



Knowledge | Briefing

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Welcome to LKL, and to our Open Evening, from LKL Co-directors Richard Noss and Alex Poulouvassilis

Crossing Boundaries: A Special Role for Digital Technologies?

Crossing boundaries can be unnerving. Boundaries of culture and language or work and play are sometimes difficult to see past, let alone cross. Disciplinary boundaries between knowledge domains are particularly difficult to cross – their discourses, aims, methodologies and epistemologies are often highly developed in ways that make it difficult – sometimes deliberately so – for the outsider to gain entry.

For those of us working in the London Knowledge Lab, crossing the boundaries between education as a social science, and computer science has been quite an experience. We started on the journey to create an interdisciplinary research facility hardly three years ago, without many of us appreciating the challenges we would face and the kinds of boundaries we would need to cross in order to achieve it.

From the outset, we represented a few sub-disciplines of education and a few of computer science. We had virtually no projects that spanned these disciplines, and – to begin with – rather few incentives to take the time to learn to listen to and hear what each other said! Yet now we have a range of projects that span the various disciplines, and researchers who would be at home in either 'piece' of the lab.

In principle, we might consider the process of achieving interdisciplinarity as one of a cultural shift. We have learned more about each others' viewpoints and approaches and, in doing so, perhaps learned how these might enrich our own. So much would surely be true in any building full of people who share some common interest – ours is learning and knowledge – and who share the goodwill to find out more. But our case is rather special, because our shared interest is in the use and impact of **digital technologies and media** in learning, and in the discovery, creation and sharing of knowledge.

Think of the most ubiquitous technologies, the ones we love rather than hate. Mobile phones, Google Earth, Facebook, YouTube, the web. These technologies do very different things, but they are attractive

because they put us more closely in touch with the people and things that we care about – finding our way, talking to friends, sharing our creations and passions, and discovering new opportunities in work and play.

Technologies of this kind are, perhaps, what the educational theorist Ivan Illich had in mind when he described *convivial* tools.

To the degree that he (sic) masters his tools, he can invest the world with his meaning; to the degree that he is mastered by his tools, the shape of the tool determines his own self-image. Convivial tools are those which give each person who uses them the greatest opportunity to enrich the environment with the fruits of his or her vision.

Convivial tools, therefore, can be used to express meaning in action – tools that work for us allow us to express what we mean more generally, and enhance our relationship to those to whom we express ourselves. They allow us, especially with the advent of ubiquitous broadband connection and the web, to express meanings for ourselves, *and* to appreciate better the meanings of others. Of course the computer itself is not convivial – it is easy to think of tools that engender anything but conviviality!

Our shared interest in the design of technologies for learning and knowledge enhancement has therefore helped us to see beyond our own boundaries into those that define meanings for others: digital technologies and media make good **boundary objects**, and provide a powerful setting for mutual engagement.

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information on
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new staff@lkl...



Hassan Baajour has a BEng in Computer Engineering from the University of Portsmouth. He is currently a Research Assistant on the MyPlan project, working on ontology-based learner modelling in

the context of service oriented architecture for personalisation.

Brock Craft received a PhD in Computer Science at University College London in 2007, and an MS in Human-Computer Interaction from DePaul University (Chicago) in 2001. Brock's research is focussed on developing design methods for Information Visualisation, using qualitative research methods.



Magdalini Kolokitha currently works as a Research Officer on the Learning Skills for Science (LSS) project. Her PhD research is located within the field of Sociology of Education, and focuses on European Higher Education policy and



specifically the Bologna Process.

Roman Kontchakov is a Postdoctoral Research Fellow. He is currently working on the EPSRC-funded project Computational Logic of Euclidean Spaces.



Jacey-Lynn Minoi works as a Learning Technology Fellow, within the Learning Technologies Unit. Her responsibilities include the support of staff in using technology for teaching and learning.



Sandeep Mittal is a PhD student, whose research involves investigating flexible data sharing using ECA rules in a schema-based P2P data integration.



Kaska Porayska-Pomsta is an RCUK Academic Fellow. Her research interests include artificial intelligence in education and computational linguistics, socio- and psycho-linguistics and social science.



Sara Price is an RCUK Academic Fellow. Her research primarily focuses on the role of digital technologies in learning. With a background in cognitive psychology, her work is based on theories arising from research in cognitive science, and particularly those relating to representation and reasoning.



Jonathan San Diego is a Post-Doctoral Research Fellow. His main research interest is in how representations influence cognition and learning, and in how the rich, linked, interactive representations which are possible in computer-based systems may be exploited to improve teaching, learning and reasoning.



Josh Underwood is a Research Officer, currently working on the VeSeL and e-Science projects. His research interests include appropriate new technologies to support and link collaboration and learning around scientific data and processes.



Nicolas Van Labeke is a Postdoctoral Research Assistant. His research interests are in artificial intelligence in education (learner modelling, personalisation, external representations).



Michael Zouboulakis is a PhD student, whose research concerns a critical comparison between query-based and event-based architectures for wireless sensor networks.



Neil Selwyn is a Senior Lecturer, whose research focuses on information technology and society. The two over-riding themes throughout his work are the place of technology in everyday life and the sociology of educational technology.



Neil describes his experience of joining LKL on page 8



new projects@lkl...

CIVICWEB

Funding: European Union

LKL project team: Liesbeth de Block, Shakuntala Banaji, David Buckingham

Project description: This project analyses the potential of the internet to promote civic engagement and participation among young people (aged 15-25). It focuses on youth oriented civic websites, their users and producers who come from diverse backgrounds, and asks questions about the role of civic websites in non-formal learning, the development of social capital, and young people's political, social and economic participation.

