

Interview Transcript

Interviewee	Tom Worthington - Senior Lecturer, Australian National University, Canberra, Australia
Interviewer	Alexander Hayes - PhD Candidate, University of Wollongong, New South Wales, Australia
Supervisor	Professor Katina Michael, University of Wollongong, New South Wales Australia
Co-supervisor	Professor Teemu Leinonen, Aalto University, Helsinki, Finland
Conducted	27 December 2012
Format	Face-to-face
Location	Australian National University, Canberra, Australia
Duration	00:32:06:00
DOI	10.6084/m9.figshare.7121087

Research Question

What are the socio-ethical implications of body worn video camera recorders on society?

Research Focus / Outcomes

This research examines the historical developments and contemporaneous challenges that location enabled body worn camera technologies pose for humanity. The potential benefits, risks or harm on society from body worn camera technologies will inform the development of a socio-ethical framework to provide context, inform and address these issues where gaps in the literature have been identified.

Hayes: Check that little part there recording is down now it may disappear down it may disappear out of view but it is still recording because I have had a couple of people say ooh hang on a minute your recording is broken

Worthington: (laughing)

Hayes: And I say, no, I can assure you it is not broken.

Worthington: Well that is your problem.

Hayes: Well that's exactly right and it would become a big problem, so in the context of this interview with Tom Worthington, the date is the 27th of November 2012. It is 2:58 PM and I am here at the Australian National University going of the date stamp of the services here via my portable computer.

Worthington: Stop fiddling with it or you'll get lots of funny noises.

Hayes: Exactly and in the transcription I'll have to push them back. My name is Alexander Hayes, PhD candidate, Faculty of Informatics, University of Wollongong under the supervision of Associate Supervisor Katina Michael, co-supervision of Professor Teemu Leinonen from Aalto University in Finland and also Professor Michael Keppel from Queensland University of Technology. This audio transcription will be stored under the DataWise data secure repository University of Wollongong which is funded under the auspices of the Australian National Data services. Tom I'd like to welcome you to this interview today and I'd like if you could possibly tell us your perhaps your role and what you would like to associate with and little bit about who you are.

Worthington: Well I am Tom Worthington and we are sitting in my office at the Research Office of Computer Science where I am an Adjunct Lecturer and I teach various Internet things to IT people and engineers and business types. I am also a Computer Consultant and have been around the IT industry for quite a while and a dabbler in portable, handheld, wearable gadgets

Hayes: Excellent. We are in the right place.

Worthington: Yes.

Hayes: Great. So Tom in the context of, rather how did you come in contact with this area, just as a sort of byline. How did you come in contact with or move into this ICTs or IT space?

Worthington: How did I move into the ICT space?

Hayes: As in, have you had any occupations that weren't related to this particular area?

Worthington: Well I got into ICT at High School about forty years ago when the Math teacher I had said we have got a computer at the teachers college, and does any of the students want to try computing? So I used to sit there after hours with a paperclip punching out punch cards, then hand them to the teacher who would send them off and the next week we would get our print out back.

Hayes: Wow!

Worthington: I wanted to be an engineer but I failed French and therefore couldn't be an engineer.

Hayes: Holy heck!

Worthington: Ah well that is maybe coming back into fashion where you need a second language.

Hayes: Indeed.

Worthington: Then I wanted to be an environmental engineer but I was only any good at computing so I have been in the computing business my whole working life.

Hayes: That is important to note in the context of where you sit amongst all the others that I am interviewing.

Worthington: Yes.

Hayes: So, therefore it leads into, are you happy to proceed in this particular order ?
(referring to question list)

Worthington: Yes, I'll just, no no I'll just keep talking. I could tell you about all sorts of things but anyway.

Hayes: Please do. I'm sure, look and please go that way. Whichever way you would like to go. Tom, what does the term 'wearable computers mean to you?

Worthington: Ok, well, I wrote down a whole lot of stuff about it but these are computers which you carry on your body and I think it is important to note that the body does not need

to be a human being. It might be a dog for example and so military dogs and police dogs wear computers and operate in some cases the computers, so it is a computer that you have probably got in your pocket or maybe you have got it on some sort of harness attached to you and really the difference is that you are probably operating it not in the normal way you would use a computer.

Hayes: As in a PC?

Worthington: As in like pushing buttons on a keyboard so the implication is that it is on your person and that it has to interface with you in a different way.

Hayes: Can you perhaps give us some idea of what those ways might be? That a person could interact with a wearable computer?

Worthington: Ah, well the classic version is with my colleagues in the other half of the building where we have the CSIRO's ICT Centre in the other half of the building next to computer science. My colleague Ken Taylor does all sorts of things with mobile phones including attaching them to elite athletes at the Institute of Sport (AIS) switches on the accelerometers and the GPS device in the phone, transmits the data and then tracks the athlete on a map showing how fast they are travelling, how much physical exertion they are making and so on as they peddle around the course or row and tries to determine for less active people such as elderly people who are under medical care. Are they walking? Are they sitting down? Are they running? Are they going up stairs and therefore how much exercise are they getting?

