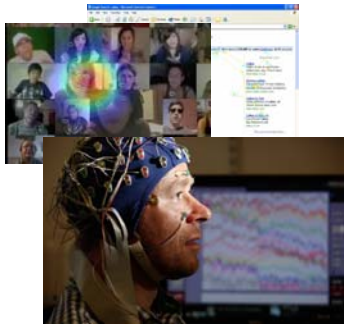
case studies in design informatics

Lecture 15: Reflection



design informatics

NRlabs neuropolitics research

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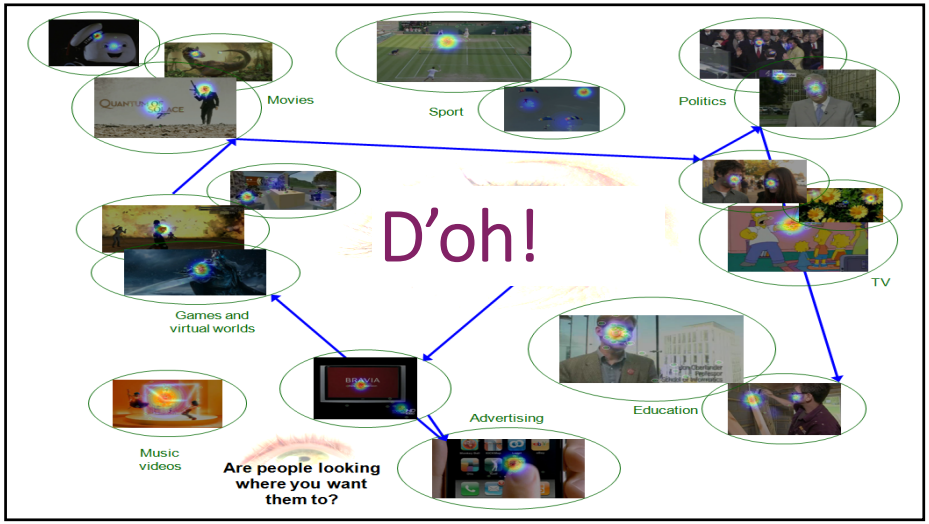
To reflect upon…

- Personalisation or generalisation (individual differences)
- Identity and culture (group differences)
- Intervention and control (e.g. health, security and freedom)
- [Ethics, privacy, consent, etc.]

- Yourself



Personalisation or generalisation?

- Micro or macro design approach?
- Big data:
  - General trends; or
  - Individual targeting?

Wisdom of the crowds?

Collective opinion

BBC “The Code”. Presented by Marcus du Sautoy

Online crowdsourcing

Steps in the visual feedback method

1) Designer shows design
2) Crowd views design
3) Crowd responds with images from browser
4) Images collected
5) Summary generated algorithmically
6) Designer views feedback.

Contributions:
Image banks instead of text; application of summarization to image selections from a crowd; evaluations of the method.

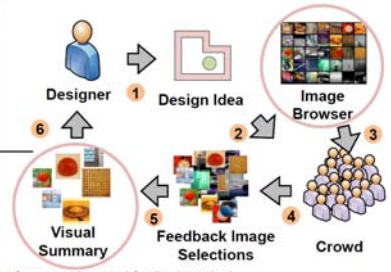


Figure 2: The visual feedback method

David A. Robb, Stefano Padilla, Britta Kalkreuter, and Mike J. Chantler. 2015. Moodsource: Enabling Perceptual and Emotional Feedback from Crowds. In *Proceedings of the 18th ACM Conference Companion on Computer Supported Cooperative Work & Social Computing* (CSCW'15 Companion). ACM, New York, NY, USA, 21-24. DOI=http://dx.doi.org/10.1145/2685553.2702676

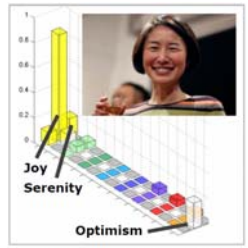


Figure 4: Image ID103, from the emotive browser, with its emotion profile. During classification, the most popular category for this image was ‘joy’. The chart shows the normalized tag frequencies laid out on the emotion model [6].

User / viewer / listener

Feedback Loop

BBC

Personalised narrative navigation

Text adapts to personal journey

This jewel is a brooch and was made by Martin Page. It is also in the Organic style. It was made in 1979. Although Organic style jewels usually have a coarse texture this jewel has smooth surfaces.

Organic style jewels usually draw on natural themes for inspiration; for instance the previous item uses natural pearls. Organic style jewels are usually encrusted with gems; for instance the previous item has silver links encrusted asymetrically with pearls and diamonds.

