

How to use consistent patterns to improve the visual communication of Game UI without text

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Abstract

Together with text, the use of iconography, metaphors and visual language combine in patterns that communicate function in User Interface (UI). Working with the restriction of not using text, The aim of this paper is to explore methods of visual communication and structure in UI design to effectively communicate without text. This research begins with the examination of various games to explore and compare their methods, which is then followed by an analysis of general UI design principles. I look at Tribal & Error's development, a game designed with the restriction of not using text, explore the various elements and reflect on what worked and what didn't. I conclude by applying a framework to my project derived from these research conclusions.

Keywords

Game, UI, User Interface, Visual Communication, Usability, Cognitive load, Game design, Pattern boxing

Introduction

Play any number of games and you've probably encountered several examples of UI that confused or overwhelmed you. To prevent this confusion and clarify their message UI designers make use of many tools such as line, color, texture, shape, iconography and metaphors (1). Looking at any random piece of UI design it quickly becomes clear these tools are usually not used in isolation but combine to form a single pattern: patterns that communicate ideas such as "this is a button that can be pressed". Creating these patterns for a comprehensive UI is challenging at the best of times, but when faced with the restriction of not using any text, how do you compensate for the loss of such a versatile tool? Before attempting to answer this question, let's break down and examine the various smaller questions it raises.

The first and most basic one: what is User Interface? As explained by the Oxford dictionary it is: *"The means by which the user and a computer system interact, in particular the use of input devices and software"* (2). The function of this interface between user and software is generally closely tied to the function of the product and the goals of the user, meaning its purpose is to enable users to effectively and efficiently perform tasks(3). Which task each UI element enables is the message that it needs to communicate. While text is a versatile tool, this paper analyses methods of conveying those message without the use of text. Which leads us to the next question:

Why should any UI designer want to design without text? Without text you're missing an important tool of communication. A tool that can be a very direct means of conveying information. One reason is our brain's significantly faster processing speed for visuals over text (4). Given that the player's reaction is vital to their performance in many games, using visuals over text can help maintain a consistent flow in their gaming experience. Another reason could be to increase accessibility for a wider audience. While countries like China, Germany, Spain or Japan score low on English literacy(5), they are in the top 10 of countries by game revenue (6). Not using English, nor any other language, could therefore remove a big hurdle in inaccessibility for a potentially massive audience. Of course this hurdle can also be overcome by localizing games. While localisation is not only the translation of text(7), any translation is obviously an increase in development workload and cost, not using or minimizing the use of text could therefore reduce both. Finally my personal perspective is that by limiting our options we both stimulate our own creativity as well as hone our skills in the use of other tools. Like our senses, when robbed of sight we improve in other areas such as hearing.

This paper is primarily for game UI artists and designers looking to develop or research UI heavy games. However, it may also interest developers looking for methods to increase accessibility by removing or minimizing a language barrier.

The conclusions produced from this paper are derived from several methods. First of all with research by design through the development of the game Tribal & Error. These designs were evaluated through usability testing at gaming conferences such as E3 2015 (8), Indiecade Festival 2015 (9) and Gamescom 2016 (10). The users of these tests, due to the nature of conferences, varied greatly in terms of age and experience with games, providing us with a diverse set of perspectives. The tests themselves were a combination of player observation, casual interviewing and questionnaires. To add a theoretical perspective to my research I also delved into desk research citing numerous papers and articles relating to UI both in and outside of games. I also used my personal perspective by playing and analysing several games that piqued my interest in their use of UI design, which is where my research began.

UI Research: Visual patterns in Games

To begin to unravel the question of how UI can improve its communication I began my research by looking at several games from different genres. Games that were generally successful, do interesting things in terms of design, but also have room for improvement. Using my personal experience I analysed and evaluated the various elements that make up each design, and look at what and how they communicate, as well as highlight interesting examples of UI design.

The Witcher 1

The Witcher is a medieval fantasy role playing game or RPG where the player takes the role of the Witcher Geralt, a professional monster slayer for hire. Throughout the game the player roams the world in search of clients who need magical mystery solving and monster fighting skills. Like many RPGs the gameplay consists of using a complex array of abilities, spells and weapons, resulting in a UI with numerous elements. A quick analysis of these various elements reveal some consistent patterns in their arrangement. Generally on the left are UI elements that pertain directly to Geralt while on the right are elements that relate to the world.

