Culture and Affordance

Designing Outside our Comfort Zone

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Abstract:

As we move toward a global society, the way we design and who we design for needs to include an element of flexibility. In today's global market, knowing and tailoring design to fit multiple users could be the difference between a successful product and a flop. Furthermore, understanding multiple user bases and cultures can allow us to expand a market base. Affordances are one design parameter that may differ across cultures. Paying attention to how different cultures or user groups interact with their environment and what they expect from their environment, could give an advantage when it comes to design.

Affordance:

Affordance is designing something so that it looks like what it will do. For example, think about the last time you were walking out of a store and reached out for a curved handle as show in Figure 1 and were surprised when you had to push the door open rather than pull it toward you. You probably would have expected the door shown in Figure 2 to push open but not the door in Figure 1. When you expected the door to pull open based on it's handle shape and design it was lacking affordance.

Figure 1: Google Image of "Pull Door"

Figure 2: Google Image of "Push Door"

In his article, *Affordance, Convention, and Design,* Norman describes the differences between affordances and perceived affordances. Affordance is a physical characteristic. [1] Continuing with the door example, 'knowing' the door in Figure 2 is a push door and then physically pushing it open means that it does indeed have affordance. There are also perceived affordances. Perceived affordances can be described as "visual feedback that advertises the affordance" [1]. Norman gives the example of a computer screen. If a computer is a touch screen it has both physical and perceived affordance. At any point you can tap or click on the computer screen and the computer will register that tap or click. However, when a designer adds a button and it is advertised in such a way that we know when we click in that space x, y, and z will happen- that is a perceived affordance. The computer screen has affordance in that we know we can click on the screen and the buttons give perceived affordance in that we know when we click a certain area, a specific chain of events will follow. [1]

Similarly, Norman connects affordance to culture by introducing constraints and conventions. Constraints, he says, are physical aspects that limit what can and cannot be done with an object. For example, he describes that a computer's cursor can not appear outside of the screen. This is a physical constraint. Conventions, on the other hand, "prohibits some activities and encourage others". [1] Conventions reflect culture in such that they act as symbols act. For instance, we all know that a green light means go. There is no physical law or science (outside of psychology- at least) that will tell us green must mean go. Humanity decided that color would be associated with go and red stop. However, when we use these colors in design we can play on such cultural associations to encourage or discourage behavior.

Let's say you want to design a program for testing or some other similar purpose and you need your user to stop after they finish their test and wait for the rest of the class to catch up to be able to continue. You could use conventions to encourage your user to take pause. After they

complete the test section- if a screen appears with a big, red stop sign and then a note underneath to wait for further instruction this may encourage the user to stop and wait and not click around their screen. Contrarily, if the user is met with a page that shows the next test sections, they may be tempted to click and start the next part. In a culture without infrastructure for a road system, the stop sign page may not work the same, neither. The stop sign doesn't physically stop them from exiting the screen, but it plays on a cultural norm to stop at a red stop sign.

Affordance, perceived affordance, constraints and conventions arguably exist across all cultures- but the way in which we use them to appeal to our user can and should differ across cultures.

Culture and Design:

Culture can be defined as a system of shared meanings that form a framework for problem solving and behavior. [2] Indeed, difference in culture can call for a difference in problems solving. For instance, cultures even measure in different ways. The US still uses the Imperial System whilst most of the world uses Metric Units. This definitely affects the way we measure- and perhaps it also affects the way we problem solve within those units. Arguably, language could play a role. For example, the are one hundred centimeters in one meter. The prefix 'centi' itself means one-hundredth. Compare this to Imperial Units, there are twelve inches in one foot and three feet in a yard. The language the Imperial System uses does not reflect the value of the unit the way the metric system does. This could mean that someone who grew up using the Metric System could problem solve an area or perimeter problem much differently than someone who grew up using the Imperial System.

Cultural differences can also play a role in the way a user perceives our design. Returning to our measurement example, someone in the US may find it completely normal to pick up a ruler that features both Imperial and Metric units. However, if we tried to sell that same ruler in a different country- who's to say that a non-Imperial System country would not find the inclusion of Imperial units strange. Oshlyansky et el realized that not many studies had been done to understand how users form different cultures perceived meaning from a design. Yet, affordance is widely considered an important design principle in the world of Human Factors and Human Computer/ Interface Interactions. [3] They set out to understand how perceived affordance may differ within Western cultures. Previous research had shown that differences existed in strikingly different cultures- such as between Australians, Chinese, and Indonesians [2], but understanding continues to be sought between similar cultures as emphasis on the user becomes prevalent.

In their research, Oshlyansky et el found that even similar cultures can benefit from further understanding of their specific perceived affordances. The study compared the United States and United Kingdom; both western cultures that had previously been lumped into one all-to-similar category. They showed both groups pictures of light switches in both upward and downward switched positions. The goal was to understand whether perceived affordance would be the same or different for each position. They found that participants from the US interpreted the downward light switch to be "off" and the UK participants perceived the

downward light switch to be "on". Their research implies that even cultures that share many similarities may not share the same perceived affordances, further supporting the idea that one-size does not fit all when it comes to design.

Designing Outside Our Comfort Zone:

When we design a new product, we have much to consider. Engineers are often concerned with cost and functionality- but what would happen if they also considered culture and affordance? Traditionally, engineers are trained to think "outside the box" as long as those thoughts are within the boundaries of science, math, and budget. It can be argued that affordance and culture are well within those three boundaries, yet underused sources of design inspiration and consideration. However, if we considered affordance and culture early in the design process more frequently- it could be possible to make better use of a budget, math, and science.

Consider a recent design issue that Michigan Tech students faced while working in India. They were working in country to fix a water tank system that a previous Pavlis Honors College team had installed a few years prior. They were the second team to try and fix the tank system since it was installed. On the site they had to think fast to design solutions with an unexpected twist. Not only did the tank system need to be fixed, but the system needed to be monkey-proofed. Part of the reason the system was failing was because no-one had understood that in Indian Culture, monkeys must be considered when designing systems that will be left outdoors. Furthermore- no one had considered affordance! The system was not designed in such a way that made sense to the locals, so when something went wrong- or the monkeys broke into the tank- they could not figure out how to solve the problem. Early design consideration of culture and affordance could have saved time and money. Had monkeys been considered in the first place, the tank system may not have broken two years in a row. Had culturally specific affordances been considered; the locals may have been able to figure out how to fix the system themselves without needing help from a traveling team of students that normally live thousands of miles away. Furthermore, consideration of affordance and culture could have saved time for the students to implement another, sustainable project else where and funding could have been spent elsewhere, similarly.

When we research culture -and the perceived affordances that come with that culture- *before* designing, we gain insight that will save time and energy in the long run. Engineering tendency is to get the job done quickly using the most cost effective and reliable solution- but 'cost effectiveness' and 'reliability' can change based on our user. Though it may feel counter intuitive initially, spending extra time on the front end to research the realm in which our users are thinking may save use from having to spend time redesigning or 'fixing' the original solution. As engineers, we must challenge ourselves to design outside our comfort zone and consider the user's culture and the affordances that come with it *before* applying our understanding of math, science, and budget constraints in order to come up with more sustainable, marketable, and useful products.

References:

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