Hayes: So essentially its logging their movements in space and time.

Worthington: Yes and without having them to do anything except turn it on and you might have a device where depending on which direction you point. So I have used some of these augmented reality things where you turn around and look at something it works out what you are looking at and it puts up an appropriate picture in front of you.

Hayes: So essentially it is interfacing what you are experiencing?

Worthington: Yes.

Hayes: Great and that leads into the second question, drilling down a little bit into what do you think the key differences are handheld, wearable and body worn technologies in your opinion? Now I know that it is a triple barrel question there.

Worthington: Well at least it is in a nice progression from at one end hand held is a device that you can easily remove from your person and hold in your hand, wearable is in a piece

of clothing or maybe I dunno in some sort of vest or something and body worn isn't an expression I would normally use but I presume it is intimately attached to you such as, I have had a I've worn a cardiac monitor for 24 hours where I had sensors glued to my body wired to a data logging box somewhere and of course these things would overlap so I suspect most of the wearable devices will be hand held phones. You put it in your pocket.

Hayes: So that means it goes from handheld to wearable?

Worthington: Then it becomes wearable and it will do something useful whilst it is sitting in your pocket.

Hayes: Do you see any trajectory there?

Worthington: Well the body worn would be I guess if you went swimming you might glue your mobile phone to your body, but body worn, I don't know and then you have got the extreme version where you can have an implanted computer such as a pacemaker or a bionic ear.

Hayes: A prosthetic of some description which is a computing device?

Worthington: Yes.

Hayes: Computational device. Excellent. It was interesting to note there the word 'intimately' which is a nice distinction when we talk about wearable to body worn but let's go on.

Worthington: Mind you it is a bit creepy on a bus and watching everyone caress their smartphone and with the handheld device there is still some type of intimate sort of relationship.

Hayes: So the tactility was one of (Steve) Job's legacies in life.

Worthington: The phone is probably vibrating and tickling them in return.

Hayes: No doubt (laughter) visually and in a tactile way. Tom in what ways have you been involved in past, current or proposed use of these technologies? Again, its a triple barrel question.

Worthington: Well over about a decade or two many people have come up and said "hey Tom we are trying out this new gadget. What do you think?" in the Defence Department and in research organisations and all over the place. So I've tried out quite a few gadgets. I've used handheld computers for decades so I'm never far from some little computer. In

fact I used to carry, in fact, you can see in this cupboard (gesturing) a pocket computer used with an acoustic coupled modem to carry around about four times the size of an Apple gadget, so using hand held devices is just normal. So I have done things like doing like broadcasts to the internet from hot air balloons and trains. (interruption)

[Deletion]

Hayes: Note delete prior minute.

Worthington: Yes, from trains, planes, automobiles, aircraft all over the place. So they are just shrunken computers. The only thing you need is a clearer, simpler interface and they are some little gotchas such as, if you are in the hot air balloon and your computer starts going over the side, wireless devices are a bad idea so, if you have got a wire you can reel it back in (laughter). This is speaking from experience.

Hayes: Absolutely. Absolutely.

Worthington: And on a warship what you have to do it is stick your device to the deck with adhesive tape. Gaffa tape to stop it sliding around on the ship but anyway, wearable devices. I've tried head up displays which just make me queasy. I've tried the Olivetti Xerox Active Badge which emitted an infrared beacon and tracked you all around the office all day. This is one of the seminal devices in this area. In reality it didn't work terribly well. The people tended to use it to get into the building, put it in their drawer, close the drawer, take it out in the afternoon to get back out of the building because they did not like being tracked.

Hayes: There is another key term, yes.

Worthington: I gained access to a building simply by following one of these people with one of these badges on into the secure facility. In theory it would activate things for you, turn on screens, even tell you if you needed to speak to the person standing next to you because it had their agenda and it had your agenda.

Hayes: And say you need to talk to them ?

Worthington: But in reality none of that ever happened and largely and with most of these wearable devices it has been that experience.

Hayes: Actual vs perceived? Like there was an idea that it would do something but in actuality it didn't resolve.

Worthington: It just wasn't practical so typically someone would stop me on the stairs and say, look we have got this wonderful thing on this device, look at at this screen and I would say I can vaguely recognise it is a screen but it is so small I can't read it so what use is this and they would go off and spend another million dollars trying to fix improve it

Hayes: To resolve a larger screen?

Worthington: No no, they would just say that he doesn't know what he is talking about so that business about making that interface, making it as simple, clear and not do too many things, basically most of these things have been a waste of time.