A repeating pattern can also be seen in how individual items are generally grouped to establish relevance to each other, see for instance the spells, stances and status meters. However, despite the presence of clearly established patterns in arrangement and grouping, there are also some inconsistencies. For instance, while the wolf medallion, seen in the upper left corner (Fig.1) hangs around Geralt's neck in a narrative sense, and therefore relates to Geralt himself, its gameplay function is to communicate active danger in the immediate area. This makes it functionally relate more to the world. Its function also correlates with the time of day display, in the upper right corner, as it also displays whether the current zone contains enemies.(Fig.1). Grouping and positioning these two elements to the right might reduce confusion due to conflicting patterns and improve the communication of both elements.



Fig. 1:The Witcher 1

In a positive example, this same wolf medallion is also used in a remarkable piece of game design. Several hours into the game the player is tasked with solving a murder mystery together with an ally named Raymond Maarloeve. Through numerous dangerous encounters at this stage players have been conditioned to associate the vibrating witcher medallion with danger. During this investigation this ally Raymond briefly disappears. At his return the game then uses the player's expectation for the medallion in an unusual manner, as from that moment in the presence of your ally the medallion subtly vibrates. At this point the UI is essentially giving conflicting information from the presented narrative. Unknown to the player during his brief absence Raymond was murdered and replaced by a magically disguised imposter, which is to be revealed later. Through a subtle UI effect this turn of events is foreshadowed, giving the inquisitive player a eureka detective moment, immersing them further in their investigative role.

Looking at the communicative performance of The Witcher's UI its strength lies in establishing function by creating patterns through arrangement and visual hierarchy. It also takes the time to condition players and create clear associations between UI and world effects, before introducing new elements.

Vampire the Masquerade Bloodlines

Vampire the Masquerade Bloodlines or VtMB is a modern day fantasy role playing game where the player takes the role of a vampire who stalks the nights of Los Angeles. Using the same lens I used with the Witcher, that of discerning patterns through arrangement and visual hierarchy, I noticed a lack thereof. The different UI elements grouped together seem to have little relation to each other, as seen for instance by the illogical pairing of a health bar with equipped weapons. One notable exception to this is how the blood bar, displayed on the right, is used as a resource for the Vampiric spells, displayed in the lower right corner.



Fig. 2: Vampire the Masquerade Bloodlines UI



Fig. 3: Warcraft 3 UI

With every use of a Vampiric spell the blood bar above lowers in volume establishing a clear correlation between the two.

Another interesting design approach can be discerned from the blood bar by its visualisation of an innovative game mechanic. When creating innovative game mechanics you're faced with the challenge of communicating their function without relying on player expectations molded by previous games. This challenge can also be complicated further when your innovative elements share superficial similarities with established conventions. The UI of VtMB is an example of this. A common convention in games, especially Role Playing Games is the use of a red health bar to represent a player's health (Fig.1). Such a bar is also present in VtMB (Fig.2), however due to its theme and gameplay the purpose of its visual representation is very different. To sustain themselves as a vampire the player will need to regularly refill their depleting blood level.

To separate this from the associations with a health bar, they made two visual distinctions which drew it closer to the concept of a draining liquid: first by giving it a vertical alignment and secondly animating it as a bubbling liquid.

By doubling down on visualizing the distinctions between their system and familiar concepts it improves its communication, despite its superficial similarities with platform conventions.

Warcraft III

Warcraft III is an isometric real time strategy game set in a medieval fantasy world. Similarly to many strategy games, in Warcraft 3 the player takes direct control over an entire faction. Their goal: to build bases and armies with the purpose of defeating an opponent through conquest. Like the Witcher 1 a quick glance at the overall UI shows consistent patterns in the arrangement and grouping of elements, such as with resources or unit actions. The idle unit icon, seen on the right (Fig.3) seemed out of place to me at first. However, seen through the lense of discerning patterns through arrangement and grouping,

the reason for its placement became clear. Despite being a unit related icon, its function doesn't match with the unit details panel.

This is because the function of the idle unit icon is to display the location of idle unit(s) on the map. To clarify the communication of its function its placement next to the minimap makes sense in terms of geography.

