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Expert Player Interface Design: Preserving the Flow

Charles Perin
INRIA, Univ. Paris-Sud &
CNRS-LIMSI
Bat. 660, Univ. Paris-Sud
91405 Orsay, France
charles.perin@inria.fr

Charles Perin is a finishing PhD student in the INRIA team AVIZ, Univ. Paris-Sud & CNRS-LIMSI. He is supervised by Jean-Daniel Fekete and Frédéric Vernier.
He has once been a hardcore gamer and stopped 5 years ago to dedicate to research the time he ~~waisted~~ spent playing video games. And actually, Only the waking hours may differ—or even invert.
Today, he is PhD student in Information Visualization and has special interests for Interaction techniques and domain-specific applications. He has published and presented at conferences such as VIS and CHI. While not being in the field of Games research, he learnt several lessons from his dark years, the application of which goes beyond video games and may be of general benefit to both game and user interface designs.

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Abstract
The theory of flow is prominent in game design. However, designing *the* user interface that will satisfy all players and preserve their state of flow is impossible for complex, multi-class oriented games such as World of Warcraft. Based on how players re-arrange the interface according to their own level of expertise, I propose an extension to the flow model by correlating interface complexity with both user experience and user expertise.

Author Keywords
MMOG, User Interface, User Expertise, Flow

ACM Classification Keywords
H.5.m [Information interfaces and presentation (e.g., HCI)]: User Interfaces.

Introduction
This paper is a personal retrospection on my past activity as a World of Warcraft (WoW) player and my involvement in the WoW community. Wow is a Massively Multiplayer Online Role-Playing Game (MMORPG) created by Blizzard Entertainment. With over seven million subscribers as of July 2013 [1]—and a maximum of 12 millions in 2010—WoW remains the world's most

[1] http://en.wikipedia.org/wiki/World_of_Warcraft

Figure 1: Default bag interface.

Figure 2: Advanced bag interface.

popular MMORPG. This highly-addictive multi-player game is the true evidence that the degree of usage over time—especially of a product which is voluntarily used—is related to the quality of user experience [5].

Context

WoW first provides a simple User Interface (UI) that beginners can easily learn. However, the more a player gains experience, the more he needs advanced features. Instead of designing a (possibly infinite) set of alternative interfaces, the developers had the great idea to let their players build add-ons [2] (plugins). Thus, by giving players the freedom to change their UI according to their needs, the developers have managed to bypass the complexity of designing a generic interface that would suit each level of player expertise. This strategy is particularly valuable for WoW, because the numbers of character profiles—involving different requirements for the UI—and player skills are huge. For example, a *healer* needs to see the allies within his group while a *spell caster* needs to see the threat he generates upon enemies.

Thousands of addons exist and some are used by millions of players. The main purpose of addons is to make use of dedicated advanced visualizations to provide additional visual feedback. Examples are compact representations that get rid of unhelpful details (*e. g.,* remove inefficient layouts, see Figure 1 vs Figure 2); color-coded animated text during combats (Figure 3); bar charts to visualize the threat generated by the characters within the group (Figure 4); and advanced charts to visualize cooldowns and spell availabilities (Figure 5).

[2] http://www.wowinterface.com/addons.php

User Interface Design

Action Bar Mods are important addons, allowing one to tweak the UI toolbars. As the expertise of the player grows, so does his need for more spells, actions, and commands; thus so does the cluttering of his UI.

keystroke-Level

Since Card et al. introduced the Keystroke-Level Model [2], studies have shown that expert interfaces provide performance advantages [8]. However, their success in practice has been limited, and often users fail to switch to expert interface mods [3]. Specific strategies must then be employed to encourage the user to switch to expert mode [9], using shortcuts instead of mouse and icons. ExposeHK [6] displays overlays hotkeys on associated commands when a modifier key is pressed, and actually WoW already makes use of this technique except that the command overlays are permanent.

While there has been considerable research into interfaces for either novices or experts, there has been relatively little work on the transition to expertise. In the context of WoW, I observed the following player behavior transformations as expertise increases:

1. Using the mouse to interact both with the virtual world and the UI elements.
2. Progressively defining and learning keystroke mappings to trigger commands.
3. Finally interacting with the virtual world using the mouse (*e. g.,* camera viewport, targetting), and with the UI elements using mainly the keyboard.

When reaching the last stage of the transformation, the player only needs visual feedback for specific actions, essentially consisting of cooldowns and alerts. Displaying the commands is not mandatory anymore

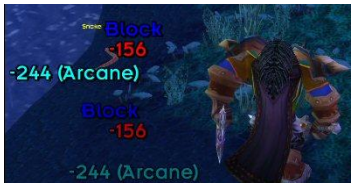

Figure 3: Scrolling Combat Text addon.

Figure 4: Omen Threat Meter addon.

Figure 5: Quartz addon.

and conversely, featuring unused commands on the screen may break the player's state of *flow*.

