Conventions and game design

How conventions and guidelines work with game design

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ABSTRACT

The game development industry is in constant growth, making the demand for more efficient methods of design sought after. There are many guidelines on how to make interfaces for webpages or software that have good usability, but few or none for the game development industry. This paper looks at current literature to figure out if such guidelines can be beneficial to the game industry, and touches on what such guidelines should focus on. Further, this paper proposes that general guidelines for interaction design in games are not useful, because the interactions in games vary so greatly. Genre specific guidelines for smaller parts of a game’s interaction might be useful (for example on how modes are handled), but more research should be conducted before any guidelines can be proposed.

KEYWORDS: Conventions, HCI guidelines, games

1. INTRODUCTION

The game design industry is one that is in constant growth with the ever increasing number of gaming platforms and new technology, making it possible for game designers to innovate in new ways. On one side, there is a constant struggling to make the most innovative games, to excite the gaming community and attract customers, while on the other side, there are certain elements, and ways of using them, that seem to reoccur in a lot of games. Elements such as lives and inventory can often be seen portrayed in a similar way (like in “Legend of Zelda”, Nintendo 1986, “Space invaders”, Taito 1978 and “Minecraft”, Mojang 2011) even though the same information could be relayed to the player in a multitude of ways. There are countless books on the process of designing a game, but few articulated guidelines like there are for website design or other software design. While there is a general view amongst software- and web designers that the use of established conventions will enhance the usability of a site, the same is not the case for the game industry. There is very little focus on the use of conventions; there are indeed not many established conventions to be found. This situation raises some interesting questions: How does the use of conventions affect the usability and positive experience of a game? How does the use of conventions in games relate to the use of conventions in other software design? Is there need for conventions and a set of guidelines in the game developing community? These are questions that will be discussed in this paper.

2. CONVENTIONS

2.1 What are conventions?

Throughout the years there have been proposed several guidelines for making a good user
interface that lets the user focus on the tasks he wants to perform rather than the interface itself. Two examples of such guidelines are the ones proposed by Steve Krug (for web design) [1] and of Microsoft (for software) [2]. The guidelines largely rely on conventions as a method of making the learning period for the user shorter, when getting to know a new interface. Experienced designers and developers in the field encourage designers to use conventions as a tool to make their softwares or websites better. However, there are several opinions on what the term convention entails. To be able to look at how conventions affect a game’s positive affect on a player it is necessary to first define what the term will mean for this paper.

A convention can be defined as a “general agreement on or acceptance of certain practices or attitudes” [3].

Young describes conventions as patterns of behavior that are customary, expected and self-enforcing. His definition entails that when a certain form of behavior is expected, and when most people follow this pattern of behavior, people will prefer to follow the same pattern of behavior [4]. Young presents a general definition of a convention, but the same factors work for conventions used in software design and web design, as user interaction with such applications is also a form of behavioral pattern. Still and Dark propose that a convention within the context of human computer interface (hereafter referred to as HCI) is a learnt perception of a function by multiple users to the extent that it creates an expectation to the function in the user [5]. In literature there has been some debate as to whether the terms affordance and convention should be kept separate. The term affordance was first introduced by Gibson, referring to the function an object clearly communicates within an environment [6]. A perceptual affordance is something that is presumed to be unlearned and automatic [5]. For example, it is self-evident that a switch on an electrical cord is meant to be flipped, or that a button is meant to be pushed. A convention, on the other hand, is a learnt behavior that emerges over time and through multiple instances of interaction, as indicated by Young [4]. An example of such a convention is how we read a book. When we pick one up, we know that we should start reading at the top left and work our way down, line by line, reading from left to right. This is natural to us because we have learned since we were children. In other parts of the world, the convention is reading from right to left, not because it is instinctively more natural to read one way or another, but because we have been taught. Norman argues that the term affordance should not be applied to virtual interactions, but be limited to physical ones because there are no physical constraints that limit the users interactions on a virtual desktop, and that the term therefore does not apply [6]. A different view is presented by McGrenere and Ho, who states that affordances in software are learned by the users, and not qualitatively different from conventions [7]. The same view is held by Still and Dark, who adds that “once conventions are learned, they afford actions” (p. 562) [5]. In practice this means that when a convention is learned, it will take on the characteristics of an affordance as described by Gibson. A good example of this is the use of blue underlined text as hyperlinks on webpages. Once a user learns that clicking on a hyperlink will take them to a new webpage, and after they have experienced this enough times, they will come to expect that all underlined blue text will work as a hyperlink in the context of a webpage. In this paper, the same view will be adopted. While the two terms may point to slightly different mechanisms in user interaction, they both cover user interaction that is somehow intuitive and effortless to the user.

