

Human-Computer Interaction

Week 9 Lecture 9A

HCI in the developing world (HCI4D)

COMP 3900 & COMP 6390

Semester 2, 2016

Duncan Stevenson

Australian National University

Relevance to you of HCI4D

HCI professionals make a lot of assumptions when they research, design or evaluate interactive systems.

In an HCI4D environment many of these assumptions fail. The reports and publications from researchers in those HCI4D environments are a valuable resource for HCI professionals who want to broaden their own understanding of what they do.

Even if you don't work in this area it will be useful for you to understand the issues involved.

Purpose of this class

We will look at, and discuss, some HCI research projects in various parts of the developing world. We can look at these from an HCI research perspective:

- What is their research question?
- What is their research task and what data did they gather?
- How did they interact with their research participants?
- How did they get involved in this research?
- What did they learn about the process of doing their research in these situations?

Studying these projects can help us challenge our own assumptions and ideas about working in HCI.

Many dimensions to HCI4D

Theoretical

- “Forces that Influence Trust in Technology in the Middle East: Culture, Politics and History”, Ban Al-Ani, David Redmiles

Whether people trust technology brought in from the developed world.

Technical

- Accessing the internet via mobile phones in South Africa (Giteau, Marsden et al. 2010)

Systems

- “Deploying a Medical Record System in Rural Rwanda”, Anokwa, Allen & Parikh.

The authors studied the manual, paper-based information processes in a rural hospital in Rwanda to work out how to install a medical records system.

Many dimensions to HCI4D

Within a community

- Nic Bidwell and colleagues describe a project that used mobile digital technology to help people in rural Eastern Cape Province record and share their stories (Bidwell, Reitmaier et al. 2010)
- Thomas Reitmaier describes his personal experiences with the digital storytelling project (Reitmaier 2011)

Services

- Mobile banking (Chong and Marsden 2008)

Many dimensions to HCI4D

Health-care delivery

- Smartphones for Output-Based Aid (Ho 2008)
Using smart phones to manage Output-Based Aid payment for healthcare services in clinics in western Uganda that treat sexually transmitted diseases.

Overviews

- Challenges in HCI4D (Chetty and Grinter 2007)
- Stories from fieldwork in HCI4D (Anokwa, Smythe et al. 2007)
- HCI4D – past, present and future (Ho, Smythe et al. 2009)
- Designing Interactive Systems for the Developing World - Reflections on User-Centred Design (Maunder et al. 2007)

Examples that we will look at

- Interplay – South Africa
- Mobile internet access – South Africa
- Lightning Runners – Australia
- Literacy - Indonesia
- Fair Trade – Australia, South-East Asia, South America
- Digital story-telling – South Africa
- Healthcare – South Africa
- Trust – Iraq
- Indigenous health care - Australia

Interplay – South Africa

Interplay is Susan Hansen's PhD project.

The play itself runs for 45 minutes. It is based on an actual situation of a widow trying to support herself by selling her late husband's art work. Its purpose is to explain the value of the Internet to Africans living in the townships.

Video (5 minute) explaining Interplay

A few minutes of the actual play.

Mobile Internet access – South Africa

Gitau, S., Marsden & Donner (2010) After Access – Challenges Facing Mobile-Only Internet Users in the Developing World, CHI 2010, p2603-2606

A study of 8 women (members of a livelihoods collective in urban Cape Town) who had no previous experience with PCs or with the internet.

See highlighted sections of the 4-page conference paper.

Lightning Runners - Australia

Lightning Runners – a computer game developed by Digital Eskimo for indigenous children.

“Each year, Heartbeat helps hundreds of Aboriginal kids discover higher education options in health and science, get practical health and fitness knowledge to strengthen their communities, and learn Aboriginal cultural approaches in these fields. After five years of running face to face activities, the Heartbeat team approached Digital Eskimo to create a digital component that children, teachers and parents could engage with in their own time.

We’re a human-centred design studio, and we make things that have a positive social impact, so we jumped at the chance to get involved.”

Lightning Runners - Australia

Lightning Runners – a computer game developed by Digital Eskimo for indigenous children.

Explanation of the design process [we look at this website]:

<https://medium.com/@Deskimo/lightning-runners-275b61a94b1c#.ot83mubcs>

Pre-release trailer

<https://www.youtube.com/watch?v=w5HfM-w8WQ&feature=youtu.be>

Synopsis of the story

<http://heartbeat.westernsydney.edu.au/lightning-runners-story/>

Play the game

<http://heartbeat.westernsydney.edu.au/play-lightning-runners/>

Lightning Runners - Australia

“... we started with a workshop, tracing the connections between the program’s aims and how students, parents and teachers experienced an activity day”

“We also interviewed a range of educators, Aboriginal Elders and other peers in the educational design landscape. Aunty Fran Bodkin, a D’harawal Elder academic involved in the program, taught us how central the gathering of different viewpoints is to Aboriginal approaches to knowledge”

“So we asked the question: **what would the *future* of Aboriginal health knowledge be like?**”

“Towards the end of the Immersion phase we made a field trip to one of the Heartbeat days to understand it first-hand”

Audio and graphical interfaces

Honours project exploring the synergy of audio and graphical interfaces in interfaces for illiterate people.