Another interesting effective UI design can be seen with the interaction of many actions in the game. With many actions in the game the player usually first has to select an action and then confirm to execute. Before confirming the player is often shown the potential result of that action. An example of this is with the placement of buildings. When the building type is selected for construction, the cursor changes into the shape of the building (Fig.3). This both clarifies the building type from the abstracted icon that was selected, as well as shows the area (represented by the green shape) that will be restricted for walking.

Take aways

Reflecting on my analysis of the above mentioned games, several tools of communication rise to the forefront. Tools such as conditioning player expectations, or the approach of VtMB to the superficial similarities between innovative mechanics and platform conventions, which they solved by using the right metaphors to clarify the distinctions between their system and familiar concepts.

Among various good examples of visual communication, the tool that is perhaps the most interesting throughout these games is the use of visual arrangement and grouping of UI elements. Each game demonstrates how the proximity of elements contribute to conveying a correlation. The Witcher showed that elements can be arranged to either correlate thematically, as was done with the wolf medallion (Fig.1) or functionally, the latter of which could help to improve visual communication of its functionality.

Research: Design Heuristics

To balance my personal experience with a more theoretical approach I looked at general UI design principles to see what these principles could teach me about structuring UI communication. While much has been written on the topic of user interface, perhaps due to the inherent ambiguous nature of creative subjects I was unable to find a clear consensus for irrefutable UI design principles. The next best thing it seems would be the widely recognized usability heuristics for interface design by the Danish web usability consultant Jakob Nielsen. As Nielsen explains it, heuristic evaluation is a tool for finding usability problems through a set of evaluators (11). Through his extensive experience he developed a set of evaluators which I have listed below (12).

My intent was to evaluate these evaluators for applicability through two lenses. Firstly how they relate to the communication of UI without text and secondly for their relevance to games.

Visibility of system status

"The system should always keep users informed about what is going on, through appropriate feedback within reasonable time."

This a principle that I would say generally holds true in games in most situations. unless that is if withholding information improves the experience. This could be the case when doing so would for example create challenge or a sense of mystery. Another thing to note is due to the often indirect nature of visual communication, if you're communicating without text then signaling status changes can weigh more heavily on the cognitive load of players. Doing so should therefore be weighed on its value in improving the user experience vs the added cognitive load.

Match between system and the real world

"The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order."

The reference to system-oriented terms goes doubly so for games that value immersion, as the experience is built on an illusion of a reality sustained by hiding the system's number crunching. Without text there is an even greater reliance on using real world conventions, metaphors and icons to convey function.

User control and freedom

"Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo."

I would say in games this logic applies in some cases but not all. It would when UI elements are merely a means of exploring gameplay choices such as menu options, however when the act of using a UI element is part of the gameplay robbing players of the possibility of mistakes can rob players of the enjoyment of achieved mastery (13). Allowing failure can increase the enjoyment of success and can be an important tool for understanding causality in the game world. In which case the UI can play an important role in visualizing the cause of a failed action.

Consistency and standards

"Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions."

The use of websites and apps has become so widespread that people from many of walks of life can be expected to have been exposed to their platform conventions (14). However, in the case of games it is important to note that

the effectiveness of using platform conventions as a means of communicating design is highly dependent on the 'game literacy' of users. 'Game literacy' being the user's familiarity with conventions, controls and terminology that games share across genres (15). This familiarity is not nearly as common as with internet use, therefore in the interest of increasing accessibility to your games beyond veteran gamers, it can be important not to depend on platform conventions. That being said I agree with the importance of consistency to establish a visual language. With pattern recognition being an important tool for humans to understand their surroundings (16), using consistent patterns can be a key method for designers to create approachable designs.

Recognition rather than recall

"Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate."

In the development of later to be covered case study Tribal & Error, we have personally experienced both the benefits, as well as the challenges of storing and displaying information to decrease memory load. In the puzzle elements there was a clear distinction of success rate between players who used a notation function to store gathered puzzle information, and players who didn't. Players who typed their notations freed up brain memory space to process the challenge of combining puzzle elements for a puzzle solution. Players who didn't, had to mentally juggle both the meaning of puzzle pieces and how they could be combined. Giving the player such an information deposit can be a useful and clarifying reference

Flexibility and efficiency of use

“Accelerators — unseen by the novice user — may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.”

