

# Prototype Hacking: Succinct Physical Communication For Design and Business

**David Cranor**  
MIT Media Lab  
20 Ames Street  
Cambridge, MA 02139, USA  
+1 970 9889323  
cranor@media.mit.edu

**Philippa Mothersill**  
Procter & Gamble (Gillette)  
460 Basingstoke Road  
Reading, RG2 0QE, UK  
+44 118 9231928  
mothersill.pj@pg.com

## ABSTRACT

This workshop aims to bring people from academic and corporate organisations together to facilitate discussions about the different reasons for developing and sharing prototypes, as well as to provide a forum for the attendees to share methods, tools and techniques for supporting the creative design process. The seeding of this discussion aims to inspire the attendees to further these ideas within their organisations, and through this integrate the ‘hacker’ mindset - the idea of putting together existing resources in a clever fashion to suit other purposes [6] – into their own development methodology.

## Keywords

Rough prototyping, hacking, physical communication

## INTRODUCTION: HACKING IDEAS TOGETHER

Rough prototyping to quickly create functional and aesthetic models in order to communicate ideas through physical media is commonplace in design research institutions. The experimental, small budget, and time pressured nature of their projects form a perfect breeding ground for ‘appropriate applications of ingenuity’ [4]. Unfortunately, this method of expression is not commonly employed in a business enterprise setting; the perceived need for high fidelity models can mean prototypes can take months to make and early ideas are rarely shared in their rough forms, as highlighted in previous Prototype Hacking sessions.

However, in both of these environments, it is crucial to share prototypes to build on an idea [2]; from allowing consumers to understand the role, look, feel, and implementation [3] of an idea, to communicating an intangible experience to more business minded people [1]. Whilst the reason prototypes are made and shared may differ, many of the tools and techniques designers and engineers use to make rough prototypes are similar and relevant to both industry and academia.

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This workshop invites discussion regarding what these two worlds can learn from each other about communicating ideas through physical objects, and how can they use these methods to enable their respective organisations to enhance their own abilities to effectively create and share prototypes.

## PROTOTYPE HACKERY WORKSHOPS: A FORUM FOR DISCUSSION

Our ongoing series of workshops bring together representatives from industry and academia in order to discuss not only the different reasons for developing and sharing prototypes, but also to share methods, tools and techniques for supporting this creative design process.

Previous workshops held at the MIT Media Lab in April ‘11 and a P&G site in July ‘11 facilitated discussions in which these topics were considered. The key elements the groups found to contribute to successful prototyping, and the different ways in which industry and academia tackle these issues are summarised below.

**Tell the Story:** The key to communicating well with any prototype - be it a technical test rig, a ‘looks-like’ visual model, or an intangible video experience – is to help the audience understand the idea and imagine the potential of its impact. Because design research in academia often explores ideas and technologies on the fringes of possibility, researchers in this area can be very good at designing experiences which can help audiences understand an idea, sometimes by utilizing additional sensorial cues to enhance intangible concepts. Conversely, industry often designs products for the here and now, hence presenting the prototypes in as natural a setting as possible thus assisting the audience to contextualise the design and help them more readily understand the idea.

**Consider the Audience:** Prototypes tell different messages to different people. An issue prevalent within industry is the range of audiences of varying levels of understanding to which a prototype must be presented. While an engineer may be able to understand a prototype of a complex technology and not mind about its unfinished appearance, people in management or marketing may not be able to interpolate how a very rough technical prototype can lead to the final product. Overall, the key is

understanding the aspects of the idea that are most important to the audience and developing prototypes to enhance those, allowing the idea the prototype is trying to explore to be clearly communicated.

**Communicate the Key Concepts:** Prototypes are used to develop certain aspects of an idea; they are not the finished product and thus cannot convey a finalised experience. The time and resource pressures of academia compel designers to only consider the key concepts needed to explore a design when developing a prototype. Identifying the crucial elements necessary to communicate an idea and using placeholders for the aspects of the design that are not yet developed can save time, money and effort.

**Look around you for inspiration and support:** Inspiration for making, as with other creative activities, can often come from the least expected source. Often simply being aware of all available resources, a commonly overlooked practice in huge industry organisations, can help to visualize a clearer path between the idea and the finished prototype. Taking advantage of “making” blogs, hackerspaces and the communities which surround them helps to keep in touch with the latest tools, techniques, and visual communication trends.

**Tools and materials:** A key to being able to make things effectively is about understanding the potential of all of the tools which are at one’s disposal [5] and having access to the right materials for the job. Industry’s sometimes conservative attitude towards experimentation with new materials or processes can hinder the experimental evolution of prototype creation. The variety of prototypes and projects in academia and the openness to experimentation calls for the use of a wide range of materials and tools, and often in unusual applications, resulting in innovative prototype creation techniques.

#### **HACKERY IN PRACTICE**

Our workshops provide a forum for designers, engineers, scientists and managers from industry and academia to discuss the benefits of communicating through objects and the barriers to creating these prototypes effectively within their respective organisations.

The wide range of participants have highlighted the large divide between people’s creative practices at home and at work. Many workshop attendees have shared stories about the very experimental, and often unsuccessful, creations they have made at home and how they cannot always use these simple creative methods in their work environment. Discussions in past workshops have stressed that the striving of industry to make perfect models can limit the options for experimenting with and sharing ideas through rough prototyping [7].

One conclusion which the groups considered key in rectifying this divide is making an effort to open people’s minds to creative experimentation during the development of effective prototypes. Enlightening managers and

research scientists as well as designers and engineers to the value of sharing rough prototypes and empowering them to use simple tools and techniques to make prototypes themselves can enable ideas to be created and iterated upon faster and more effectively.

A second topic which formed a large area of discussion within the workshops was the enabling of this creativity through giving access to the resources needed to create rough prototypes. Many members of industry commented on the lack of accessibility to the tools they needed to make prototypes quickly and cheaply within a large organisation. The workshops provided a forum for groups to discuss these issues and share inspiring methods for incorporating ‘hacking’ tools and techniques within a potentially more conservative corporate environment.

An example of this integration into an industry organisation has been the incorporation of the ‘hackery’ ethos within an R&D site of Procter & Gamble. Workshops held there have helped to inspire designers, engineers, scientists and management to understand the value of sharing rough prototypes, and the regeneration of disused workshop areas into ‘protospaces’ has helped to enable more employees to have access to the simple tools, techniques and materials needed to create effective prototypes quickly and cheaply.

The ongoing goal of this work is to further facilitate discussions like the ones described here and carried out at conferences like DESIRE, hence assisting people from both industry and academia to ingeniously apply simple creative methods to more easily realise their ideas in physical form.

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