Affordances Report

Scorpion Exo 500 Motorcycle Helmet

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106CR - Designing for usability
Homework 4

Contents

Introduction

According to Norman (2013), the solution for good human-centred design is to “put human needs, capabilities and behaviour first, then design to accommodate”. (p8). This report will provide an insight into the Affordances, Mappings, Constraints and Conventions of the Scorpion Exo 500 Motorcycle helmet in order to demonstrate the psychological concepts employed in its design.

Affordances

According to Norman (2013), an affordance is defined as “a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used” (p11).

Norman (2013), mentions how signifiers (a sub component to affordances), are important to help a person understand what an object does visually. From the image below, you will notice a strong visual indicator of the helmets purpose. This is arguably the only indicator that should be considered for this product, as if visually impaired, it is illegal to ride a motorcycle personally unless as pillion passenger. See Figure 1.

Figure 1: Full helmet

Mappings

According to Norman (2013), natural mappings are defined as “those where the relationship between the controls and the object to be controlled is obvious”.

Upon looking closely at the helmet, I had noticed several clearly mapped functions, but not all were clear and could arguably be seen as a bad mapping by someone else. In this section, I will firstly list the good mappings, then describe mappings that I believe to be somewhat vague.

Good Mappings

The open and close mechanism for the lid (seen in Figure 1) may visually be identified by the lip at its base. Using common sense, this could provide strong visual aid in discovering its function, before the use of touch.

The images below are also examples of good mappings. A person could identify the air vents that prevent the helmet’s visor from fogging. These are mapped in a way that a rider may have access to the front slide-vents, but also allows for heat to be released from the back vent. As illustrated in Figure 2.

Figure 2: Air circulation vents

An example of good interior mapping could be how each component of the interior padding may be removed for cleaning. The components are connected with Velcro and popping buttons for ease of access. See Figure 3.

Figure 3: Interior Mapping

Visual markings are provided for left and right strap sleeves, as well as a size indicator for the users' reference. The size indicator gives both the universal 's' for small, but also its measurement in centimetres. This could potentially save time for a person who is not familiar with the 's' indicator. This could, for example, be a person from a different culture. See Figure 4.

Figure 4: Indicators

Bad Mappings

One example of a bad mapping could be the helmets locking/opening mechanism due to its lack of visible instruction. The mechanism requires some experimentation before it can be used. The mechanism may be difficult for someone that is unfamiliar with its function and potentially dangerous when attempting to operate while riding. The mechanism is also somewhat hard to locate and requires practice. Fortunately, the shape of the lever is intuitive and easily operated with enough practice. See Figure 5.

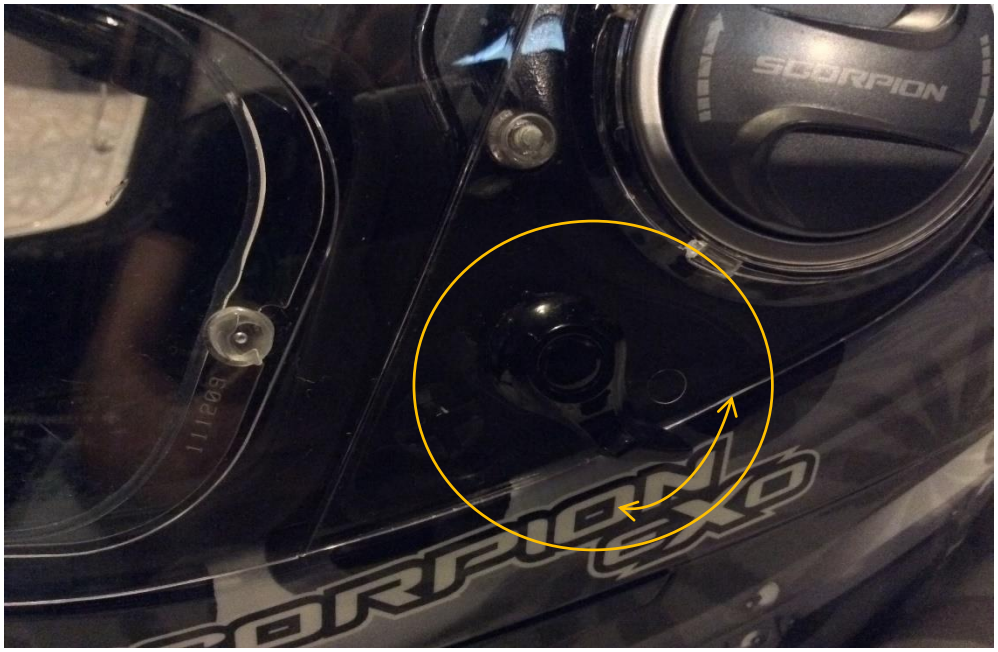

Figure 5: Locking Mechanism

Constraints

According to Norman (2013), there are four types of constraints: “Physical, Cultural, Semantic and Logical” (p125). To demonstrate an understanding of each, this section will explain one constraint of the helmet per type.