2.2 What makes conventions useful?

So why do experienced parties urge the use of conventions to such an extent? As indicated above, the term convention is a broad one. It is not only used in HCI, but in all kinds of interactions. To illustrate the scope of the term, some examples of well-known conventions within different fields will be presented.
When driving down a street in Europe (with the exception of the UK and Ireland) without a center line to divide it into lanes, a car will automatically keep to the right side of the road. This is a convention related to behavior. Another convention is that when looking for a specific house on a street we know which side on the street to look because, conventionally, houses with odd numbers are situated to one side of the street, while even numbered houses are on the other side. A third convention, concerning the use of language, is the convention of putting one alternative before another when saying two words together. Some examples of this, presented by Cooper and Ross, are “now and then”, “sooner or later”, “man and wife”, “land and sea”, “life and death”. Cooper and Ross stated that these options sound unnatural and surprising when reversed [8].

The purpose of most conventions is to let our brains assess a situation more quickly and efficiently. A study on conventions in conversation performed by Holbrook et al. found that violations of conversational conventions disrupted the cognitive processing of the respondents, and that their response time was longer than when conventions were followed. The study also proposed that the respondents made more errors when presented with a question that violated conversational conventions [9]. In other words, following certain conventions saves cognitive effort and deliberation time.

One example of a convention in software design is one that appeared in Microsoft’s updated guidelines for software design from 2007, namely *ribbons*. “A ribbon is a command bar that organizes a program's features into a series of tabs at the top of a window. Using a ribbon increases discoverability of features and functions, enables quicker learning of the program as a whole, and makes users feel more in control of their experience with the program” [2]. With this statement, Microsoft supports the findings of Holbrook et al, but in the context of software design rather than language.

Nielsen, in the context of a website design project involvement, found that 80% of testers found what they were looking for when the navigation scheme conformed to the users’ expectations, and only 9% were successful when the navigation scheme did not conform. Based on this and other findings he developed *Jacob’s Law of the Web user experience*, which states that “*users spend most of their time on other sites.* Thus, anything that is a convention and used on the majority of other sites will be burned into the users’ brains and you can only deviate from it on pain of major usability problems” [10].

As mentioned earlier, user interface guidelines largely consist of conventions. Tetzlaff and Schwartz state that “the purpose of user interface guidelines is to enable the development of usable, consistent applications, which conform to designated conventions” (page 329) [11]. However, in contrast to Nielsen, they conclude that deviation from guidelines does not necessarily significantly reduce the usability of an interface, and that consistency is often more important on a website than conformity to interface guidelines [11]. The importance of consistency in the given context, as superior to the importance of conformity to guidelines, is supported by McCarthy et al, in their study on the best placement of navigation bars on websites. They found that while conforming to user expectations gave better results on a short term basis, it had little effect on long term results, and didn’t influence the user satisfaction [12].

A third view on the matter, presented by Grudin, argues that too much focus on consistency may lead to the false conclusion that consistency in a user interface automatically results in good design. His view is that the primary design goal should not be to strive for consistency. Further, he points out that while the numerous articles urging consistent interactions are not to be completely disregarded, the designer should look
at the context in which the interaction is to be carried out. He states that the arguments for consistency have to be interpreted in their original context and not applied as generally as explicitly recognized. According to Grudin, a thorough understanding of a user’s tasks is more important than consistency. From his studies he finds that consistency becomes surprisingly insignificant when the tasks of the user is in focus and well understood [13].

