

# **OpenMaterials :: P2P Theory in Practice**

*an open research group case study*

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[OpenMaterials](#) is a research group dedicated to open investigation and experimentation with DIY production methods and uses of materials.

This project was initiated by Catarina Mota and Kirsty Boyle in 2009. It was during Interactivos'09: Garage Science, hosted by Medialab Prado, that Catarina and Kirsty met, along with the core of the openMaterials collaborators. It was also at this time that the idea for creating an open research platform investigating materials was conceived.

Interactivos'09: Garage Science was an intensive [project development workshop](#) (January 28 through February 14, 2009) and a seminar that explored practices where art, science and technology meet. Participants were invited to turn the Medialab Prado into a garage laboratory where low-cost, accessible materials were used to develop objects and installations that combine software, hardware and biology.

During the workshop we built a [fully functional RepRap machine](#). This machine is now permanently available at the Medialab Prado for use by the community at large to turn their ideas into physical things. RepRap is an open source project for building a self-replicating 3D printer which is capable of producing real objects. A RepRap machine enables creative and inventive possibilities to explore art, science and technology, giving 'citizen scientists' the power to manufacture and share designs and experiments in an open and distributed way. In this context, DIY refers to being self-reliant by completing tasks autonomously, and promotes the ability of the ordinary person to learn to do more than he or she thought was possible. The evolution of desktop 3D printing brings advanced fabrication and prototyping technology to people everywhere who wish to learn how to make things previously considered improbable.

Alongside the RepRap project, other projects developed during Interactivos'09: Garage Science included the [Fruit Computer Laboratory](#) (Laboratorio de ordenadores-fruta) by Alejandro Tamayo and [Garage Astrobiology](#) – Microbes and EMF (Astrobiología de garaje - Microbios y campos electromagnéticos) by Andy Gracie, who are also now active openMaterials collaborators.

The format of the Interactivos'09: Garage Science series provided us with the opportunity to not only connect as individuals and as creatives, but has now formed long term collaborative partnerships and future opportunities for many of the participants. It soon became clear during our discussions that we were not only interested in novel fabrication and DIY processes, but also very committed to exploring and experimenting with a broad range of materials.

As we were interested in DIY fabrication and experimenting with different materials in our art work, we were soon faced with a series of questions: What websites list materials? Where are the materials? How do we make these materials DIY? Realizing that there were no simple answers to these questions and that accessible information was scarce when compared to other areas, such as hardware, we also did not want to keep our research private, and felt that by sharing our experiences we could all work together, albeit remotely, on learning about materials.

In the spirit of the open source software and hardware movements, we began discussing how we could promote materials to be researched and developed in a public, collaborative manner. We see materials as an open resource, and wish to establish an open process for exploring and sharing knowledge, techniques and applications related to materials science.

Inspired by Eric Raymond's comment in 'The Cathedral and the Bazaar', regarding the bazaar style which he described as "a great babbling bazaar of differing agendas and approaches", we hope to encourage discourse and experimentation with the broadest range of materials and processes possible. We aim to promote the concept of 'open materials', but believe we are also establishing a model for p2p 'open research', which presents a range of opportunities and possibilities.

OpenMaterials is thus intended as a platform to share ideas, knowledge, resources and discoveries, document experiments and

processes, as well as provide a means of connecting people. We aim to do that by:

- gathering relevant resources (such as news, scientific articles, papers, artworks, videos, etc) and share them via blog posts and links.
- publishing in-depth articles and interviews with other researchers and artists.
- creating a grand repository of relevant materials, tools and techniques, accessible and editable by all those interested in this research area. This wiki will contain all the data we collect during our research, and our attempt at creating a comprehensive and useful resource for all those who wish to work with or just learn more about smart materials. We will strive to provide accurate descriptions of the different types of materials, as well as detailed information on physical properties, uses, techniques and hacks, where to get them, who's using them and who's improving them. In this context, one very important issue that needs to be addressed is the matter of classification. We are currently discussing ways in which to categorize materials in an intuitive way that can become clear and easy to navigate for all.
- experimenting, documenting our experiments, and sharing them via tutorials, detailed explanations, and video demonstrations. From ceramic, paper, textiles, polymers, metal, semiconductors, biomaterials, smart materials, and tools we are open to exploring all methods and applications related to materials.
- maintaining an open call for collaborators and welcoming any and all we want to contribute to this pool of knowledge.
- forming a network of individuals and a groups around the world, while encouraging and participating in open and public discussions of all the issues at play in open source systems and in open materials in general. The openMaterials website was launched in April 2009, and already there is a huge amount of interest and support. We recently formed an alliance with the [Open Manufacturing](#) movement, an email list which was initiated by Nathan Cravens. The list was formed after discussions with Michel Bauwens on the p2p research list about starting a group for Open Manufacturing.

Above all OpenMaterials aims to inspire others to experiment and share knowledge, ideas, experiences, connections.. which we believe is

the key to the future of successful open source everything, and subsequent abundance.

Currently the [openMaterials collaborators](#) are Catarina Mota (Portugal), Kirsty Boyle (Australia), Erika Lincoln (Canada), Anab Jain (India/UK), Alejandro Tamayo (Colombia), Dr. Marc Dusseiller (Switzerland), Jefferey Walker (United States), Andy Gracie (UK/Spain) and Hiroya Tanaka (Japan). The majority of group were involved in the Interactivos'09: Garage Science and met at Medialab Prado in Madrid, and enjoy working in a distributed but connected way sharing research relating to materials.

### **References**

Eric S. Raymond (1999). The Cathedral & the Bazaar. O'Reilly. ISBN 1-56592-724-9. <http://www.catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar>