Choice Support as a Component of Persuasive Technology

Description of a Tutorial at Persuasive Technology 2017

Anthony Jameson

Abstract This half-day tutorial offers researchers, practitioners, and students in the persuasive technology field a deep understanding of a theme introduced in my keynote talk ([3]) at the 2013 Persuasive Technology conference in Sydney: People in the persuasive technology field should be able not only to use technology to *persuade* people to do particular things but also to help people *choose for themselves*. The tutorial will clarify this distinction, motivate the central claim, and introduce the participants to the scientific knowledge and thought patterns that they need in order to be able to combine persuasion with choice support.

1 Persuasion vs. Choice Support

With *persuasion*, people are encouraged via any of a variety of means to choose particular behaviors or attitudes that are known in advance to the persuading agent. An agent that offers *choice support* is likewise attempting to influence a person's choices, but not in a particular predetermined direction. Instead, the choice support agent aims to help a person make a choice that is likely to work well for him or her, whatever particular option the person may end up choosing. Consider as an example the difference between (a) persuading someone to exercise more and (b) helping someone to figure out what particular forms of exercise he or she finds most rewarding.

As this example shows, persuasion and choice support can often be naturally and effectively combined: Helping someone to find a form of exercise that works well for them can be an effective part of an effort to persuade him or her to get more exercise. Conversely, helping people to choose effectively for themselves can involve

Anthony Jameson
German Research Center for Artificial Intelligence (DFKI)
e-mail: jameson@dfki.de

things like persuading them to apply effective procedures for making a choice and to actually execute the action that they have chosen.

More generally, strategies for persuasion can be systematically transformed into strategies for choice support through application of a few general principles. And in the other direction, strategies for choice support can usually be applied in a (more or less subtly) biased way that turns them into strategies for persuasion.

My Persuasive Technology 2013 keynote ([3]) summarized the relationship by saying that persuasion and choice support are like the black and white keys of a piano: You can play nice melodies on the white keys or on the black keys, but you can play more effectively if you use all of the keys.

2 Why This Tutorial Is Needed

Traditionally, the fields of persuasion and choice support have unfortunately been largely disjoint. Only a rather small fraction of the scientific research and literature taken into account by the one field is also taken into account by the other. This failure to see the big picture represents a big missed opportunity for both fields.

There is a practical reason why it has not been easy for persuasive technology researchers and practitioners to make use of research relevant to human choice and choice support: The relevant research is vast, complicated, and in many ways confusing. It includes a variety of perspectives that at first glance seem mutually incompatible and whose research literatures are largely disjoint.

3 An Integrative Conception of Choice Architecture

In an effort to overcome this practical problem, I have spent much of the past 8 years working out a usable synthesis of research on human choice and choice support that is suitable for understanding and application by those who are engaged in research or practice on interactive computing technology—including, of course, people in the persuasive technology field. The diverse perspectives on how people make choices in everyday life are combined into the integrated ASPECT model, which distinguishes six *choice patterns* (listed in the first part of Table 1) that people use alternately or in combination. Similarly, the complementary ways in which it is possible to support people when they make choices are synthesized in terms of the ARCADE choice support strategies (second part of Table 1), which can likewise be used by people or systems alternately or together. This combination of the ASPECT and ARCADE models yields a general way of approaching problems of choice support: Consider which of the six ASPECT choice patterns people might be applying in the situation in which you are trying to help them make better choices; and anticipate specific difficulties that can arise in applying these choice patterns in this situation. Then consider which of the ARCADE choice support strategies can be ap-

plied to overcome these difficulties. This analytical method regularly generates new ideas about how to help people make better choices. These ideas need to be tested and adapted in particular application situations, but their grounding in theoretical and empirical research creates good conditions for this practical application.

Table 1 Brief explanations of the ASPECT choice patterns and the ARCADE choice support strategies.

ASPECT Choice Patterns

Consequence–Based	Anticipate and evaluate the consequences of one or more options.
Trial–and–Error–Based	Try out one or more options to see what works well for you.
Policy–Based	Apply a general policy for this type of choice.
Experience–Based	Do what has worked well for you in the past.
Socially Based	Do what relevant other people do, expect, or recommend.
Attribute–Based	Evaluate options in terms of their attributes.

