person Perspective**

Michaels, M.G. and Michael, K. (2009) in many of their collaborative publications urge others to make a true commensurate assessment of what socio-ethical implications these ubiquitous technologies will mean for humans in the longer term. This perspective will inform this research study as the author considers the privacy, security and civil rights considerations of the individual, considering the advance of uberveillance, advanced location-based services for humans as a collective industry state of capitalist singularity.

This research also aims to inform the discourse from an "embodiment" trajectory, encouraging educators to address the physical wearable attributes that arise from using these technologies rather than simply waffle on about the device type as a tool or novelty. The shift in nomenclature, it is envisaged, will invigorate debate around how protect the interest of the learner whilst not restricting the commercial, industrial or social aggregation of innovation.

## Research Design

The researchers must employ careful consideration when examining the context for, the applied use and the potential misuse of data to derive useful and valid conclusions and outcomes from research. To ensure the rigor of this research, the use of both investigative and participative modes of inquiry will form the basis for the collation of data, composition of findings, presentation and review. Where perceived conflicts of interest emerge, delegation of research duties will be involve carefully, informed contingency measures.

Likewise appropriate third parties may be selected and employed to interrogate selected stakeholders as to their aptitude, attitude, application or intended use of these technologies where appropriate. Methodologies employed to derive data that will inform this research:

- Define the educational sector, evidence empirical definitions and associated pedagogy
- Identify cohort, investigate and conduct case studies that define how stakeholders are using body-wearable location-enabled technologies
- Define key 'other' stakeholders, assay of the 'viewer, the viewing and the viewed', identify diversity, conflict or balance achieved
- Data analysis as it happens, has happened or is determined as yet to happen
- Development framework approach using data collection in differing educational contexts examining differing complexities
- Consider socio-ethical considerations to act as guide for data collection
- Conduct research based design case studies, coalesce experts panel, mobilize focus group, instigate and monitor un-focussed discussions
- Review and reflect using peer validation
- Description process via short papers, articles and presentations

## Methodological Approach

The following methodologies will be employed to derive data that will inform this research:

- *Literature Review* - Extensive investigation of scholarly and industry oriented publications in this and other related areas
- *Interviews* - Stakeholders, expert panel, focus groups, industry representatives and others using audio, photo and video documentation
- *Case Studies* - Delphi oriented, research based design and pro forma guided
- *Focus Group* - A cross-sector, global collective of stakeholder informants
- *Surveys* - Statistical, experiential, qualitative, quantitative, deliberative and summative
- *Work Samples* - a data repository design for approved use of digital samples from participants in the study
- *Networks* - use of syndicated online applications or events for data harvesting

This research project will identify and inform a methodological approach for educational oriented purpose to realize:

- Development of an appropriate research data collection model for examining the use of these technologies with trial groups or individual participants
- Documentation that identifies gaps in existing, new and emergent bodies of knowledge that inform implications for using location enabled body wearable technologies in education and training
- Case studies that better articulate effects that these technologies may have upon the engagement of the learner and educator in differing education and training ICT contexts
- Articles that influence considerations by organisations to constructively inform organisation policy governing the use of these technologies in an educational context

- Rich-media resources that have been derived from field observations, interviews and examples of application of these technologies in each respective domain of research interrogation

## **Research Setting**

This research will be conducted with participants from select cross-sectoral organisational, business and individual workplace settings. Anonymity of participants data where required or privacy of individual participant identity in case studies or investigative research may required by Ethics Committee decree.

## **Ethical Considerations**

As this research involves humans of all ages and from differing geographical jurisdictions there is a distinct need for ethics consideration at the outset to:

- Identify the project cohort;
- Select subject and project participants;;
- Make application to the University's Human Research Ethics Committee via the
- Ethics Officer at the University's Research Office to conduct this research upon approval of application;
- Employ recommendations throughout research project

## **Timeframe**

The research study will be conducted over a five year period employing a sequential and chronological implementation of each defined phase of the study. This research study has changed in constitution from a full-time load to a part-time capacity.

## Data Collection & Analysis

This research study will be conducted in 5 sequential phases. Each phase contains a series of actions and implementation methods to gain the data required to compose a collection and to conduct a thorough analysis.

- *Phase 1* - a comprehensive literature review of both local and international publications that are present, recommended and affiliated with all areas of the research endeavor.
- *Phase 2* - identification, recruitment and engaged response of stakeholders to study intentions building relationships with identified stakeholders and engaging them in anecdotal, conversational and openly permissible modes of communication in preparation for refinement of selection.
- *Phase 3* - actively engage selected stakeholders who have been identified and who have agreed to intensive inquiry of their application of these technologies, coming to agreement on literature recommendations, case study selection, digital data collation etc.
- *Phase 4* - peer review of the developed framework, recommendations, findings and insights composed in three parts which examine the context in which the existing body of knowledge presents itself, the considered assay of the knowledge
- *Phase 5* - preparation, collation, review and dissemination of presentations in article form for peer and public feedback prior to submission for publication.

## **Expected Outcomes**

The expected outcomes of this research project include:

- Development of an appropriate research data collection model for examining the use of these technologies with trial groups or individual participants
- Documentation that identifies gaps in existing, new and emergent bodies of knowledge that inform implications for using geo-data-enabled body wearable technologies in education and training
- Case studies that better articulate effects that these technologies may have upon the engagement of the learner and educator in differing education and training ICT contexts
- Articles that influence considerations by organisations to constructively inform organisation policy governing the use of these technologies in an educational context
- Rich-media resources that have been derived from field observations, interviews and examples of application of these technologies in each respective domain of research interrogation

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