Alex Simangunsong is planning a user study of his concepts in his home town in Indonesia this summer.

Communication pathways in fair trade supply chains

Taylor, Stevenson & Gedeon (2015) Domain Exploration of ICT Use in Consumer-to-Producer Feedback Loops within the Fair Trade System, Proc OZCHI2015, p231-239

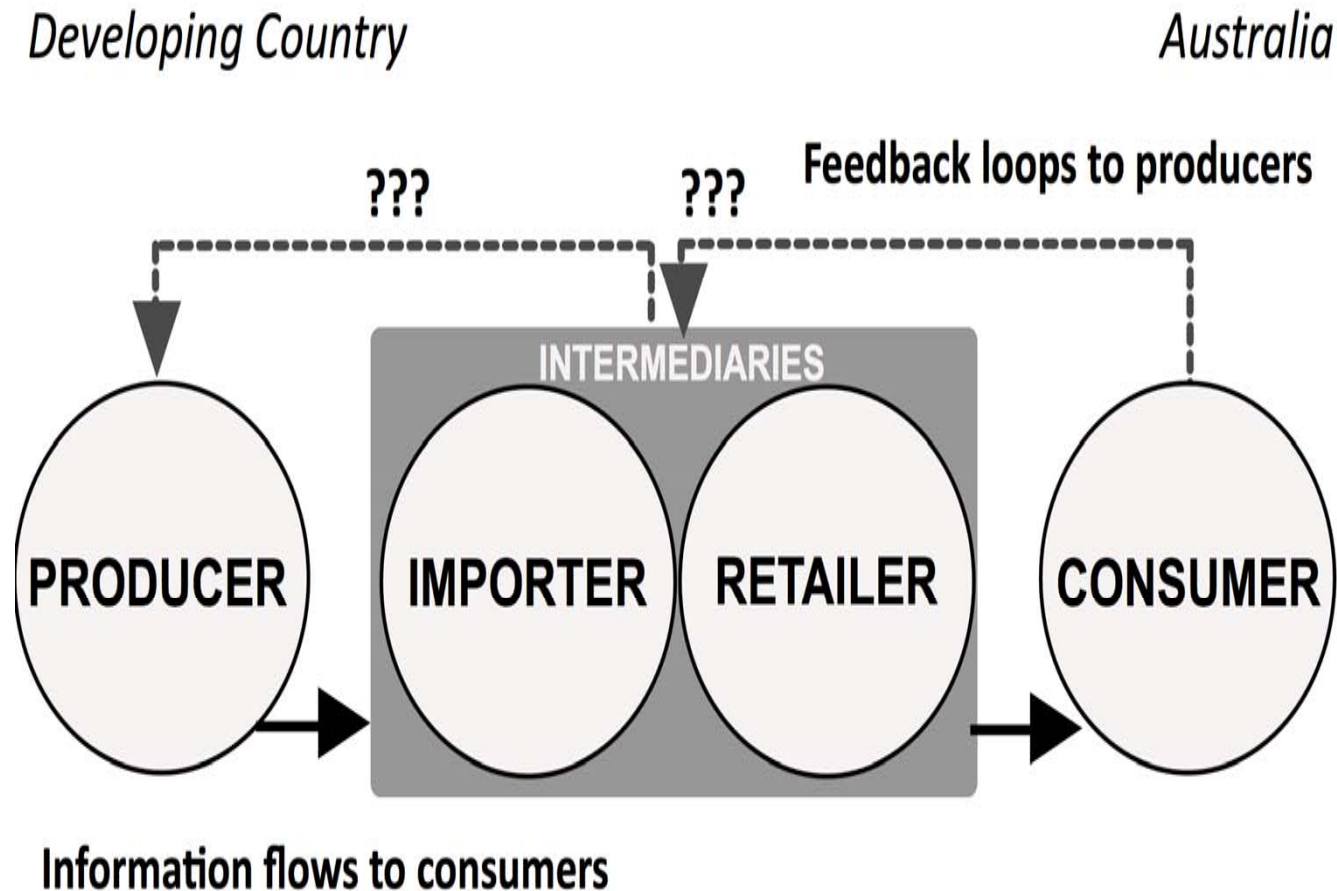
Interviews:

- Consumers (in person)
- Importers (in person, phone, Skype)
- Producer cooperatives (Skype) [Ethics]

