Wayfinding in gaming

By Chad Fillion

When playing video games, players are faced with a variety of challenges given to them by the developers. While designing these games, however, developers must be certain not to impart an added level of difficulty within them by overlooking fundamental navigational guides. Developers must keep a close eye on how they design their games to make sure players can use intuitive wayfinding techniques to navigate within their new and undiscovered territories. A critical point for them to consider is how to effectively accomplish this without adding intrusive interface elements so the immersion level of the game remains intact.

Traditionally, the term Wayfinding has referred to navigation across land or sea, but more recently the term has been used when developing complex architectural structures, transportation systems, theme parks and digital interfaces. More directly defined, Wayfinding is an individual's ability to traverse unfamiliar areas using spatial recognition, contextual clues, and sensory guides in order to maintain their awareness of their surroundings and travel to a particular spot along an unknown route. Throughout history travelers have used wayfinding techniques in order to chart paths across oceans and continents. Humans have completed voyages across the globe long before the advent of common day instrumentation using only the stars, mountain ranges, the sun, animal migration routes and ocean currents for guidance.

Even with the advent of technologies such as GPS, computers and complex navigational equipment, we have not lost "our knack", or our innate ability to be able to find our way. The human brain's ability to remember environmental clues is a remarkable feat and could be tied directly to our primitive survival instincts. Our brain is able to create mental maps upon which to refer back to when moving from place to place. These maps are refined again and again as we retrace our steps, building upon them and adding new information each time we revisit a location. In addition, when we find ourselves in new locations,

we tap into the knowledge gained from previous mental maps we have made. With little effort we can find similar clues and make navigational adjustments based on our current environmental conditions.

When discussing wayfinding as it relates to video games, we must decide how we are going to use the term. We can use it as it relates to literally navigating around an environment within a game, such as in an open world MMO, or we can use it more symbolically as it describes one's ability to travel throughout the menu system and sub-screen associated with playing the game. Either way, the developers and designers must introduce a system, or set of rules, upon which to place their navigational foundation. The rules can certainly be unique to other systems that exist outside of the game, yet should never sway from the precepts developed within the game itself. Breaking away from the consistency of the established rules set can cause confusion, disorientation and certainly will distract a player from the game play. One must also remember this when developing a new and original system: It doesn't matter how good it looks, if it doesn't work—*it doesn't work*. Form should always follow function, especially in this critical process of guiding a player around a game.

When it comes to interface design, the more information you place in front of a player while they are playing your video game, the more cluttered and confusing the game screen can become. Certainly some genres of game play require a specific amount of information to be displayed on screen at all times. Health status, score, currency, ammunition, position, items, or any number of these information points could be critical at any given time during game a game. However, too much information at once can distract a player from their primary objective. Recognizing the most critical elements of your game, limiting the number of superficial elements on screen, and displaying only what is required can significantly reduce the on screen confusion. This reduction of onscreen information can clear the path for the player and provide a streamlined gaming experience.

In discussing wayfinding as it relates to interfaces, the use of a text only solution on screen could cause problems to players who do not speak the

native language the text is delivered in. Certainly localization techniques can assist in overcoming this shortfall, but implementing a non-text based system could prove advantageous to a developer. A graphical or “text free” design that uses symbols, colors, shapes, sounds and motion can add originality to a menu or interface design, as well as functionality in the form of wayfinding. Developing a set system of icons to be used throughout the game can prove beneficial and rewarding; it is unique and helps to build upon a solid wayfinding foundation.

You can see examples of a variety of wayfinding symbols all over the real world. A universal image of a Man or a Woman placed onto a sign on a door symbolizes a gender specific bathroom. A red circle with a line through it (either horizontal or diagonal) usually signals that a restriction is being placed upon an action such as walking, smoking, or drinking. The exclamation point placed onto a yellow or red backdrop signals us to be aware of a hazard or cautionary situation. These simple, yet universally understood icons can be implemented into a variety of systems to help guide and direct individuals. Colors such as red, yellow and orange offer us a heads up to something that may harm us, while green seems to be a culturally accepted color for “go”. These contextual clues can be added to a game to help refine a wayfinding system.

