Baroque Technology

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Abstract. As new interactive systems evolve, they frequently hit a sweet spot: A few new tricks to learn, and users gets tremendous benefits, simplifying their lives. But beyond that lies the dark phase of baroque technology: increasing complexity with little payoff. We will look at examples for both sweet-spot and baroque interactive technologies, from GPS devices to window systems, find out how to identify each kind, and become better interaction designers in the process.

1 Introduction

Think back to two recent events in your daily life: First, when was the last time you came across a new interactive electronic device or service that truly simplified your life, making things easier than before by removing or cutting down on an unnecessary task?

Second, when was the last time you used an interactive system and felt that, actually, it was making your life more complicated, requiring complicated steps without providing the simplification of your task that you had expected?

The first kind of system was a device in the sweet spot of its evolution. The second one was likely already in its baroque phase. The rest of this article will explain the difference.

2 Why "Device"?

I mostly talk about consumer devices here, because they have a broad user base so you can probably relate to my examples. But the principle applies equally to desktop productivity applications, ticketing machines, web shops, and many other interactive technologies and services we encounter on a daily basis. So when I say "device" in the remainder of this article, please interpret it in this broader sense, and see if you can come up with additional examples from these other domains from your own experience.

3 The Phases of Technology Adoption

In [2], David Liddle describes three phases of adoption for consumer technology: An initial enthusiast phase that only invites "hackers" to exploit the new

W. Nejdl et al. (Eds.): AH 2008, LNCS 5149, pp. 1–5, 2008.

technology, a second professional phase in which it becomes mature enough to let professionals work with it to help their business, and a third consumer phase in which it becomes useable, cheap, and attractive enough for users to enjoy in their daily lives.

4 The Sweet Spot

Somewhere in the early consumer stage, products can hit their sweet spot: The device offers a new kind of support that so fundamentally simplifies everyday routines that it experiences an explosive growth in adoption by consumers. The system is lean, it does not offer unnecessary extras, its design just concentrates on delivering that new functionality as unobtrusively and conveniently as possible. After a little while, we even start using it without really noticing it, because it works so fluently and unobtrusively that it hardly becomes our "locus of attention" [3] anymore.

Not every product reaches this spot of course. Most will either not be of enough utility in their core functionality to warrant the additional hassle of integrating them into consumer's lives at a large scale, or they combine so many things in one that, despite a lot of added uses, their usability also suffers too much. In both cases they are not making it beyond Saffo's "threshold of indignation" [4]. This threshold claims that, for the general user population, the willingness to put effort into using an artifact will only be as high as its perceived usefulness for the respective kind of user.

Some indicators that the sweet spot has been reached include that a new market segment of consumer devices establishes itself; that non-technical users quickly understand and may even evangelize the usefulness of the new device category; and that social behavior around the device and its tasks changes.

5 The Baroque Stage

Unfortunately, development usually does not stop at the sweet spot (if it ever reaches it). Assuming that to compete in the marketplace, products need to continue to grow in their amount of features, companies keep adding extra "stuff" to their sweet-spot product. And consumers who had their lives simplifies by a sweet-spot device, will buy the upgrades, expecting similar additional life-simplifying effects.

Unfortunately, the opposite happens: The added features, often functions that already existed elswhere before, lead to a much more complicated user interface, but provide little added benefit compared to the original sweet-spot idea.

This means we need to add a fourth stage, the baroque phase, to Liddle's three-stage model of technology adoption (figure 1).

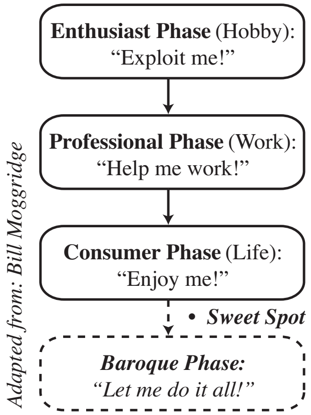

Fig. 1. Four phases of technology adoption

6 Examples

The best way to understand this model is by looking at some examples. In-car navigation systems have been attempted ever since GPS became commercially available, but were not for the faint-of-heart in their beginnings. After several years, logistics companies began equipping their fleet of trucks or cars with the technology, but only since the introduction of all-in-one, simple navigation systems such as TomTom’s and Garmin’s devices, the technology has spread like a virus into the consumer market.

Fig. 2. TomTom GO 910 Car Navigation System. Courtesy of TomTom.

And the effects are noticeable: You stop asking people for directions when planning to visit them; an address is enough (better, in fact). You may start to un-learn how to get from A to B because your GPS tells you about each required turn. Following manual driving directions, and the ensuing high stress levels during driving, become a hassle quickly forgotten.

But the latest slew of GPS devices keeps adding features, from photo slide shows to messaging with buddies, bringing the in-car GPS into the baroque phase.

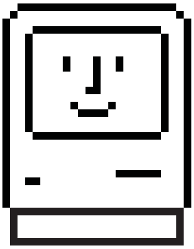

Fig. 3. Happy Mac. Design: Susan Kare

Another example are cell phones that started as a high-tech device for technologists, soon became an indispensable tool in the form of car phones for entrepreneurs on the move, and in the 90s had their breakthrough as network coverage, prices, and device size and battery life met to create a sweet spot with an astonishingly quick adoption rate in many countries. Call anybody, or be called by anybody, wherever you are! The effects are also clearly visible in our society. But the latest all-in-one communicators and smart phones are squarely in the baroque phase of the traditional mobile phone.

Other examples include home DSL flatrates (a sweet spot), modern microwaves (extremely baroque), or even the graphical user interface metaphor of the desktop (with its sweet spot in the 80s).

7 Solutions

Sometimes, consumers simply backpedal to the sweet spot - take the microwave ovens that still only have two dials, go bing at the end, and sell extremely well.

Another solution is to innovate out of the baroque phase by rethinking the device, its form factor and interaction metaphors. Apple's iPhone is a good example.

But some will argue that the baroque phase is actually essential, because its pool of complex, hard-to-use devices is actually the enthusiast phase of the next generation of devices: the primordial soup out of which the next technology will arise and go through the same cycle again.

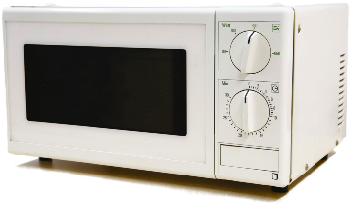

Fig. 4. Microwave. Photo: Thorsten Karrer.

Fig. 5. Apple iPhone. Courtesy of Apple.

Whether that is always true or not, it certainly pays off to look for more sweet spots in our research and development of interactive systems, products and services, instead of spending time on baroque extensions. And one of the keys to hitting this sweet spot lies in Human-Computer Interaction: Getting the interface right, supporting a task in an innovative and simplifying, enjoyable way.

Acknowledgements

A more extensive discussion of this topic can be found in [1] or at http://hci.rwth-aachen.de/sweetspot. This work was funded by the German B-IT Foundation.

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