While this could be a great source of enjoyment in the need for mastery, extra methods of play could add another layer of complexity that needs communicated without text. If presented outright to every player this could risk creating a visual overload. This could possibly be remedied by evolving the UI over time to include more features as the player grows with the game.

Aesthetic and minimalist design

“Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.”

The term dialogues usually refers to the spoken words of characters in the context of games, however applying this principle to game UI in general seems to fit. While there are many methods to slay the beast that is visual communication, perhaps the most effective approach is to ensure the beast is not too great to begin with. By simply decreasing the amount of items to be communicated, the cognitive load of understanding an unfamiliar UI could be significantly reduced. This would however only be applicable in an introductory stage when every item adds to the cognitive load due to need for everything to be processed. After the player has reached a level of familiarity with your UI only the changes in status require active mental processing on the player's part.

Take aways

Looking at Jakob Nielsen design heuristics through the lense of structuring visual UI communication, one main recurring theme was the management of a users cognitive load. As every item presented to the player is

something for them to process, managing how and where items are presented is key in designing a comprehensive UI. This cognitive load can be managed through such methods as a minimalistic approach in presenting information, displaying relevant information instead of asking the player to remember things, or through consistency of communication styles.

Without text to literally declare an object's meaning these tools become essential to creating a consistent pattern that communicates function.

Case study: Tribal & Error

To gain further understanding of the role of consistent patterns in visual UI communication, I added an extra layer of depth to the theoretical research with research by design through the development of the game Tribal & Error. It is a game both with an unusual mechanic unfamiliar to players, as well as a design restriction of using no text. As a result, communicating the design at all required an in depth look at the process of visual communication. It was this design restriction that prompted the need to research how UI could communicate its function without text. This chapter is an exploration of the different UI elements developed, and a reflection on how its visual patterns contribute, or could contribute to visual communication.

What is Tribal & Error?

Tribal & Error, a game developed by a group of students, myself included, is an isometric 2D puzzle adventure game where you play a tape recorder robot sent back in time to help cavemen survive. However, to help them you need to learn their language first. The player can record the words of the cavemen and play them back to them. How they respond to that can give the player an idea of what each word might mean. The player can then type in their interpretation of the caveman's words. Because this input is just a note it can be typed in any language, and despite being about language the only language needed to play the game is



Fig. 4: Tribal & Error's UI

literally learned in the game itself. With this process of collecting words you can start to build a vocabulary, and with a vocabulary you can form simple sentences. These are then used to explain things to the cavemen in their language.

The concepts to communicate

Through the iterative process I have encountered instances where the symbolism used to convey ideas created confusion rather than clarity. It made clear the importance of establishing what it is that you're communicating in the first place. What are the concepts and analogies players need to understand to use your UI? For Tribal & Error's overarching concepts, we narrowed it down to two points.

"You're a robot with the ability to record, store, categorize and play audio files."

"These abilities are used to learn, process and use language."

Every UI element contributes to communicating the concept of being a robot through similar visual design as the robot, while other concepts are communicated through individual elements.

Tribal & Error UI Elements:

The Wordbar & Buttons

When a word is recorded by the player, the word is added as a button to the word inventory bar. These word-buttons form the main method of interacting with the game world. The visual patterns of the wordbar that contribute to communicating the main concepts are ideas of storing and categorizing

information. This is first of all achieved by it being visualized as a taskbar similar to those seen in RPGs (Fig.1). The idea being that this would generate associations for the button as abilities or actions that could impact the game world. The main concept of storing data is also visualized as a pattern of seven slots. This is to intentionally mimic the seven short term memory chunks that the human brain can process (17). While this decreases the information load to a level manageable to our brains, for those familiar with this psychological concept it brings with it the association of processing information.