From the opinions presented above, it is clear that the use of conventions has some benefits when it comes to user expectation, and can have positive affect on user speed and accuracy when performing a task. However, it also becomes apparent that the designer should consider if violating a convention might be beneficial in some cases. Although there are many opinions when it comes to the use of conventions and guidelines, there is a general agreement that while other aspects of the design process should perhaps be in focus, conventions and guidelines can aid the ease of learning and usability of an interface.

2.3 When should conventions be violated?

That there are times when conventions can be a useful tool is well established, but in what cases should the designer consider violating conventions? There is not much literature on how the use of conventions can influence usability in a negative way. The focus has been on how interfaces benefit from conforming to conventions, which makes it difficult to say with certainty when conventions should be avoided. There is, however, some literature on the use of consistency in interface design. The very definition of a convention entails that there is a high degree of consistency to a convention. If a feature, like the example with the hyperlink, is not used consistently, it cannot be called a convention. This makes consistency in interface design very relevant for this paper, and also raises another interesting question, namely: How can one determine when something becomes a convention? This will be looked at in the discussion. In the following section a few interesting views on consistency will be presented.

Monk states that consistency is useful to enhance ease of learning. He states that having action-effect consistency may reduce the time spent on learning an interface. As an example he points to interactions in Microsoft’s softwares Word and Excel: If a user knows how a dialogue box works in Word, the user also knows how it works in Excel [14]. This, as mentioned earlier, is also true for conventions: If a user expects a certain type of interaction form a feature because it is conventional, the user will know how this feature works in other settings as well. Monk then goes on to propose that this consistency can be interpreted as a general rule to avoid modes, although modes are sometimes unavoidable. In small user interfaces, such as on phones, the user has a limited set of buttons, and modes are necessary, and indeed useful. It might make the interface more difficult to learn, but easier to use in the long run [14]. Johnson and Wiles point out that modes can also be very useful in games [15]. In games, the interfaces are not necessarily small, but a limited set of buttons is still an issue. Johnson and Wiles point out that having a limited number of buttons to play a game has the advantage of limiting the cognitive effort, and promoting a sense of control for the player, even though this often leads to inconsistency, and the use of modes [15].

It can be gathered from Monk’s observation that ease of use is not the same as ease of learning. This is supported by Grudin, who adds that “ease of learning can conflict with subsequent ease of use” (page 1166) [13]. Grudin goes on to say that before an interface can be used, it must be learned, and in the case of casual or infrequent use, the user may stay in a constant state of learning while using that interface [13]. It follows that when ease of learning is more important than ease of use, making an interface consistent is of greater importance. When ease of use is more important, however, it is less important with consistency, according to Grudin [13].
Johnson and Wiles also observe that HCI guidelines often strive to minimize the errors made by the user, but that in games, the possibility of error is crucial to making it challenging, and necessary to facilitate a feeling of mastery when error is avoided [15]. From these views it seems that whether guidelines and conventions are applicable or not depends on the goal of the designer and how the software, website or game will be interacted with.

3. WEB DESIGN AND SOFTWARE DESIGN VS. GAME DESIGN

To talk about how conventions should be used (or not used) in game design, it is important to understand what the designer’s motivation is when making a game. It is also important to have a grasp on the motivations of other software designers and web designers since they have a lot more experience with consciously using conventions as a tool in their design process than game designers. As implied in the previous section, the considerations that game- software and web designers have to make can differ. For example, for websites, it is desirable to minimize possible errors, while in games the possibility of error is a prerequisite for challenge and pleasure from mastery [15]. First, what this paper means by software and game must be clarified.