Other jewels in the style include:

- a Bjorn Weckstrom pendant-necklace
- the previous item
- a Frances Beck finger ring
- a Jacqueline Mina finger ring
- a Kutchinsky finger ring
- an Ernest Blyth finger ring
- a Gillian Packard finger ring
- a John Donald brooch

Cox, R., O'Donnell, M., & Oberlander, J. (1999). Dynamic versus static hypermedia in museum education: an evaluation of ILEX, the intelligent labelling explorer. In S. P. Lajoie & M. Vivet (Eds.), *Artificial Intelligence in Education: Open Learning Environments: New Computational Technologies to Support Learning, Exploration and Collaboration (Vol. 50, pp. 181-188). Amsterdam: I O S Press.*

VR version

Konstantopoulos, S., Androutsopoulos, I., Baltzakis, H., Karkaletsis, V., Matheson, C., Tegos, A., & Trahanias, P. (2008, July). INDIGO: Interaction with personality and dialogue enabled robots. In *18th European Conf. on Artificial Intelligence,(demos), Patras, Greece*.

Robot guide version

Vogiatzis, D., Spyropoulos, C. D., Konstantopoulos, S., Karkaletsis, V., Kasap, Z., Matheson, C., & Deroo, O. (2008, October). An affective robot guide to museums. In *Proceedings of the 4th International Workshop on Human-Computer Conversation, Bellagio, Italy*.

MoodScope

- Infers the mood of its user based on how the smartphone is used.
- Compared to smartphone sensors that measure acceleration, light, and other physical properties, MoodScope is a "sensor" that measures the mental state of the user and provides mood as an important input to context-aware computing.
- Analyzes usage history to act as a sensor of the user's mood.
- API available for developers to create mood-enabled applications.

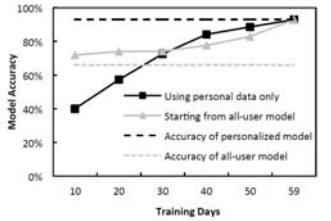


Figure 9: Pleasure training accuracy vs. training data size

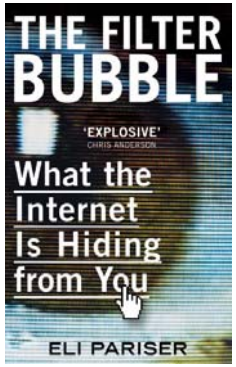
LiKamWa, Robert, Liu, Yunxin, Lane, Nicholas D., & Zhong, Lin (2013). MoodScope: building a mood sensor from smartphone usage patterns. In *Proceeding of the 11th annual international conference on Mobile systems, applications, and services* (MobiSys '13). ACM, New York, NY, USA, 389-402. doi:10.1145/2462456.2464449

In-groups and out-groups

Problems with personalisation

- Automatic system-initiated personalisation removes control from users
  - Pariser's "filter bubble"
  - Autonomy, transparency, identity/privacy

Bozdag, V. E., & Timmermans, J. F. C. (2011). Values in the filter bubble Ethics of Personalization Algorithms in Cloud Computing. In *1st International Workshop on Values in Design – Building Bridges between RE, HCI and Ethics, Lisbon, Portugal, 6 September 2011*.



Solution?

- Restore control via user-initiated customization
  - People tend to like customization, even though it can harm effectiveness (and introduces Sunstein's "echo-chamber")

Ahn, Jae-wook, Brusilovsky, Peter, Grady, Jonathan, He, Daqing, & Syn, Sue Yeon (2007). Open user profiles for adaptive news systems: help or harm?. In *Proceedings of the 16th international conference on World Wide Web* (WWW '07). ACM, New York, NY, USA, 11-20. doi: 10.1145/1242572.1242575

Sundar, S. S., & Marathe, S. S. (2010). Personalization versus customization: the importance of agency, privacy, and power usage. *Human Communication Research, 36(3), 30.* doi: 10.1111/j.1468-2958.2010.01377.x.

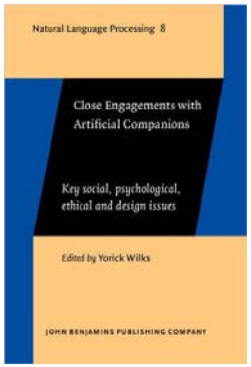
Tintarev, N., & Masthoff, J. (2012). Evaluating the effectiveness of explanations for recommender systems: Methodological issues and empirical studies on the impact of personalization. *User Modeling and User-Adapted Interaction, 22(4-5), 399-439.* doi: 10.1007/s11257-011-9117-5.