The Text field UI

With every word button unlocked, an initial empty text field opens above (Fig.4) When clicked this opens a new window above the word bar (Fig.5). This window is a tool for the player to add labels to the words collected by them via keyboard text input. The key message this UI needed to communicate was that this input is your personal interpretation of a word's meaning. A note that is neither wrong nor right, and one that can be edited at will. This was both one of the most crucial points as well one of the most difficult to convey. Throughout several iterations the problem remained that very few intuitively understood that functionally anything can be typed without any effect, and that its function is merely to provide the player with a note to free up puzzle brain thinking space. Partly these problems were caused by having the text input appear with question marks as default (Fig.6). However after numerous tests we concluded that this framed the concept of the UI too much as a question



Fig. 5:Text field pop up UI

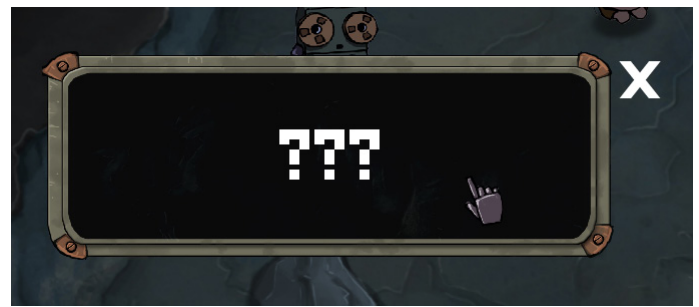


Fig. 6 Early iteration of text field pop up UI

with a right or wrong answer. Therefore in a later iteration we decided to focus more on communicating the concept of a note. This is visualized as an icon of a notebook in the upper right corner. While the percentage of players who require hand holding in this instance has decreased, for too many players the function of this UI remains unclear and more future iteration is therefore required.

The Cursor

The cursor is the main input tool for the player, used for click-based navigation and pressing buttons. It functions in much the same way as a regular cursor. Originally visualized just as an arrow-shaped cursor, to increase clarity we added visual variations to the cursor that



Fig. 7:Cursor variations

appear when hovered over different things. For example a walking interaction is visualized with an icon of footsteps. Despite the player character being a legless floating robot, we decided to go with feet as a logical symbol for the concept of walking. (Fig.7) Yet to be implemented is a pencil cursor to further communicate the concept of a note when hovering over the text field UI (Fig.7)



Fig. 8: Sentence speech bubble UI

The Word Speech bubble

Every time either the player or a caveman utters a word, the pronounced word is symbolized by a speech bubble hovering over their heads. An important function in the game is the combining of words to make simple sentences. This is done by simply clicking a combination different word-button. In previous iterations this sequence was represented as separate words. Through playtests we found that the key point that these words combined to form a new meaning was misunderstood by too many players. To communicate the idea of a connection between words, we grouped them in a single bubble, and through further testing we were able to confirm the problem was largely alleviated as a result (Fig.8).

The Infobar

The infobar is a non interactive UI element with the primary goal of aiding in signaling different game states (Fig.1). Two elements were added to help convey the concept of a tape recorder robot: First of all the speaker box, which vibrates when the player uses a word (Fig.1), and the record and play lights that turn red when a word is heard and recorded by the player, or green when the player plays a word. The battery display is a narrative tool to display the progress of time in the game, as it depletes further in the game.

Results

Looking back at the design process up till now, as is to be expected, I can still see many things to improve. Often problems we encountered could be traced back to not having clearly established what it was we were trying to communicate with each UI element. We discovered that without this groundwork, jumping in and formalizing the tools of communication can create a chaotic and confusing mess of buttons. However, even with a clearly established message, too often the actual message players received was, throughout many iterations, very different from the intended communication. Surprisingly often these problems could also be alleviated by the grouping and arrangement of elements to convey a correlating meaning, which led me to wonder whether this tool could be formalized in a unifying framework to analyse a UI's communicational performance.