3.1 Clarifying the term software

There are several types of software, one of them being games. In this paper, the term software will refer to software that has some specific function other than entertaining the user, in contrast to games. In other words, games will here be excluded from the term. It is worth noting that there is not a clear line between games and software as defined in this paper. There are games that are made for learning, and software that have some of the same characteristics as a game. For the purpose of this paper, however, the term game will exclude learning games and focus on games that are made solely for entertainment purposes. Software, in this text, will refer to a software program that has the purpose of aiding the user to reach some specific goal.

When someone uses software, they have a purpose for using it, which is to complete a task. This task might be to write a document, to edit a movie, to play music or to send an e-mail. Similarly, a website has a specific goal, being to distribute information or provide a service for the user. A game will, on the other hand, be used without any other goal from the user than to be entertained by the actual use of the product. Here the use is in focus, and not the result that comes from using it.

Plainly said, users have different motivations depending on the type of interface they are using. Therefore it is natural to think that the designers who design the different interfaces will have different motivations as well. This hypothesis will be explored in the next two paragraphs.

3.2 Motivations in software- and web design

Johnson and Wiles observe that “the majority of research on software design has been directed towards functionality and performance” (page 1332) [15]. Looking at literature, the trend is that software- and web designers tend to focus on functionality and usability rather than user experience. Nielsen states that usability is essential to creating a successful web site. He argues that if a site is difficult to use, people will not bother to use it, thereby preventing it from becoming successful [16]. A similar view is held by Krug, but he proposes that a site needs to be user-friendly for another reason as well: He states that if a site is easy to use it will make the whole site seem better, and because there is so much competition for users’ attention on the web, a site needs to attract the user at a glance [1]. Even though Krug touches on the topic of experience, both he and Nielsen focus mainly on usability and efficiency. Song and Zahedi support this by stating that effective website design is
critical when wanting to attract and maintain customer interest, and influence customer purchase behavior [17]. An interpretation of these views is that apart from every designer’s goal (to get people to use their designs), software- and web designers’ main goal is to make the interface functional and effective.

3.3 Motivations in game design

Many game designers have a different focus than software- and web designers when designing games. According to Crawford, the goal of the game designer is to entertain, enlighten and educate the players [18], or in other words, to create an enriching experience for the players. Schell supports this view by stating that when designing a game, the main goal is to give the player a positive experience. He also says that to make the experience positive, the interface needs to be user-friendly, but that this comes secondary to the experience the designer wants to invoke [19]. Johnson and Wiles support this statement by claiming that it is unlikely for a game to succeed if it does not induce positive emotions in the player, and that while there are several reasons to play a game, the key motivating factor for most players is “to experience positive affect” (page 1332) [15].

The kind of experience designers try to invoke in players vary greatly, depending on the game genre, the game theme and the vision of the designer, amongst many other factors. However, one goal that all game designers strive to reach is to make the player experience a sense of immersion and flow while playing the game [19]. Flow is a term that was first introduced by Csikszentmihalyi, who describes the state of flow as one where a person is completely immersed in, and concentrated on a task, leading to a euphoric feeling. He also claims that when in a state of flow, a person is willing to carry out an activity for its own sake, without considering what other benefits the activity might lead to [20]. According to this account of flow, it is very desirable to create flow for the player, because then a player will play the game for the sake of playing it, and it is more likely that the game will become successful.

4. DISCUSSION

The term convention, as covered earlier in this paper, is vaguely defined. It can be applied to a number of different interactions and elements in a game, as well as to interactions in general. A convention in a game can deal with the movement of a token, how the collection and use of objects are handled in the game, or how menu options are displayed. But how does one determine if an interaction has become a convention? From the presented definitions of conventions it is clear that there are limited means of determining when something has become a convention without the use of subjective judgment. When dealing with conventions, a game designer will have to rely much on gut instinct, as there are no guidelines that talk of conventions at present in the game design community. There are, however, some common properties to the definitions of a convention: That it is accepted by multiple users through repeated interactions, and that it creates an expectation among users [3, 4, 5]. To what extent these criteria should be fulfilled is not really relevant until a set of guidelines for interaction design in games has been proposed. It can be speculated in whether it is desirable to have clearly defined guidelines for use of conventions in game design, or even useful. To figure this out it is necessary to discuss to what extent conventions should be used in games, and what the effect of use might be.

