**What is Culture Lab?** Culture Lab is a beautiful building dating back to 1889, when it was the Grand Assembly Rooms. In 2006 it was renovated and transformed into Newcastle University’s center for interdisciplinary research in digital media. Although the Digital Interaction Group makes up the bulk of Culture Lab’s research community, we share it with SiDE, the Social Inclusion and Digital Economy project (of which we are a part) and postgraduate students in arts and culture. Culture Lab also functions as an arts venue with performance spaces, so there is always something different going on.

**And the Digital Interaction Group?** The Digital Interaction Group is actually part of the School of Computing Science, but we are located in Space 2, the main research space in Culture Lab. This is a studio space we designed as a very open and collaborative environment. Space 2 serves as a complete workspace, with a mix of digital fabrication tools, desks, meeting tables, settees, and full-blown installations. Things are in a constant state of flux as we reconfigure the space for demos, open labs, and our famous kitchen talks (so group members need to be “robust”). As Culture Lab isn’t logically or physically part of any school or institute, it acts as a neutral ground, which makes it easier to collaborate across disciplinary boundaries.

We have a core team of about 40 researchers, which makes us one of the biggest HCI groups in the U.K.—five academics, and currently 18 researchers and 18 Ph.D. students. There’s an inspiring mix of academic backgrounds and research specialties, including computer science, fine arts, psychology, electronic engineering, education, sociology, design, and social gerontology. With this critical mass of researchers who have a range of knowledge and core skills, we mix and match people to projects (both official and guerilla), creating a vibrant atmosphere of collaborative working.

**How did the group come about?** Patrick Olivier established the group by moving into Culture Lab in 2006, with Pete Wright joining in early 2010. Our research agenda and our capabilities have evolved over the years, but at their core is our commitment to experience-centered and participatory design, the design and making of hardware for pervasive interaction, applied research in machine-learning techniques for context-aware computing, and a design-led approach to inquiry that explores innovative forms of digital devices. We often joke, though it is in fact true, that our emphasis on experience-centered design arose as a result of Patrick’s previous life as an AI researcher at the University of York in the 1990s, where he saw the experience-centered approaches adopted by Pete Wright, Andrew Monk, and Mark Blythe and assumed it was mainstream HCI!

**What are your unique selling points?** As an interaction design group, we are pretty unusual in not only having workshop spaces that include 3-D printers, laser cutters, PCB pick-and-place machines, and woodworking and metalworking facilities, but also having the skills among our group members to actually make use of them! This “making” aspect of our research practice is something visitors (and we get lots of them) always comment on as being particularly stimulating. Indeed, we would say that one of our unique selling points is our capability to both design and make new forms of interactive technology—for example, everything involved in producing a new sensor platform (from PCB design to fabrication). But it is not just about technology—our conceptual...
and methodological agenda around participatory and experience-centered research goes hand-in-hand with our making and our commitment to practice-based inquiry. All of our projects have a multidisciplinary component, involving academics from a range of schools, including health services, clinical sciences, architecture, business, social science, and art.

Who are your neighbors? We have a range of collaborations with Northumbria University (a 10-minute walk away), which is home to Pam Briggs (PACT Lab), Jayne Wallace (who recently moved there from our group), and Mark Blythe. We have longstanding exchanges with Sheffield Hallam University, the University of York, Goldsmiths, Lancaster University, Royal College of Art, Microsoft Research Cambridge, and Philips Research (Eindhoven). We also have regular visits from Andrew Monk (York) and John McCarthy (Cork), with whom we have a number of ongoing projects.

Could you give some examples of recent projects? We have so much going on at the moment, it’s hard to choose, but we can talk about our research threads and illustrate them with examples.