Pattern Boxing Example

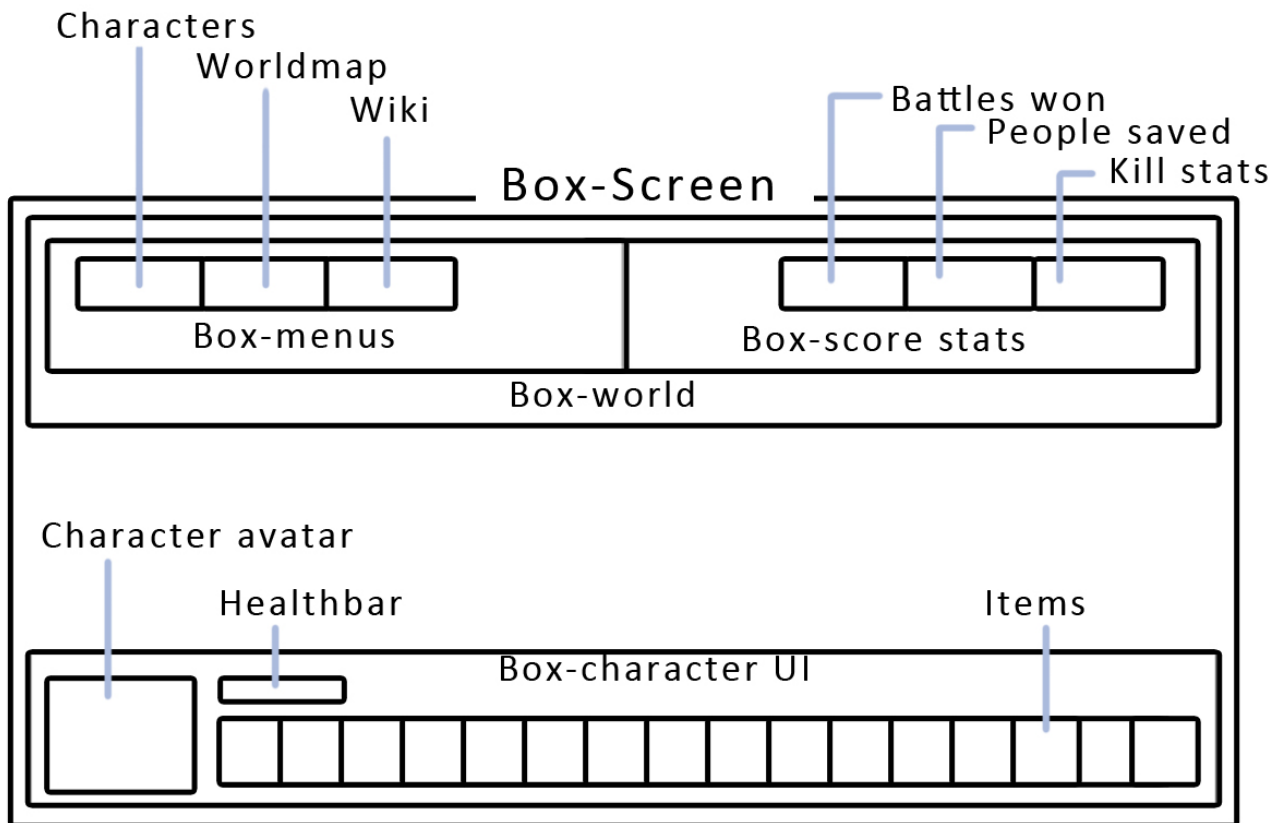


Fig. 9: Hypothetical UI Pattern Boxed

Pattern Boxing

Throughout this paper I have reflected on numerous tools of UI design. Tools that each contribute in their own way to creating visual patterns that communicate a message. While creating a pattern is in itself an act of structuring information, my hope throughout my research was to find a means of structuring a UI's collection of patterns under the umbrella of a single framework. One consistent framework that emerged was the idea that with the use of positioning, grouping and arrangement, patterns can be ordered in a hierarchy of concepts to communicate. Which led to me to construct a framework called 'Pattern Boxing'.

Pattern Boxing is the arranging of all UI elements in an abstracted wireframe through a hierarchy of boxes, one nested into the other. Each box has a ruleset of concepts that all boxes inside it adhere to. The outer box being the entirety of the screen, while the smallest boxes are individual elements such as buttons.

Every time a UI element or a set of UI elements adds a communication rule that applies to them but not to all elements, they get their own box (Fig.9). This new box inherits the rules of the box it's nested in such as: 'You are a robot' and adds a new distinction like: 'This UI relates to just the robot arms'.

When used retrospectively to evaluate a UI, Pattern boxing can visualize which elements relate to each other and what message they project to the player as a result of their visual relation. The goal of which is to evaluate whether this correlates with the message it needs to project, visualising potential flaws in a design. With this framework derived from my research I was armed with a new lens to retrospectively evaluate Tribal & Error's design, and propose new solutions to the challenges of UI communication without text.