In the interest of being unique, a developer may desire to create new symbols and implement them into their wayfinding strategy. Introducing a player to a unique set of symbolic elements never before seen can be difficult, yet when used in conjunction with shapes and colors that are already understood as part of an external system it can work. Building upon the premise that humans have an innate ability to use contextual clues (wayfinding) when they are given to them, we can assume that when given context clues from an external system, in conjunction with a unique internal system, the brain can adapt and implement the unique elements into an already understood solution. Caution should be taken when developing a unique symbolic system, however, as consistency should be adhered to whenever possible. Consider the following example listed on the next page.

In the above example the shapes are recognizable as individual elements; an "X", a circle, a circle with a line and brackets with dots. Yet when placed in this specific formation it isn't necessarily *functionally* clear what these symbols may represent. On their own there is no point of reference upon which to base a theory on what they stand for. However, if the symbols were located on buttons as part of a control panel next to a device that looked similar to a monitor, a player may be able to utilize information external from the game—tapping into their brain's innate mapping ability. For example: If the player were to experiment with the buttons and press the one with the circle symbol, they may see a video clip appear on the video screen and discover that the circle represents a "play" function on the control panel. Further experimentation with the buttons would reveal that the "X" represents a stop function. The player may then be able to infer from additional external contextual clues that the other symbols represent pause, fast forward and rewind. Though the circle, "X" and brackets with dots are unique to this example, the symbols selected are no more arbitrary than say a square, triangle or triangles with lines such as these:

In our second example (shown directly above), the symbols selected are still representative of functions on the control panel. External to the game they are familiar shapes with possible familiar functions, though the order isn't the same as we traditionally see them. Using context clues from real life we could infer that the symbols represent a play, fast forward, rewind, pause and stop function on a player, most likely we could make this assumption prior to pressing any buttons on the control panel. It isn't until we actually test the theory within the game that we can see for certain though if these are in fact the functions of the buttons. At first the individual playing the game may not recognize what these buttons could relate to as they are out of order from how they are traditionally arranged.

Placed in the more common order and coupled with nearly 50 years of integration (or mind mapping) allows us to recognize the play functions immediately:

Now, let's refer back to the original set of symbols placed on the buttons. I will show it again as a point of reference:

After the discovery process of the play controls, the player will continue on within the game. If the player were to encounter a similar monitor with similar buttons and symbols associated with said monitor, they would know from their previous encounter with the device what the symbols mean. The player uses their mind map that they created previously (a form of wayfinding) to infer that this second set of buttons will reproduce the same results as before.

Let's say for a moment that the second video player uses a *new set* of symbols on the buttons associated with it. The individual playing the game could become confused as to what these new buttons may be for. They will have to repeat the discovery process all over again and this conflicting information goes against the very principal we are trying to establish. Consistent use of an established system within a game helps reinforce its wayfinding techniques.

Another point worth mentioning is the value of the provided context clues. What if the video screen was not there in either of the previous examples, perhaps it was hidden within the console only to be revealed upon pressing the play button. Without it being visible to associate the symbols to a screen, would the player have been able to recognize the buttons as a video player at all? More importantly, if the same set of symbols in the second example had produced different results from the first example, the functional consistency would be broken—what could the player expect to experience if they encountered the same set of buttons a third or fourth time? By not adhering to a functionally consistent system the game developers could disorient the player

inadvertently and crumble any previous wayfinding systems they worked hard to implement.

Symbols and icons are nice to use as graphic elements within a menu system; however, text must be utilized to some degree. Making sure the text is readable, large enough and easily seen is another critical point in developing a wayfinding system. Navigation within a series of layered menus can become very confusing if there isn't a consistent and legible path delivered to the user. If the text is too washed out on a light background, or too small on a screen, those with vision impairments may be unable to navigate effectively through the system. One issue to keep in mind are the usability limitations and accessibility problems your players may have. Myopia, color blindness, and other vision impairments should never hinder a sound wayfinding system. In addition to how the menus are viewed on screen, you must remember to implement a way to exit these screens. On any sub-screen or menu the user should be given the option to return to where they came from (lateral movement), return to the parent level (vertical or structural movement) or exit the menu system entirely (escape option).

When utilizing wayfinding within a game under the more traditional sense, one may think of maps, signposts and radar devices to help with navigation around the environment. Though effective, these elements only scratch the surface of ways to alert the player to their surroundings and location within the game. Lighting can be used in a number of ways to help "illuminate" a path for travelers—both physically and metaphorically. By using selective lighting in areas you can call attention to specific scene elements and help guide the player to the tool/key/passage and not have them feel lost. Using lighting as a form of actually guiding a player down a select path such as lanterns or torches on a wall can not only add to mood or feeling of the environment, but it can also serve as a path for the player to follow as well. Caution should be taken to use the "lighted path" method sparingly though as most of the fun in game play is in the discovery of the correct path or hidden item. It is a fine line to walk between guiding a player toward and actually giving a player the answers.