Problems with personality

- Automatic system personality encourages an erroneous view of systems:
  - As "carers"
  - As "full moral agents"

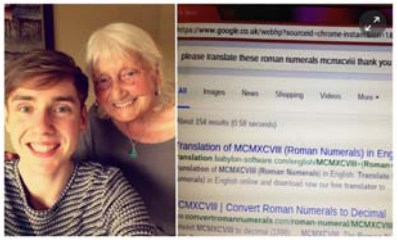
Bryson, J. J. (2010). Robots should be slaves. In Wilks, Y., editor, Close Engagements with Artificial Companions, pages 63–74. John Benjamins Publishing Company, Amsterdam.

- Possible solutions:
  - De-personify – remove system/tutor model?
    - E.g. average language choices, average content selection
  - Re-personify – replace system model with the "wrong" one?
    - E.g. emergency back-up personality
  - Reduce social presence
    - Close eyes, remove face, remove voice …
  - Uncanny valley?



Manners maketh Nan: Google praises 86-year-old for polite internet searches

Grandson says May Ashworth believed she was writing to a person at Google HQ when typing in search queries



Ben John and his grandmother after a tweet about her use of Google went viral. Photograph: Ben Jones/Twitter

Google has thanked an 86-year-old British woman who proved old-fashioned manners have a place in the modern world when she typed "please" and "thank you" in an internet search.

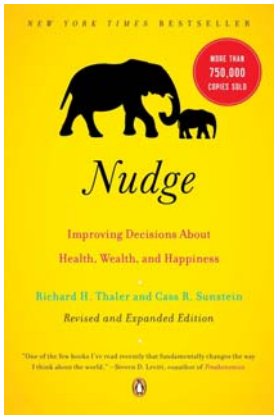
"I asked my nan why she used 'please' and 'thank you' and it seemed she thinks that there is someone – a physical person – at Google's headquarters who looks after the searches.

"She thought that by being polite and using her manners, the search would be quicker," he said.

Source: https://www.theguardian.com/uk-news/2016/jun/16/grandmother-nan-google-praises-search-thank-you-manners-polite

Nudge

- Subtle intervention to alter human behaviour
  - Good or bad – who decides?



Data visualisation nudge

Calorie count
https://www.instagram.com/caloriebrands/

Unhealthy colour

- Commissioned by the Australian government, research agency GfK identified what it says is the most disliked colour in the world:
- Pantone 448C, also called "opaque couché" - a dark brown which focus groups said reminded them of 'death', 'dirt' and 'tar'.

Why? To enhance disgust.

Creating a successful health nudge

1. Specifically define the behaviour or choice that you are trying to influence.
2. People who need a nudge to pick the right health plan, exercise, take their medicines, or donate their organs make lots of health choices every day, but nudges at this broad level don't produce the same results as a targeted nudge.
   - Nudging people to "exercise regularly" is too broad to be meaningful.
3. Nudging people to take the stairs instead of the elevator, go for a walk after lunch instead of going back to sit at their desks, or committing to go to a favorite exercise class three time a week targets a specific decision point that will be easier to influence with a nudge.
4. Focus on the decision point rather than big goals.

[source: www.changemakers.com/stories/how-nudge]

Creating a successful health nudge

- Next, think about the type of decision you are trying to influence.
- Thaler and Sunstein point out that there are certain types of decisions that respond to nudges well. They are:

1. **Delayed Consequences Decisions**—where the impact of the decision (or non-decision) and its consequence are separated in time (such as smoking now and the risk of lung cancer later).
2. **Complex Decisions**—where there are many variables to consider in the decision, such as choosing the right health care insurance.
3. **Overwhelming Decisions**—when there are too many choices, or the choices are unfamiliar, such as which exercise routine is best for you.
4. **Low Feedback Decisions**—where there is no obvious feedback from the decision, such as taking vitamins everyday
5. **Infrequent Decisions**—where the decision points come up very rarely, such as choosing between surgeries, medicines or other treatment options for a diagnosis.

[source: www.changemakers.com/stories/how-nudge]

Creating a successful health nudge

Four flavours:

1. Default rule changes are best for situations when not choosing is common or has a big impact.
   - Smartly setting the default for people who neglect to choose a health care plan … will have far-reaching impact.
2. Environmental reminders can be anything that reminds people of what's important—like a checklist or a poster.
   - These are best for routine decisions, like taking medication …
3. Designed decisions place alternatives in front of people at the moment in which they need to make a choice.
   - This flavor of nudging is best for decisions between two or more alternatives, like treatment plans for a diagnosis …
4. Processes and programs that help people remember their commitments are best for decisions where it's challenging to continuously keep on track,
   - like eating right, exercising or quitting smoking.