One of our threads involves connecting people, storytelling, and experience. The Personhood in Dementia project (photos a and e) is a collection of pieces addressing the possible preservation of aspects of self and identity in dementia. The project has developed through in-depth, co-creative research with Gillian, who has dementia, and her husband and full-time caregiver, John. Gillian used to own lots of beautiful dresses, many of which she made herself. John kept remnants of the dress fabrics; Dress Brooch captures each of these fabric pieces so that Gillian can wear her dresses again. RFID technology allows the recording and playback of sound, so they can record, to each piece of fabric, their memories, stories or even pieces of music from when the dress was originally worn (www.digitaljewellery.com).

A second thread in our research is context-aware computing. As part of our core capability, we developed our own accelerometer sensor platforms: WAX (for wireless transmission in interactive applications) and CWA (for logging of up to a month). WAX is the sensing technology behind the Ambient Kitchen (photo c), which is our research platform for exploring context-aware applications relating to food preparation. These include situated prompting for people with dementia, second-language learning through cooking, and the measurement of cooking competence (skill and knowledge of cooking). This thread depends on our ability to produce not only basic technologies, but also new algorithms and approaches to activity recognition. As a very visible artifact of our research, Ambient Kitchen provided a common ground for collaboration with commercial partners (e.g., Philips Research) as well as nutritionists, linguists, psychologists, and social gerontologists. Both WAX and CWA are used by a number of our collaborators.
A third thread is expressive interaction and media for live performance and production. Waves and Humanaquarium, both presented at CHI last year, are novel performance systems that offer good examples of how we look to combine theory and practice in our research. More recently, we have also been looking at creativity in collaborative TV production settings. StoryCrate is a production tool used in a studio or on location. Developed in collaboration with BBC Research, it comprises a high-resolution tangible/multitouch display built entirely into a portable flight case. StoryCrate (photo b) serves as a global status indicator for the production but also supports the skills and creativity of on-site production staff by allowing them to instantaneously slot “rushes” from live camera shots into a storyboard. This live storyboarding allows instant playback of clips in the final production order, rather than the order in which they were shot—a never before accomplished process, especially while the shoot is taking place!

A fourth thread is health, well-being, and learning. Our research in this thread covers a broad range of contexts, from collaborative learning and the emotional well-being of children in schools to the self-management of chronic illness and public-health intervention design. One nice example is MagicLand, a Ph.D. project that is exploring how children and play therapists could use digital technology in nondirective play therapy (photo d). This has required us to design and evaluate our system in relation to the theory and practice of nondirective play therapy, which is rather different from a traditional tabletop design exercise, with nondirective play therapy foregrounding the creation of trust (between child and therapist), creative expression, and children’s sense of control over their environment. MagicLand is currently undergoing a three-month evaluation at a specialist play therapy center, which is indicative of our commitment to real-world deployments and longer-term evaluation.

What’s next?    David Kirk, Madeline Balaam, and Thomas Plötz have all recently joined Newcastle, which will give our capabilities in fieldwork studies, design, and context-aware computing a real boost.

In terms of projects and programs, we are in the process of establishing a universitywide Centre of Digital Health and Wellbeing, which will provide a focus for our existing collaborations with health researchers and a springboard for new research in mental well-being, speech and language therapy, and user-centered design of healthcare services. We have also just been awarded funding to support one of the U.K.’s four Knowledge Exchange Hubs for the creative industries (in collaboration with Lancaster and the RCA). This is an academia-industry partnership to design and develop participative media for exhibitions, broadcasts, and live performances. The Creative Exchange Hub will start in January 2012.

Event-wise, we are hosting DIS 2012 and Pervasive 2012 back-to-back in June, which will give everyone a chance to come and see what’s happening in Culture Lab, Newcastle, and the beautiful Northeast of England!

What about the longer-term vision? Of course, we want our research to make a difference in people’s lives, but we’re also very aware that as a university we have a role to play in our local and regional community. This means pursuing longer-term endeavors through initiatives like Culture Lab On-site, which is an off-campus location for community and business engagement. Ultimately, we hope that with our civic and local academic partners, Newcastle will be one of Europe’s leading centers for interaction design research.