Physical

As defined by Norman (2013), a physical constraint is where “physical limitations constrain possible operations” (p125).

An example of a physical constraint for the helmet, could be the difficulty a person may experience when removing and reattaching the visor. Each side of the helmet is equipped with a silver, circular release mechanism, that can be twisted clockwise to remove the visor. Although the mechanism is clearly mapped with an arrow, it is difficult to operate both mechanisms simultaneously to release and considerable force is required when reattaching both sides of the visor back, onto the helmet. Furthermore, the process could prove more difficult for someone with, for example, arthritis or another form of medical condition, impairing finger movement.

Cultural

A cultural constraint is where two people from different cultures could be given the same task, but complete it differently due to cultural backgrounds. Every culture has what they consider to be their cultural norm and a design must take this into consideration (Norman, 2013).

One cultural constraint for the helmet could be the S logo found on the front. Although the S logo may seem harmless to most, it may signify something offensive in another culture. This could in turn prevent them from being able to use it. This could also apply to the overall design or the materials used in its production (Norman, 2013). See Figure 6.

Figure 6: The S symbol

Semantic

As defined by Norman (2013), semantic constraints are “those that rely upon the meaning of the situation to control the set of possible actions” (p129).

An example of a semantic constraint could be how the chin strap for the motorcycle helmet has been redefined over time, due to technology changing their life-saving importance. In addition, there is arguably a greater demand for improved safety with increased population, which has increased the amount of vehicles on the road. Below, Figure 7 illustrates how the chin strap has changed with time, from a simple buckle and now utilises a similar kind of technology that is used in car seatbelts.

Figure 7: Helmet safety then and now (Collectorsweekly.com 2011)

Logical

An example of a logical constraint could be when all the pieces of something are put together but something is left out of place (Norman, 2013).

A logical constraint for the motorcycle helmet design could be replacing the **last** piece of interior **first**. As there are no clear guidelines for a logical order of replacement. If the last piece was to be placed first, it would make replacing the remainder quite difficult due to obstruction. See Figure 8.

Figure 8: Logical order

Conventions

According to Cambridge Dictionaries Online (2016), a convention is defined as “a usual or accepted way of behaving, especially in social situations”. However, in the context of affordances, this could arguably relate more to cultural conventions. An example of this could be what different people from different cultural backgrounds, perceive as normal.

It could be argued that conventions have been applied to the psychological design of the helmet in the UK due to the Highway Code. As explained in **Rule 83** of the Rules for motorcyclist’s handbook, www.gov.uk (2016) states that “on all journeys, the rider and pillion passenger on a motorcycle, scooter or moped MUST wear a protective helmet”.

Due to Rule 83, wearing a motorcycle helmet has arguably become the conventional norm and has been embedded into the culture of UK motorcyclists. In conjunction, the testing of helmets was introduced, which lead to the rigorous ACU (Autocycle Union), Gold Sticker - Five Star Rating System. A design would need to conform to the rating system in order to be legal in the UK.

Although helmets may be compulsory to wear and rigorously test in the UK, in other parts of the world they are not. According to www.statutes.legis.state.tx.us (1967), in Texas, a person is not bound by law to wear a helmet beyond the age of 21. Therefore, it could be argued that USA’s cultural norms and conventions are different from the UK’s and could be reflected in the helmets design. For example, the helmet would not be required to pass the ACU Gold Sticker - Five Star Rating System, thus potentially reducing its quality. This would not be perceived as ‘normal’ in the UK.

Summary

This report has provided an analytical insight into the Scorpion Exo 500 Motorcycle helmet as a means to identify the psychological concepts that have been employed in its design. To achieve this, the concepts of Affordances, Mappings, Constraints and Conventions were employed.

In summary, I have found the helmet to be invaluable as it is more than a simple protective layer. The affordances of the helmet are more than suitable to meet my motorcycling needs. Most of the mapping systems are clearly and sensibly mapped and are easily accessible whilst riding (with some practice). I have also found the constraints to be easily overcome with experience and have no restrictions conventionally.

Table of Illustrations

References

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