Implementing Research

Throughout my research I have evaluated several design tools that aid in the creation of visual patterns. Before applying the Pattern Boxing framework to Tribal & Error I evaluate each of these tools separately and look at how they might be implemented to improve Tribal & Error's design.

Conditioning player expectations

The Witcher 1 showed the possibility of wordlessly communicating complex concepts by conditioning player expectations. These expectations can then be used to clarify new situations. A possible implementation of such a concept could be a solution to communicating a jump forward or back in time in Tribal & Error's narrative. By showing the battery display depleting on completion of a level we could condition the player to associate the battery with the progression of time. This association could then be used to communicate a time jump by refilling or depleting the battery display.

Double down on distinctions from conventions

Vampire the Masquerade Bloodlines showed an interesting example of how to work with visualising the distinctions between unique mechanics and platform conventions. By adding visual elements over the familiar that highlight the distinct, the overall meaning can be clarified.

In Tribal & Error we already consistently make use of this concept. With the toolbar we make use of expectations that come with such a visualisation: expectations such as the ability to use items on a toolbar, or that these items can be collected. On top of this we needed to add the distinction that these collected items are words and language. To this end we use visualisations that people associate with language, such as words as handwritten and highly abstracted symbols. These same symbols are also presented in a sequence inside speech bubbles. Another aspect associated with words

is that they are abstract concepts instead of physical objects. Given the physical visualization of the word buttons, visualising these as more abstract digital elements could further aid in pointing toward the concept of language.

The management of a users cognitive load.

As the research in design heuristics showed, in order to design a comprehensive UI it is important to manage a user's cognitive load. This can be done by balancing a minimalist approach, so as not to overload users, with displaying relevant information. In Tribal & Error throughout various iterations a minimalist approach gradually evolved as elements were introduced and cut. It could perhaps even be argued that this has been done to the point that relevant and helpful information is actually lacking from the ensemble of UI elements. An example where the introduction of an extra UI element could help to clarify a game state, is in navigating the range that cavemen can be heard and spoken to. An extra UI element that visualized the maximum talking range with a circle around the robot could help clarify this nebulous border.

There are of course many more tools in UI design but a recurring theme throughout my research was how visual arrangement could unify these tools to structure their methods of communication: to which end I developed the Pattern Boxing framework.

Pattern Boxing Tribal & Error's UI

Having devised the framework of Pattern Boxing I proceeded to apply it to Tribal & Error to uncover flaws in its communication design. I mapped out the hierarchy of each element determined by their arrangement and grouping (Fig.10), and listed the message(s) each box needed to communicate. Perhaps the most obvious problem this highlighted was of the infobar's placement, grouping it with elements differing in function. Despite visually having its own frame distinct from the toolbar, its direct alignment to the toolbar visually links the two.



