ABSTRACT

The paper describes the use of three-dimensional generative participatory toolkits for modelling different transportation device configurations in a participatory design activity. The activity was carried out with two different kinds of model kits viz. abstract and concrete in four different combinations 1) abstract-only, 2) concrete-only, 3) abstract-concrete and 4) concrete-abstract. The paper aims to enquire into different ways that these toolkits operate and attempts to highlight the significance of each type of toolkit for future design endeavours.

INTRODUCTION

Participatory Design research at the early stages of the Design Process reveals deep tacit (Polayni 1983) knowledge of users and issues surrounding the use of product, to inform and inspire designers in the conceptualization stage (Schuler 1993). A participatory design research typically is composed of: Participatory prototyping (to gather collective user knowledge) and Context mapping (for designers’ use for concept generation). Bodker (2000), (Hekkert and VanDijk 2001), (Grudin and Pruitt 2002). The participatory prototyping through the use of three dimensional generative participatory toolkits is found increasingly significant for accessing aspirations and expectations for a new product design and development process (Sanders 2000). Through the use of 3D visualization toolkit, users elicit responses by making various configurations of the modules and components of the toolkits. Careful design or selection of the participatory toolkit is important to ensure effective user response elicitation. Therefore, appropriate toolkit with naturalness of use, would be required to align with company’s goals and objectives for a particular future product launch.

Author through the case study - ‘Participatory research to design a new vehicle that bridges the huge price gap between two wheelers and cars in India’, illustrates four types of participatory toolkits viz. concrete, abstract, concrete-abstract hybrid and abstract-concrete hybrid for near-future, moderately-futuristic, futuristic and very futuristic design projects. The paper describes the use and implications of use of four different toolkits (abstract-only, concrete-only, abstract-concrete and concrete-abstract) in participatory prototyping sessions.

CASE STUDY

Gap between cars and 2 wheelers in India: In 2008–2009, around 7.5 million two wheelers were sold in India and that accounted for 79% of the total vehicles sold (SIAM 2009). There are mainly compact cars and account for 60% of the total passenger car sales in India (Technology Roadmap 2006). The general price of two-wheelers in India range from 30,000INR-80,000INR and the cheapest car starts from 2,25,000 INR. There has been a long felt gap between a two-wheeler and the car. Over the years in India, two-wheeler manufacturers perceived this gap as an opportunity to launch expensive scooters & motorcycles and the car manufacturers with stripped down cars, both with a limited success.

BRIDGING THE GAP

There is an opportunity to design a vehicle that would bridge gap between cars and two-wheelers in India. But, in the increasingly dynamic, diverse and complex environments like India, the challenge to innovate and develop new personal transport vehicles demands a deep knowledge of the users and issues surrounding the use of personal transport products. It has become increasingly important to understand people’s aspirations and expectations and to utilize these insights in the vehicle design undertaking. Therefore participatory approach is adapted in this case study to get deeper user insights for...
near future, moderately futuristic, futuristic and very futuristic designs.

PARTICIPATORY PROTOTYPING

Participatory prototyping for the case study was conducted with four groups of user participants. Each group of users was diverse in terms of age and socio-economic status. Each group was given different toolkit. Prototyping was moderated by the author. Participants were asked to collectively design a vehicle that can potentially bridge gap between two wheelers and cars in India through the toolkits provided.

PARTICIPATORY PROTOTYPING 1: CONCRETE ONLY

When all the elements viz. wheels, chassis/body, passenger and luggage are replicas of actual product elements. It has a transparent base frame with slots to place wheels. Various vehicle configurations like Two-Wheeler, Three-Wheeler, and Four-wheeler can be made by use of toolkit.

PROTOTYPING APPROACH

Intent of step by step prototyping is explored in this prototyping activity. It would normally start from the wheels, as wheels need to go into slots followed by body/chassis, passengers etc. Key words used in the conversation were normally familiar and had the precedent. (Refer Transcript Excerpt 1).

These key words were names of vehicle brands, wheel configurations, features, type of vehicles etc. This form of tool-kit helps elicits more concrete and definitive responses in its natural use.

APPLICATION

This form of toolkit can be used for near future design endeavours like re-designing or re-styling existing products.

PARTICIPATORY PROTOTYPING 2: ABSTRACT ONLY

ABSTRACT TOOLKIT

When all the elements viz. wheels, chassis/body, passenger and luggage are abstract or indicative in their appearance. This allows users to devise any form of vehicle product. The blocks could magnetically join with the help of button magnets. Thus gives users easiness to quickly join and visualise.

APPROACH

The start is not defined and the kit modules are not well defined. This kind of toolkit allows users to choose their own start and also allows them to interpret results in their own way. Solutions that emerged were more systems oriented and very futuristic. Keywords were not familiar and
Fig 3: Concrete-Abstract Hybrid Participatory Toolkit.

mostly had no precedents. These keywords were about modularity, multilevel design, sleeper berths, touchbutton controls etc (Refer Transcript Excerpt 2). This form of toolkit helps elicits more abstract responses in its natural use.

APPLICATION

These responses through this kind of method may be used for very futuristic design projects where thoughts through actions flow freely and can take any direction through the use of any module of the toolkit.

PARTICIPATORY PROTOTYPING 3: CONCRETE-ABSTRACT (HYBRID) TOOLKIT

When the artificial world is concrete and man world is abstract. In this case artificial world like base plate and elements of wheels and body are from concrete toolkit and man world like passengers and luggage is from abstract toolkit. Vehicle configurations begin by placing wheels in the slots and then manipulation with abstract and concrete elements is done.

APPROACH

Dual way is intended to regulate start and then freely use abstract elements for man world to get more insights. Keywords were familiar and solution oriented towards current vehicle problems. These keywords were space efficiency, safety, storage space, vehicle footprint etc (Refer Transcript Excerpt 3). This form of toolkit helps elicit controlled abstraction in its natural use.

APPLICATION

The response generated through this kind of toolkit may be used for design of moderately futuristic projects where practicality is more important.

PARTICIPATORY PROTOTYPING 4: ABSTRACT - CONCRETE (HYBRID) TOOLKIT

When the man world is concrete and artificial world is abstract. Abstract blocks of wheels & chassis/ body and concrete elements of passengers & luggage were used.

APPROACH

This dual way is indented to first allow users to freely choose any starting point and then control it with concrete elements. Keywords emphasised on passengers, issues surrounding comfort & safety, accidents, personal mobility etc (Refer Transcript Excerpt 4). This form of toolkit yields more free-flow creativity with practicality in its natural use.

APPLICATION

The responses generated through this kind of toolkit may be used for futuristic design projects, where free flow creativity is more important.

CONCLUSION

Depending on design lead time and business goals, four types of participatory toolkits viz. concrete, abstract, concrete-abstract hybrid and abstract-concrete hybrid can yield concepts for near-future, moderately-futuristic, futuristic and very futuristic design projects in prototyping activity. Step by Regulation is possible with concrete elements for more practical responses. When used with all types of toolkits,
designers/researchers can map possible directions for near-future, moderately-futuristic, futuristic and very futuristic design projects and further use in the design process.

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