[source: www.changemakers.com/stories/how-nudge]

Creating a successful health nudge

- Think about how to promote the nudge.
- Lots of big ideas and little encouragements fall by the wayside because these ideas don't stick with us, or they get crowded out by all the other messages we are exposed to everyday.
- How will you make the health nudge public and get people thinking and talking about it?
  - Out of sight equals out of mind.
- When designing a nudge, remember that you're following the middle way - don't want to take away choices, but don't want to force a particular choice either.
- You're designing for people.
  - Rational, logical, predictable robots are easy to design for.
  - Understanding and respecting their right to choose is the first principle of nudging.
  - Accepting that people make mistakes and need some help is the last.

[source: www.changemakers.com/stories/how-nudge]

Nudge Rules: Do

1. Specifically define the behaviour that you are trying to influence.
2. Make a nudge that respects people's right to choose [permit poor choices].
3. Take the perspective of the decider—which choice is best according to them?
4. Simplify the number of alternatives and reduce the complexity of the choices.
5. Make it easier to make a choice.
6. Make the nudge public.
7. Take advantage of existing social norms and community practices to make your nudge stick.
8. When possible, set the default for the best decision.
9. [When] you create a decision point … think about how your influence will enter the decision and design for it.

[source: www.changemakers.com/stories/how-nudge]

Nudge Rules: Don't

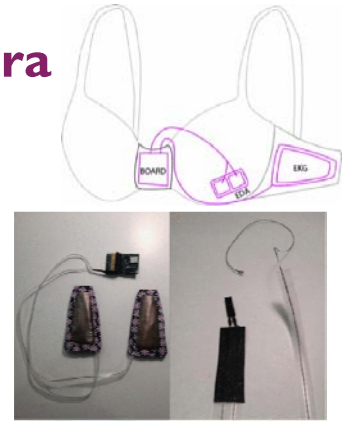
1. Don't take away all the choices but one.
2. Don't force people to make choices without creating room for them to reflect on the decision.
3. Don't expect that everyone will understand all the aspects of the decision.
4. Don't give people too many choices.
5. Don't confuse an incentive and a nudge.
6. Don't underestimate the power of the small details.
7. Don't expect people will make error-free decisions in the environment you create.
8. Don't set the default position without a good deal of careful research and consideration.
9. Don't feel constrained by technological limits. If a technology does not yet exist, part of your nudge can be the creation of it.

[source: www.changemakers.com/stories/how-nudge]

Wearables? Smart Bra

Carroll, E. A., Czerwinski, M., Roseway, A., Kapoor, A., Johns, P., Rowan, K., et al. (2013). Food and mood: just-in-time support for emotional eating *2013 Humaine Association Conference on Affective Computing and Intelligent Interaction (pp. 252-257). New York: IEEE.*

- Focused on building a persuasive system for behaviour modification around emotional eating.
- Designed a novel, wearable sensor system for detecting emotions using a machine learning approach.
- Tested the sensing system and found positive results for emotion detection in this mobile, wearable system.



EKG sensor pads, connected to a GRASP board (A); Conductive thread insulated by scotch tape (B)

The reflection cycle

[Extension of points made by Jon Oberlander last year.]

- Reflect on learning content, and identify points of connection between the case studies.
- Reflect on learning process, and identify points for improvement in personal performance.
- Reflect on teamwork.
- Reflect on leadership [particularly CDI2].
- Identify skills shared and transferred.
- Identify additional skills to be developed, especially at the professional level.

Why reflect?

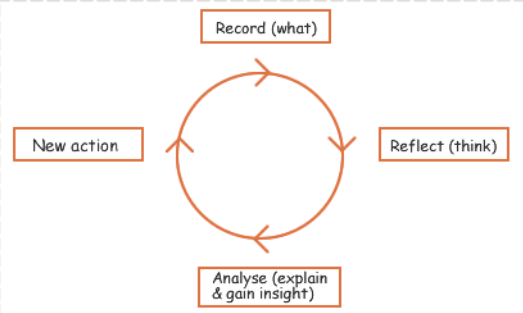
"It is not sufficient simply to have an experience in order to learn. Without reflecting upon this experience it may quickly be forgotten, or its learning potential lost. It is from the feelings and thoughts emerging from this reflection that generalisations or concepts can be generated. And it is generalisations that allow new situations to be tackled effectively."

Gibbs, G. (1988) *Learning by Doing. A Guide to Teaching and Learning Methods*. FEU

Reflective writing provides an opportunity for you to gain further insights from your work through deeper reflection on your experiences, and through further consideration of other perspectives from people and theory. Through reflection we can we can deepen the learning from work.

[Source: http://www.exeter.ac.uk/fch/work-experience/reflective-writing-guidance.pdf]

Reflection cycle



[Source: https://www.dlsweb.rmit.edu.au/lsu/content/2_AssessmentTasks/assess_tuts/reflective%20journal_LL/cycle.html]