Hayes: What do you think the benefits, risks or harm from your perspective Tom could be on the users of this technology?

Worthington: Well there is a privacy, security risk in people being tracked so a lot of these technologies assume you are going to track the person. Thats a problem in that you are tracking them or it is a problem if they find that disturbing and therefore switch the device off and lose the benefit of it which could be dangerous in itself or the device itself could be dangerous physically. The lithium batteries in devices tend to catch fire and if you have got this strapped to yourself or secreted in some inner pocket you may not have caught out that it has caught fire until you are badly burnt, but I think the major problem is distraction such as people driving cars with gadgets disturbing them while they are trying to drive. It is a great problem and if someone invents a technology which recognises the devices in that situation and links it somehow that would be very good so there are dangers and also it is disturbing with a room filled with people not paying attention to whatever they are supposed to be doing because they are all caressing their gadgets.

Hayes: Device types, which is of particular interest to me, was raised recently in a conference regarding the proportion of the people that mentioned that distraction interfered with the receptivity of learning for their learners and therefore it is of large consequence for those educational settings.

Worthington: The benefits if you can deliver a little bit of what they need, when they need it, because the device is with them and it is position aware and it is context aware. Thats great so instead of giving them a huge chunk of information and then having to know a particular time and place of which sentence or chunk that they need, if the device knows what time it is, where they are and what they are doing, just give them what they want That's really good including in education, that can be very useful. I saw an example of the issues on television last night from my former employer. There was a bomb disposal squad in Afghanistan and the robot operator was using a heads up display and a games controller to drive the bomb disposal robot, but the problem was he could only see the image through the headset he had and the supervisor who could see out the window was

frustrated because the operator was concentrating on his little screen on his gadget and could not see what else was happening and drove the robot into a hole.

Hayes: So contextually not aware ?

Worthington: Yes and the two people, because one of them was wearing a wearable gadget, the other person wasn't.

Hayes: The same context so they should have put a heads up display on the officer in charge as well so they could then share the view of what they are doing or got the bloke to open his other eye and see out somehow.. So it meant that the operator was in his own little world?

Worthington: So substantially so in that case, disconnected from the reality of and the immediacy of needing to see more in that situation. We have people everyday who get run over by cars because they are fiddling with their gadgets when they are crossing the road or drive over other people because their fiddling with their gadgets while driving the car

Hayes: That is interesting because we will get down to the longer term effects of this technology on the users. Is there anything else that you might like to add there around perhaps benefits at all of the technology ?

Worthington: Not really. I think it is that context and immediacy that being able to access the information when you need it and it may not be very much go, no, yes, go.

Hayes: Very simple commands.

Worthington: You don't need a huge screen display of stuff you just need to know, is this the right room?

Hayes: At the right time.

Worthington: Yes. Is this accessible or not? That sort of thing.

Hayes: Which leads to this slight switch in the way we are going but what does the term 'location enabled' mean to you in the context of 'location enabled body worn technologies'?

Worthington: Well location is where somebody or something is and you can have a GPS or augmented GPS to a cell tower location device in a gadget which can tell you where you are within several metres which is good enough for a lot of these applications, especially if it knows when you are and what you are supposed to be doing. It could be down to

metres, or centimetres or millimetres in terms of location and then you can ramp it out if you have several devices on the person. You can work out which way up they are, have they got their arms out and they interface with the device by moving around.

Hayes: So it is an interoperability between various technologies and this geographical location?

Worthington: Yes. Assuming location is important.

Hayes: Which issues if any are you aware of that involve this type of networked technology ? By networked we are talk of location.

Worthington: Well, privacy is the obvious issue with that if someone knows where you are all the time.

Hayes: Are you aware of any issues that are being presented in the media or in another context?

Worthington: Well I don't know about the media but it is a privacy issue if the cellular phone system tracks you at all times and then security services or somebody else has access to that information. I guess the extreme case is people in Palestine who can then be targeted and Afghanistan as well targeted for attack based on their location information in their phone.

Hayes: So the phone is tying their identity to a location and that information is then colluded for another service for a specific purpose.

Worthington: Yes, you download the GPS coordinates from the phone into the missile and kill them.

Hayes: So it is tracking and tracing that particular asset. That is a very contemporary example of an issue that might involve that type of networked technology. So what impacts have location enabled body worn technology had or are likely to have upon yourself, your colleagues or perhaps even your entire industry?

Worthington: Very little I think. It is a clever bit of technology but I think it has very little practical use outside of things like transport. I don't see it being something of you know, very widespread use. You just don't need gadgets to know where you are.

Hayes: What about your colleagues or people within your industry?

Worthington: Well it is a great way to get a research grant or get money for a startup company.

Hayes: To tie the basis of the application to location enabled?

Worthington: Yes, well we are going to do location enabled smartphone application with something something something. I just don't think it has much use for anything.