Literature review

Review of importers' websites

Information flows in Fair Trade supply chains



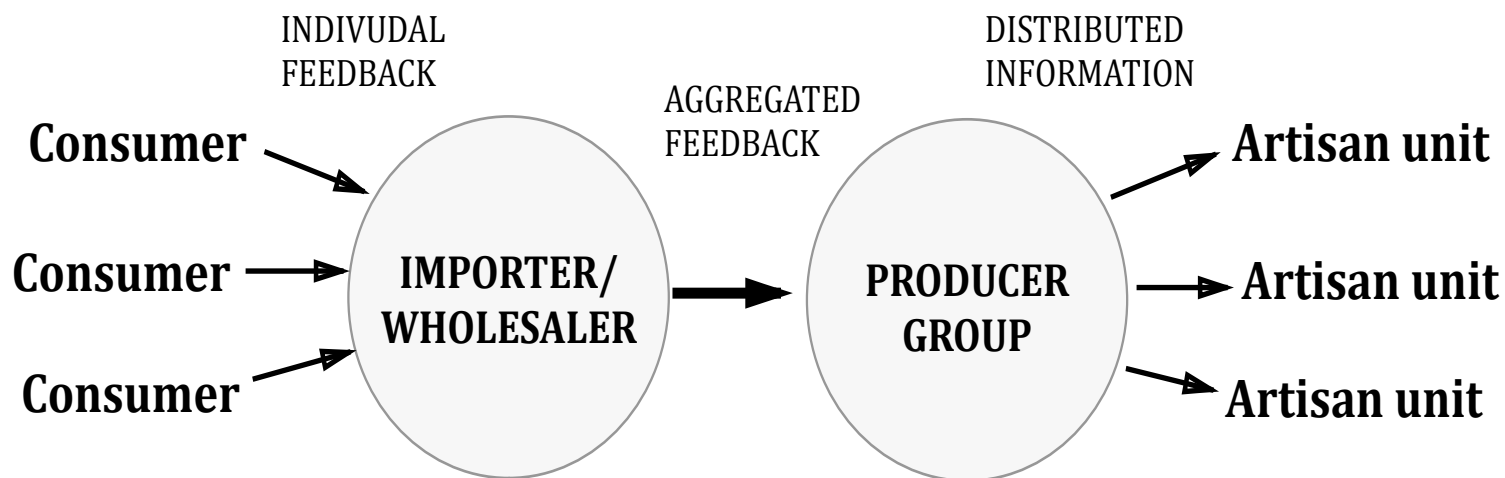
Communication pathways in fair trade supply chains

Research questions:

- What types of feedback do producers actually want and need from consumers about their products?
- What types of feedback are currently offered along fair trade supply chains from consumers and importers to producers, and how is this feedback transformed along the chain?
- How is ICT currently used in fair trade supply chains to facilitate feedback links?
- What are the gaps or limitations in these feedback links that interaction designers in this space may need to consider?

Information flows in Fair Trade supply chains: results

We found that the importers/wholesalers were modifying and aggregating feedback from consumers and that this was important and necessary.



Information flows in Fair Trade supply chains: results

- Each of the groups (consumers, importers, producers, artisans) had a different conceptual model of “feedback”
- The producer groups (and artisans) mostly wanted real business and market intelligence about their products
- The best feedback for the producer groups was a re-order of a product.
- A range of ICT products was used between the producer and importer countries and within the producer countries.

Digital storytelling

Digital story-telling – South Africa

Two papers:

Bidwell, Reitmaier, Marsden & Hansen (2010) Designing with Mobile Digital Storytelling in Rural Africa, CHI 2010, p1593-1602

Reitmaier, T (2011) “She looked deep into our eyes”
Reflections on Cross-Cultural Practice, IKTC 2011, p100-107

Digital storytelling

Bidwell et al discuss developing a “technology probe” [two Nokia mobile phones, one for recording audio, one for taking photos] and then giving it to the people in the village to create their own stories.

They write about the small details that made this work different from the way they would have worked in their own “Western” environment.

“... villagers treat writing as special and sketching and writing materials are not available locally so paper prototyping, typically used to defy rigidity and determinism, is unsuitable.”

Digital storytelling

Thomas Reitmaier writes a different paper, describing his involvement in this project but emphasising his personal experience, how his assumptions and attitudes changed over the three years [of his involvement in this type of research in South Africa]

“I decided that rather than evaluating the usability of our system, the primary goal of the field work should be to find out – in collaboration with the research assistant – how our mobile digital storytelling system would be put into practice. How would villagers interpret digital storytelling?”

Healthcare

Ho, M (2008) Smartphones for Output-Based Aid,
HCI4D workshop 2008

- Private health providers in Uganda typically are paid at the time of service
- Aid agencies typically pay a claim for medical services after the service is delivered
- This is a dis-incentive for private health providers to be involved in aid-agency funded health care

This project created a proposal for integrating smart phones into the existing claims process to create valid claims and pay them promptly

Trust in information technology

Al-Ani, B & Redmiles, D (2008) Forces that Influence Trust in Technology in the Middle East: Culture, Politics and History, CHI2008 workshop: HCI for Community and International Development.

Position papers at workshops are often the beginnings of a line of research.

The authors suggest that “the limited adoption of technology [in the Middle East] can be attributed to the lack of trust”.

- Cultural impediments [to trust]
- Government impediments
- Historical impediments

Indigenous health care in Australia

“Indigenous Australians and Health: The Wombat in the Room”, Oxford University Press, 2013

Edited by Ron Hampton and Maree Toombs

“[This book] should be included in the curricula of ... all students of nursing, medicine and allied health ... whose work will bring them into contact with Aboriginal and Torres Strait Islander people”