Tribal & Error Main UI Pattern boxed

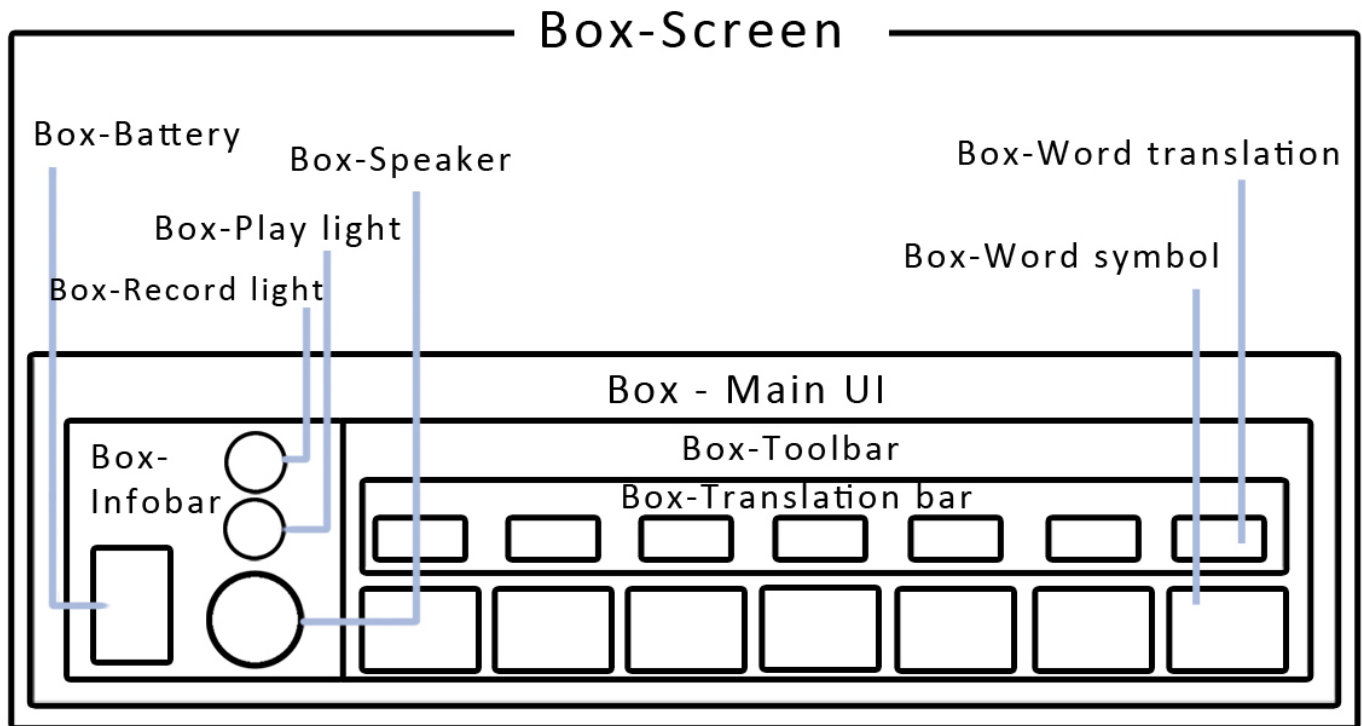


Fig. 10: Tribal & Error's UI Pattern Boxed

This suggests a correlating function. However, the infobar is a non-interactive element, while the toolbar, as the name suggests, houses the player's tools of gameplay interaction.

A more subtle observation the pattern boxing highlighted was the grouping of all word translations in a single box. Taken at face value this might not seem like a problem. These text note input fields are after all functionally the same. The point of these notes however is to serve as a translation of the symbols below them. Getting the player to understand this was, as playtests had shown, not only challenging, but it is also far more crucial than highlighting the already obvious functional similarity.

Grouping the text fields together with a contrasting colour is therefore a detriment to the visual communication.

Based on the findings of the Pattern Boxing framework I devised a proposal for a new visual arrangement of UI elements to solve the uncovered issues (Fig.11). Firstly, I cut the infobar from the toolbar and moved it slightly to the left so as to maintain a visual balance as well as define clear divergence in functionality. I also removed the horizontal border between symbols and text fields to instead indicate a relation between each pair with a vertical border separation.



Fig. 11: UI proposal Tribal & Error

This is however arguably less aesthetically pleasing and may need another iteration to improve visual variety, while maintaining or perhaps even strengthening this new communicative structure.

Conclusions

In this paper we have looked at various tools in UI design that contribute to creating visual patterns. We've analysed different games, design principles and evaluated tools such as the effectiveness of conditioning players. We explored methods of visualizing distinctions between conventions and unique mechanics, and highlighted the importance of managing a cognitive load.

The original aim of this paper was to evaluate how consistent patterns can be used to improve the visual communication of Game UI without text. Through the various research methods employed in this paper a means to structure

these patterns emerged. This structure allowed me to propose the abstract wireframing tool that is Pattern Boxing. Applying this framework to Tribal & Error proved highly effective in visualizing design problems. I therefore concluded that consistent patterns can be used to improve communication by using a framework to structure visual patterns in a hierarchy through arrangement and grouping. The aim of this is to find design flaws and opportunities towards fixing them. When designing without text it is vital to seize every one of these opportunities to compensate for losing one of the most direct methods of communicating function. While this framework might not be suited for every type of game, the intent of Pattern Boxing is to be broadly applicable in analyzing Game UI designs. For those interested in further exploring the applications of Pattern Boxing, another avenue of research could lie in attempting to use it as a tool for designing Game UI from scratch, instead retrospective analysis.

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