ARCADE Choice Support Strategies

Access Information and Experience	Help the chooser C to gain access to information and experience that is relevant to the current choice.
Represent the Choice Situation	Influence the way in which C perceives the choice situation in such a way that C's processing is facilitated.
Combine and Compute	Process available information computationally in a way that facilitates one or more processing steps of C.
Advise About Processing	Encourage C, implicitly or explicitly, to apply a particular (part of a) choice pattern in a particular way.
Design the Domain	Change the basic reality about which C is choosing so as to make the choice problem easier.
Evaluate on Behalf of the Chooser	Take over from C one or more steps in the processing that involve evaluation or choice among alternatives.

This perspective has been expounded in detail in the book-length monograph *Choice Architecture for Human-Computer Interaction* ([4]) which provides the conceptual framework for my practically and commercially oriented work. This perspective has also been applied in recent handbook chapters to the domains of recommender systems ([8]) and multimodal systems ([6]), respectively.

4 Content of the Tutorial

The tutorial will show participants how to exploit this perspective within the persuasive technology field.

Specifically, for each of the six ASPECT choice patterns, one or more examples relevant to the persuasive technology field will be considered (e.g., the above-mentioned problem of helping people to choose forms of exercise that work well for them). We will then discuss how ARCADE choice support strategies can be applied to the choice pattern in question; whether and how the same choice support ideas can be adapted for persuasive purposes; and how persuasive techniques can contribute to the choice support.

Participants will be encouraged to contribute actively to discussion of the examples on the basis of their experience with the problems that they face in their own work—a procedure that I have used extensively in my previous tutorials (see below). After the tutorial, participants will be able to deepen their knowledge to any extent that they like by consulting the monograph *Choice Architecture for Human-Computer Interaction* and optionally by pursuing the primary references cited in that work.

5 Qualifications of the Presenter

As can be seen from my web homepage,[1] I have almost four decades of experience in research on interactive intelligent systems, and I have often presented influential theoretical syntheses like the one offered in this tutorial, including ones in the areas of systems that adapt to their users ([2], [5]); group recommender systems ([7]); and ubiquitous computing ([1]). My experience as founding coeditor-in-chief of the *ACM Transactions on Interactive Intelligent Systems* from 2009–2016 has helped to ensure a broad understanding of relevant systems. In parallel, I have been engaged in practical work directing research and development projects and consulting for industry. For example, from 2014 through 2016 I directed a multinational, multi-million-euro project which produced technology that won the 2015 Semantic Web Challenge and is currently being commercialized.

I also have extensive experience in teaching tutorials like the one offered here. For example my last three tutorials in the CHI conference series, which were related to the topic covered here, received consistently above-average evaluations, and the tutorial material was used in 2013 by the tutorial organizers as a positive example for other CHI tutorial presenters.

---

[1] http://dfki.de/ jameson/

References

1. A. Jameson. Modeling both the context and the user. *Personal and Ubiquitous Computing*, 5(1):29–33, 2001.
2. A. Jameson. Adaptive interfaces and agents. In A. Sears and J. A. Jacko, editors, *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications*, pages 433–458. CRC Press, Boca Raton, FL, 2nd edition edition, 2008.
3. A. Jameson. How can persuasive technology help people choose for themselves? In S. Berkovsky and J. Freyne, editors, *Proceedings of Persuasive 2013*. Springer, Berlin, 2013. Abstract of a keynote address.
4. A. Jameson, B. Berendt, S. Gabrielli, C. Gena, F. Cena, F. Vernero, and K. Reinecke. Choice architecture for human-computer interaction. *Foundations and Trends in Human-Computer Interaction*, 7(1–2):1–235, 2014.
5. A. Jameson and K. Z. Gajos. Systems that adapt to their users. In J. A. Jacko, editor, *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications*. CRC Press, Boca Raton, FL, 3rd edition edition, 2012.
6. A. Jameson and P. O. Kristensson. Understanding and supporting modality choices. In S. Oviatt, B. Schuller, P. Cohen, and D. Sonntag, editors, *Handbook of Multimodal-Multisensor Interfaces*. Morgan & Claypool, Williston, VT, U.S.A., 2017. In press.
7. A. Jameson and B. Smyth. Recommendation to groups. In P. Brusilovsky, A. Kobsa, and W. Nejdl, editors, *The Adaptive Web: Methods and Strategies of Web Personalization*, pages 596–627. Springer, Berlin, 2007.
8. A. Jameson, M. Willemsen, A. Felfernig, M. de Gemmis, P. Lops, G. Semeraro, and L. Chen. Human decision making and recommender systems. In F. Ricci, L. Rokach, and B. Shapira, editors, *Recommender Systems Handbook*. Springer, Berlin, 2nd edition edition, 2015.