Hayes: What about in terms of your industry itself?

Worthington: Well it is something the industry does. The IT industry and if somebody wants it then yes.

Hayes: So how do you envisage these location enabled body worn technologies being used in the future for educational purpose?

Worthington: I can see almost no application for education. I just can't see how it applies and if you were going to do it I'd worry greatly about the privacy implications for the students.

Hayes: When I say educational purpose, there that is education and training, so in can be in an industry context, military, policing, community.

Worthington: Well there would be some minor use in industry. One of the early applications was provide a head up display for technicians when they are repairing equipment so that they could look at a photocopier or a military aircraft and see the device labelled with all the parts and be given instructions on how to repair it.

Hayes: So it became an instructional augmentation.

Worthington: Yes. It's a form of augmented reality similar to the applications now being described where wave a smartphone over an object on a desk and getting extra information, but really that is a bit of a gimmick. I don't see it as a mainstream educational application.

Hayes: Now if I may talk about a number of technologies that are posed to be or there is a perception that they may have an impact being lifelogging cameras or head worn or body worn cameras.

Worthington: Yes.

Hayes: Do you think that these will have any educational significance?

Worthington: No. No, I think the privacy ethical issues would be huge because you would have to get permission for that not only from the student wearing it but from everybody else they come into contact with and you would have to get copyright clearance for everything they see in their visual field the whole time and for other forms of clearance for things they may look at also at anytime. I don't see what the educational benefit would be. In extreme cases if they then glance at something which they are not allowed to photograph they could be arrested. I mean it's an interesting research application but I don't see them as being of any practical value.

Hayes: For educational purpose?

Worthington: Or for any other purpose.

Hayes: For any other purpose?

Worthington: Well, for any other purpose apart from research as to see what it is that people do everyday that might be interesting for research purposes but for practical anything else t's, you know,.not useful.

Hayes: Not useful. Ok, so do you envisage the longer term effects will be of this technology will be on society? That is throwing it open to all contexts and industries.

Worthington: As the gadgets get smaller what we are going to have to come to terms with are people using them without our knowledge and as they become cheaper might we be required to have them. So a typical application you pick on is people who are sick and elderly, so you say lets equip them all with wearable gadgets so we can check on their health and if they fall over it will be a dead man's switch where if they can't move you can call for help.

Hayes: So are you saying there that it may become a mandatory thing or do you envisage that it might go that way?

Worthington: If you look at the costs of having to have a visit from a nurse everyday it is going to be cheaper and so you say to the people "well it is not mandatory but if you want that service it is not part of the standard fee you will have to pay extra". The problem is that there is a very short step from that to controlling the behaviour of the individual, so you will be checking up on whether is he eating the right things or are they watching the right television or why are they talking to that neighbour and so on. I am a little uncomfortable with all of that.

Hayes: So that is the impact of monitoring?

Worthington: Yes. We have this problem already with students when we use a learning management system as it logs everything they do.

Hayes: That is correct.

Worthington: There is a very great temptation to go and when you think a student is being slack to go and look and see whether they have logged in. Have they ?

Hayes: Their patterns.

Worthington: I think that is improper and so I don't do that but I have to keep saying to people we are not testing them on their behaviour rather on demonstrated competencies and skills.

Hayes: Understandings.

Worthington: Yes, and so I did course where I couldn't read the downloadable electronic documents so I didn't download them and if the tutor looked at that they would say that this person has never read any of the readings, but I might have gone to the library and taken them out on paper and I would have been disadvantaged so you could infer the same sort of thing if you used some of these wearable devices.

Hayes: So it could sway the perception of others in relation to the data that comes from those devices?

Worthington: Yes. e could for example say that students are required to attend lectures so we will equip them all with with gadgets to check where they were in the lecture theatre or not, which would meet the administrative requirements, but would not assist the learning in any way at all.

Hayes: You would be aware of portable devices that allow students to interact and vote and mobile clickers and similar.

Worthington: Yes, so there could be problems for society in all of that, so I think we have to be careful.

Hayes: Indeed. Tom I really appreciate the time and sincerely value that you have contributed to this particular research project that Katina and I are looking at. Do you have any further comments that you may like to make in relation to perhaps the research itself or anything else that you would like to make comment on?

Worthington: Well it is good that people are doing research on these things. I guess the other question would be are you trying it out?

Hayes: As in, that I am an active research participant myself?

Worthington: As in, it's about wearable gadgets. Have you tried wearing gadgets personally as one part of it is the physicality of it all I think.

Hayes: That's correct.

Worthington: Different to sitting in a chair rigidly as you now have a gadget that you can move around with. I think there is something about that and so, no, I think we have covered everything.

Hayes: Well that's great. Well thank you very much Tom. The time is 3:30PM on the 27th November 2012 and I'm now going to cease recording.