In section 3.2 and 3.3, this paper touched on how the goals of a web- or software designer were different from the goals of a game designer. The findings from literature indicated that using the same methodology (like following HCI guidelines) will yield different results, depending on whether it is used while designing a game, software or a website. For example, as mentioned earlier, the possibility for making errors is undesirable in a website, but is crucial to creating a challenging
and rewarding gaming experience [15]. To find out when conventions might be useful in game design, we have to look at what the purpose of using conventions is. As explained in section 2.2, conventions can save cognitive effort and time spent deciding what to do. In addition, Nielsen states that in the case of websites, it is crucial to make a website easy to use right from the start to get people to use it at all [10]. In Microsoft’s guidelines from 2007, they state that one of their conventions (ribbons) is supposed to increase the discoverability and ease of learning for the user [2], but are the same things equally important for games? As the motivations when playing a game are different than the motivations when using a software, or visiting a website, it is natural to think that they also have to be designed differently to please the user. One of many pleasures that a player can get out of playing a game is discovery [19]. If following a convention can increase this aspect of a game, it might be prudent to use such a convention. However, this is not to say that a game designer cannot achieve good discoverability by other means, and that these other means might yield better results. As Grudin argues, context based design can be a better way to design than simply following guidelines, depending on what the designer seeks to achieve. Grudin also touches on the claim that ease of use is not the same as ease of learning, and that designers need to know which one is the most important to focus on for their particular design project. He states that when the use of an interface is infrequent or casual, meaning the user spends a relatively short amount of time using it, the user can be in a constant state of learning [13]. In such cases, it can be argued that ease of learning is more important that ease of use, and that conforming to conventions and having a high level of consistency might be a good way to design. So what interfaces sport casual and infrequent use?

Like Nielsen states, a website needs to attract the user at a glance [10]. This is because a user rarely spends a lot of time on any given website, although they might spend a lot of time on the internet. Surfing the net entails jumping from website to website, not staying too long in any place. This puts the internet user in a near constant state of learning, and ease of learning therefore becomes very important. This might explain why there are so well defined guidelines for designing websites, and why a lot of websites are set up in the same way: with tabs or links, using conventions like hyperlinks, or using the site icon as a button leading back to the home page. Softwares are generally intended to be used for longer than websites, but there are cases of infrequent and casual use here as well. Small programs with a limited set of functions are such a type of software. An example might be Paint, which comes with the Windows operating system for personal computers. This is a program that has a very limited amount of functions, but it is easy to familiarize yourself with, and doesn’t take long to learn. More functions might be desired, but introducing more functionality would probably reduce the ease of learning. If we look at how this can be transferred to games, it is natural to assume that games that have similar properties (that they are used for small amounts of time) with small softwares could benefit from focus on ease of learning, hence making conventions and consistency a useful tool. Both on the internet and on smartphones, there are countless casual games to be played. To make the user interested, it is important that these are easy to learn, and since a player rarely spends long periods of time playing a casual game, it might me more important with ease of learning than ease of use in these cases. If a casual game found on the internet is difficult to learn, and it takes a long time for the user to get to the core interactions, the player will most likely leave and pick another similar game that is easier to learn. This is not to say that an interface cannot be easy to learn and easy to use at the same time, only that a designer should be aware how the interface they are designing will be used, and make development decisions thereafter. Exactly how conventions fit into these types of games is difficult to determine, because the interactions can differ so greatly, in contrast with websites where the same interactions are found on almost all websites. It might, however, be beneficial to
develop some guidelines for small, casual games within a given genre, but these would have to be viewed in light of the context they are meant for, as argued by Grudin [13].

