Artcodes

An interview with Boriana Koleva and Emily Clare-Thorn

When design meets technology, interesting things can happen. But how does it work bringing teams together who have different goals and speak different languages? Boriana and Emily tell us the story of Artcodes, and how technology fulfilling a particular function can be beautiful at the same time.

Tell us about Artcodes and how they came about?

QR codes are a type of two-dimensional barcode containing information about an item to which they are attached. They can be read by devices such as cameras and the images are interpreted by the technology. They are very robust, but the grid of black squares on a white background is not particularly pretty, so they tend to be hidden - on the bottom of a plate for example.

We were interested in developing an alternative way of using computer vision where the markers would actually add to the aesthetics of the product rather than be a necessary evil. After various discussions with our collaborators (including Central St Martins) and running workshops to test the ideas with users, we developed an existing ~~new~~ topological approach (d-touch) where, as long as a few simple drawing rules are followed, you can recognise a code no matter what the shape. By pushing this existing software further by introducing and developing it alongside designers we were able to create beautiful and complex imagery- now known as the Artcode.

An Artcode is made up of regions, a boundary and blobs, which together represent a code – and this simple set of rules gives a lot of power to designers to be creative. The technology uses an app which can be downloaded on to a smart device and can then be used to scan the Artcode — the app does not recognise the image but scans the topography of the image. By making such decorative patterns interactive, all manner of everyday objects can become part of the "Internet of Things" simply by decorating their surfaces. Pointing a camera at a thing might then enable people to learn about what it is, how it was made, and how to use it; to access personal memories or review their history of use; or to trigger other contextually relevant services.

Where were Artcodes first used?

We worked with the London restaurant chain, Busaba Eathai, to provide ideas for an enhanced digital dining experience, allowing customers to scan decorative pattern designs on tableware, menus and placemats. The intention was to allow the diners to access information such as specials of the day, a view into the kitchen to see the food being prepared, and to learn about each dish, its ingredients and any possible allergens. Busaba was one of the first restaurants to sell Thai street food so they were also very keen on communicating the stories about the culture that inspired the food, and the history and social context of the dishes. They were also interested in ideas around a rewards programme through the phone app.

How did designers find working with the technology?

To develop the patterns for the tableware, we commissioned a number of designers who were completely unfamiliar with the Artcodes technology. We ran a training day for them so they could learn the design rules and play with drawing Artcodes. They then produced a number of beautiful designs for a given set of codes which were pulled together into a book and we used those patterns for the design of the tableware.

However, the designers were beginning to create more complex and amazing patterns, and the technology we were using at the time was unable to recognise them. We started exploring the idea of being able to embed multiple codes into a single illustration, something we had not tried before. That required our developers to add extensions so the technology could cope, and at the same time we needed to make it more robust for working in the restaurant environment where variables such as reflections, shadows and curved surfaces needed to be considered.

So the technology was being pushed hard by the designers?

Yes, it was. While exploring a number of ways to extend the technology, it was important to work closely with designers to gain their feedback on what makes sense to them – the technology needed to remain very easy to understand and not put constraints on the creative process. There were times when ideas made sense to technologists, but it was just not possible for designers to work with them.

An example of this was when the technology was extended through other spatial relationships to open up the code space. This allows us to make more distinctive codes that can be robustly recognised and potentially allow new interactive opportunities as well. We explored a number of different technical approaches for doing this, some of which were not workable solutions for the designers. In the end, the one that the designers preferred was based on surface area size. Now we could play with the orientation of the code – reading the pattern from different angles would be like reading different codes, and hence linking to different content.

Colour filtering was another big development again pushed by the designers, enabling layering of Artcodes - depending on the colour filter you would see a different code. We used these developments to showcase the use of Artcodes on furnishings.

What sort of furnishings did you work with?

We created three big wall murals that were deployed at The Nottingham Writers Studio, Mozfest, and one is decorating the wall in Horizon for visitors to play with.

As part of the EPSRC funded "Living with Interactive Decorative Patterns" project, we worked with ceramic designers and Johnson Tiles to explore the creation of beautiful tiles decorated with Artcodes. We also commissioned designers to produce digitally interactive wallpaper and we are aiming for these to be installed in public places and in homes. One of which will be installed into a private home where it will be used as a virtual guest book in the spare room.
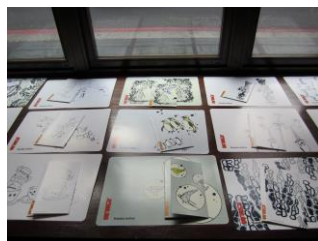
What other new creations have been developed using Artcodes?

We commissioned an artist, Alice Angus, to design a beautifully illustrated, freestanding advent calendar - traditional and handcrafted in style, and featuring scannable Artcodes on stickers for under the doors. We developed the Christmas with Artcodes app, and instructions on how to customise the stickers and associated content to share with family and friends. It was very well received, and we are set up to sell the product on Etsy and through various Nottingham retail outlets in the lead up to Christmas.

And the future?

We have carried out a number of workshops with the calendars and collected data through surveys, and we will be collating the data for research purposes.

One of the projects funded by Horizon was looking at hybrid gifting (digital and physical combined), working with the BBC to find innovative ways to release their content in a personalised way. We ran a workshop with the advent calendars, and also looked at different ways of utilising Artcodes with children. Scanning Artcodes on murals for story-telling at bedtime, or using them in backstage tours for linking to content, are ideas we may pursue.

We are also working with Nenescape, a Heritage Lottery funded Landscape Partnership Scheme (www.nenescape.org) using Artcodes to re-connect local people to, and attract new visitors to, the river Nene and its surroundings. The objects we have used to deploy Artcodes up to now have been 2-D – wallpaper, murals, placemats – and we have the opportunity to work with 3-D objects and materials on this project, such as shoes! It will also provide us with a long-term Artcodes deployment

in a heritage environment, where the organisations themselves have the capability to maintain and update the interactive experience

We have deployed Artcodes in various settings - City Arts Nottingham window display at the Festival of Light, artCHI brochure, Design Carousel in London, Create Festival, London Design Festival – Tent, Tate Britain, Tate Exchange, Lakeside Gallery – http://www.artcodes.co.uk/