Flow Preservation

Flow is one of the main reasons why people play video games [7] and is applied to game design [10]. Flow is *"the condition in which people are so involved in an activity that nothing else seems to matter; [...] people will do it even at great cost, for the sheer sake of doing it"* [4]. Balancing challenge and skills is key to flow. Bederson [1] applies the theory of flow to interface design. He considers two types of users: novice and expert. Based on my knowledge and observations, I introduce the *advanced* user as an important and mandatory intermediate stage in the continuum from novice to expert.

I propose an extension to the model of flow preservation [4] by correlating interface complexity with user experience and expertise. The interface complexity first increases with the skills of the user before being reduced asymptotically to his expertise (Figure 6).

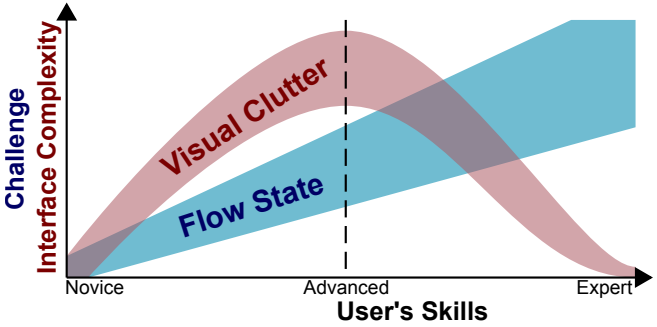

Figure 6: Interface complexity continuum, from novice to expert user. Adapted from [4].

An online article[3] perfectly illustrates the advanced level. The blogger claims that a novice UI is clean (Figure 8(a)), while an expert UI is full of addons (Figure 8(b)). Although such assertion is common, later on the player will change his mind and reject his own claim. Indeed, he will realize that the so-called expert UI is actually the *advanced* UI, an "on steroids" interface. Ultimately, the advanced player will progressively go back to a clean, uncluttered interface that is an expert UI (Figure 8(c)). Doing so, he will unintentionally apply this famous principle from industrial design Dieter Rams [4]: *"Good design is as little design as possible - Less, but better because it concentrates on the essential aspects, and the products are not burdened with non-essentials. Back to purity, back to simplicity."*

Indeed, by unconsciously staying in the state of flow—by optimizing his experience—the player performs a continuous transition from novice to advanced interface, and in some cases from advanced to expert interface:

1. He learns the **novice** UI to increase his UI literacy, until he feels limited due to his increasing skills.
2. He Progressively adds complexity to his UI to satisfy his new needs until reaching the **advanced** UI. Core gamers (less addicted than hardcore gamers) usually stop at this advanced level.
3. The hardcore gamer later on realizes that his UI is "burdened with non-essentials". Then, he progressively goes "back to purity, back to simplicity" by simplifying his UI. He removes all visual features which are not essential; and the more expertise he acquires, the less features remain essential/visible in the **expert** UI.

[3] http://www.elgamificator.com/gamification-punchline-semaine-3
[4] https://www.vitsoe.com/gb/about/good-design

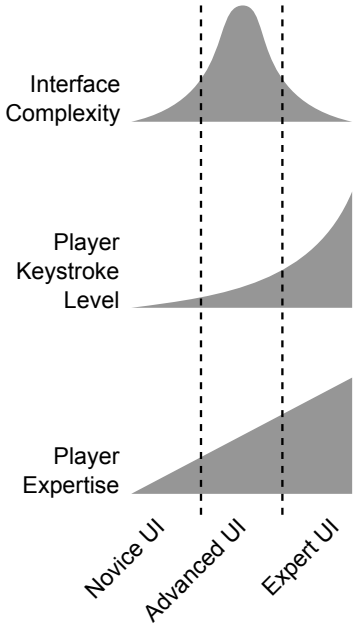

Figure 7: Interface complexity, player keystroke level and player expertise, according to the level of the interface.

Figure 8: Novice (a), advanced (b), and expert (c) UI.

Discussion and Conclusion

In this paper, I exposed the smooth transition from novice to expert players by introducing the advanced level as an intermediate stage of the progress. I qualify the three types of interface (novice, advanced, and expert UI) players build according to 1) player expertise; 2) player keystroke-level, and 3) interface complexity (Figure 7).

Although the player will change his behavior on his own to preserve the state of flow, something else is at play in the transition from novice to expert. When reaching a certain level of expertise in a multiplayer game, the player faces more skilled allies and adversaries and has to bring himself up to speed to compete with expert players. If he does not, he will never reach the expert level.

If expert players spend so much time building a clean, elegant UI, it is also because they can play more than a hundred hours a week in front of the same interface. Moreover, several websites, dedicated to WoW interfaces design [5] [6] highlight the importance of the UI and design considerations from players.

Finally, an expert user may be defined as someone who masters his customized software interface. This is valid for video games, but the same definition applies to complex software such as *After Effects* and *In Design*. Because millions of players play for free—or even pay to play—they are millions of potential real users to provide feedback and ideas on interface design, the application of which must go beyond video games only.

[5] http://www.wowuigallery.com/
[6] http://www.warcraftui.com/

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