Another way of seamlessly introducing wayfinding techniques is to add creative elements within the environment. Landmarks, either natural or man-made could help a player navigate to a destination without them realizing they are following these visual cues. If a player is searching for signs of civilization in a desert region, trash may litter a certain area and alert them to a campsite or gathering place. Perhaps evidence of previous individuals in the area could trail off in a specific direction and give a "heading" as to which way the player should travel. Obfuscation of these clues are critical though as you do not want a player to feel as though the game is on "rails". Clever use of a variety of markers can lead a player on a path, or help them create a mental map for when they return (in the case of an open world campaign). Worn out wagon or foot paths within a grassy terrain, recognizable statues from afar, discernible buildings to use as markers, and any number of interesting terrain features can all add to the contextual clues a player needs to be able to navigate effectively. Remember, wayfinding isn't just about moving from place to place…It is the ability for one to recognize their surroundings and build a mental map of the area for later use *while* moving between the different places. By developing clues that are embedded within the environment a designer can create wayfinding techniques to assist the player and add tasteful functionality while avoiding the more traditional and boring "signposts" at the crossroads, or blips on a radar.

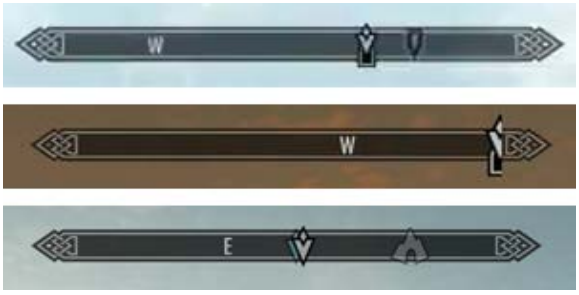
Often times developing solutions for adding wayfinding techniques into a game isn't the problem. Obfuscating those elements so they become seamless in the terrain is the real issue. Certainly a giant green arrow pointing north would direct a player where they need to go, but the absurdity of such a game element is certainly apparent. Less intrusive is the more common HUD map that is displayed innocuously in an upper portion of the screen. Though well integrated, such a device still can distract from the immersion within the game, unless it truly feels like it belongs there.

In recent times advent approaches to wayfinding have veered away from the traditional corner warts of interface design and moved towards the sleek and abstract. A perfect example would be the navigation system developed for the latest Elder Scrolls game; Skyrim. The game has a sub menu which displays a

beautiful three dimensional topographic map of the entire region. On that map destination points are activated within the player's menu system, based on what the player has discovered already, any quests they are currently taking part in, and what tasks or goals they have "activated" to be displayed on their HUD.

Upon exiting the sub-menu and entering the in-game play area, the player can use a "map" that consists of a thin bar across the top of the screen. This map represents a compass's heading and shows the player the direction they are travelling and any active locations they triggered within the sub-menu.

Not only does this system serve as the map and compass for the player, the beauty of the developed system is in it's uncanny ability to not feel invasive. The icons that alert the player to the destinations they selected aren't always there. Rather than being active and glaring at the player at all times they appear or disappear based on a clipping event generated within the engine.



Three variations of the navigational bar from Skyrim: Elder Scrolls V showing different opacity values for the different destinations on the map.

The icons start as small and faint symbols, barely visible on the navigation bar. As the player gets closer to the destination they grow in size and intensity. This seamless map blends nicely with the interface and doesn't occupy too much space, yet it is fully functional in every aspect. Not only does a player know which direction they are heading, but they can also quickly deduce their distance from their intended destination based on the size and density of the icon displayed on the map.

Making sure a player always knows where they are within a game is a crucial development issue. Constant reminders must be given within the environment

or menu system so the player can not only recognize their surroundings, but learn from their new environment and take with them additional information making new mental maps along the way. Any amount of immersion within any given location will eventually lead to an understanding of one's own surroundings. But by implementing truly effective wayfinding techniques within a game can place a novice player in even the most difficult or daunting situations and they will be able to follow the path to the destination with ease; unless of course a monster eats them first.