Monk’s view is slightly conflicting with the proposal for guidelines for casual games. He states that small interfaces, such as phones, where the user has a limited set of buttons, inconsistency in the form of modes is often beneficial. Mobile games have just this problem, however, the use of modes has the disadvantage that they can be more difficult to learn. A possible solution might be to focus on making the first encounter with a game, and the learning period that follows, pleasurable by making discovery part of the game. Finding functions and new interactions might be a big part of what makes the game fun, however, if modes are necessary in a lot of these small games, it might be useful to create guidelines that cover how the use of modes are handled, so that the player will be able to transfer control systems from one game to another.

Grudin argues that ease of use is often more important than ease of learning [13]. We have covered some cases where ease of learning might be as important, or even more so that ease of use, but what about larger softwares and games?

Based on the presented views on what the motivating factors for playing and designing games are, it becomes clear that a game is played for the sake of playing, and so it makes sense that not only the results of interactions has to be fun, but interactions themselves. Inducing immersion and flow was mentioned as important when wanting to create a successful game. Johnson and Wiles propose that the use of modes can facilitate flow, because it requires less attention on the actual actions that a player needs to preform, and allows them to focus on the gaming experience [15]. If this is to work, however, the modes need to be designed in a way that makes sense to the user. If the modes are poorly designed, they will most likely confuse and disrupt the player rather than inducing immersion and flow. A set of guidelines on how to use modes might be worth making, and perhaps some conventions in the context of modes could be useful as well.

In larger games that are intended for platforms like PC, Play Station, X-Box and similar consoles, a player is intended to spend a fair amount of time playing the game. The player can play a game for hours at a time. This makes them more like large softwares than websites, and ease of use is probably more important than ease of learning. As proposed above, the learning part should be integrated in the game, as it is part of exploring. In the case of games that are played for long periods of time, taking the view of Gruidin, Johnson and Wiles, consistency and conventions should have a smaller part in the design process [13, 15]. Like Grudin implies, having a clear view of the tasks a user (or in the case of a game: a player) will have to preform is the right focus, and conventions and consistency might be more or less irrelevant. Consistency within a game might still occur, and be beneficial, but it should not be the main focus. It can be argued that testing with users and focusing on what facilitates flow is more favorable, and that consistency will probably occur on its own to some extent.

5. CONCLUSION

The points of this paper suggest that game designers can indeed benefit from using conventions, but that they may have a smaller significance in games than in website- and software design. In areas where a game has interactions that are similar to those in websites or software, it can be prudent to consider using established conventions to further facilitate flow. However, the designer should also be aware that consistency can be as important as conforming to conventions.

In casual games on the internet or for smart phones, the conscious use of guidelines, conventions and consistency can enhance a
game, but these guidelines have to be spelled out before the game development community can benefit from them. This paper proposes that simply taking guidelines and transferring them to other types of interfaces is not a good solution, especially when transferring to games.

In larger games, where the player will spend a considerable amount of time, conforming to conventions might not be helpful at all. Because there are such a rich variety of interactions to be found in games, it is nearly impossible to create a general set of guidelines that will improve most games upon use. Instead of looking for a recipe for making games, game designers should focus on user feedback and find ways to facilitate flow that suits the genre and interactions of the game in question. There are, however, possibilities for the creation of guidelines for smaller parts of a game that can be helpful to the game designer. When it comes to the handling of modes, this paper proposes that it might be desirable to have some guidelines to make the job easier. These would most likely have to be context specific, but within the same genre (like for example shooting games) the modes in use might be similar between games, and developing some sort of conventional design for these might benefit the game development community.

This paper proposes that for games in general there is not much use for a general set of guidelines, nor is it possible to develop. However, smaller pieces of a game might be worth investigating. Further, this paper proposes that the use of modes in games is a theme that should be looked at more thoroughly, and is a good place to start in further investigation of the usefulness of conventions and guidelines in games.

REFERENCES

Still under construction


[10X] Tullereferanse