Computational Logic of Euclidean Spaces

Funding: EPSRC

LKL project team: Michael Zakharyashev, Roman Kontchakov

Project description: Much of the spatial information we encounter in everyday situations is qualitative, rather than quantitative, in character. Thus, for instance, we may know which of two objects is the closer without measuring their distances; we may perceive an object to be convex without being able to describe its precise shape; or we may identify two areas on a map as sharing a boundary, without knowing the equation that describes it. This project is investigating the computational properties of spatial and spatio-temporal logics for reasoning about mathematically well-behaved regions of Euclidean space, and developing algorithms for reasoning with these logics.

ECHoeS

Funding: ESRC/EPSC (TLRP)

LKL project team: Kaska Porayska-Pomsta, Genaro Rebolledo-Mendez

Project description: The ECHoeS project aims to establish the interdisciplinary foundation necessary to investigate the impact on 4-10-year-old children's language usage during collaborative task performance with other autonomous agents. The focus will be on children with Asperger syndrome. The long-term aim is to provide children with an opportunity to explore language issues during social interactions *and* to give researchers tools with which to investigate the relationship between children's communication skills and their learning.

e-Science Usability

Funding: ESRC

LKL project team: Rose Luckin, Kevin Walker, Josh Underwood

Project description: In e-science, scientists access and share data globally, have remote access to large data sets and facilities such as telescopes and particle accelerators, and use autonomous sensors and mobile devices to collect and analyze data in the field. This project aims to help develop and support new e-science communities, involving science teachers and their pupils, and to expose young people to e-science as a natural way of engaging in scientific research.

Learning Skills for Science

Funding: Gatsby Charitable Foundation

LKL project team: Michael Reiss, Sara Price, Magdalini Kolokitha

Project description: This project is evaluating the Science Enhancement Programme (SEP)'s *Learning Skills for Science* programme. The main aim is to ascertain the impact of the English-based LSS programme on the teaching and learning of science in secondary schools.

Learning to Innovate

Funding: WLE Centre, Institute of Education

Project team: Neek Alyani, David Guile, Phillip Kent

Project description: Compression of business lifecycles, increased customer/client needs, and intensifying competition encourage firms to explore and invest systematically in embedded learning and innovation processes. There is a dearth of literature that critically engages with innovation and 'learning to innovate': the aim of this one-year project is to mark the research terrain, formulate a framework, and at a later phase, a plan to synthesize and evaluate the concept.

learning- innovation	socio-cognitive	socio-cultural
examples of approaches		
re-situation and re-development of practice and/or artefacts	learning-loop approach Argyris & Schön	social practice approach Lave & Wenger Brown & Duguid
creation of a new practice and/or artefact	SECI cycle approach Nonaka & Takeuchi	activity approach Engeström et al

a framework on *learning to innovate* (Alyani & Guile, forthcoming)



exploring the role of firms' learning in the innovation process



MrGen

Funding: TLRP (TEL)

LKL project team: Richard Noss, Alex Poulouvassilis, Celia Hoyles, George Magoulas, Niall Winters, Ken Kahn

Project description: Expressing generality, recognising and analysing patterns and articulating structure are at the core of mathematical thinking and scientific enquiry. These ideas are, however, notoriously elusive for students, who routinely find themselves unable to understand what mathematics is about. MiGen responds to these challenges by developing an intelligent environment to support teachers in improving 11-14 year-old students' learning of mathematical generalisation.

Learning from Online Worlds: Teaching in Second Life

Funding: Eduserv Foundation

LKL project team: Diane Carr, Martin Oliver, Andrew Burn

Project description: Learning exists in social worlds and games - but what does it look like, how might it be documented, and how is it supported? This project will research and theorise learning in two different online worlds, Second Life and World of Warcraft, and will test these theories by teaching MA classes in Second Life.

Social Tapestries (SNOUT)

Funding: The Esmee Fairbairn Foundation; The Arts Council for England

LKL Project team: George Roussos, Jenson Taylor, Dimitrios Airantzis

Project description: The SNOUT project is exploring how communities can gather and visualise evidence about local environmental conditions, and how that information can be used to participate in or initiate local action. This project combines an artistic with an evidence-based approach, building and testing a prototype body sensor network that uploads data to a social networking system.

VeSeL

Funding: EPSRC

LKL project team: Rose Luckin, Josh Underwood, Darren Pearce, Kevin Walker

Project description: The VeSeL project is part of the Bridging the Global Digital Divide network, sponsored by the EPSRC in the UK. The aim of the project is to enable rural communities in Sub-Saharan Africa to use advanced digital technology to improve their agricultural practices and literacy levels.

ongoing projects@lkl...

ASSIST: Association Studies Assisted by Inference and Semantic Technologies

Funding: European Union

LKL project team: George Roussos, Dikaios Papadogkonas, Jenson Taylor

Project description: The ASSIST project aims to build a Medical Knowledge Base which will enable cervical cancer researchers to bring together environmental, lifestyle and medical history data from diverse medical records, with minimal effort and cost. The investigation of associations among all these factors and genetic data aims to identify risk factors that can then be used at the point of care by gynecologists.

AUTOMED: AutoMatic Generation of Mediator Tools for Heterogeneous Data Integration

Funding: EPSRC, MoD, BBSRC

LKL project team: Alex Poulouvassilis, Lucas Zamboulis, Sandeep Mittal, Dean Williams

Project description: The AutoMed project is developing tools to assist in the transformation and integration of data from different data sources. The AutoMed toolkit can handle structured, semi-structured and text resources. It is currently being used to support data integration in Grid and P2P environments in the BioMap and iSPIDER projects at the LKL, and in projects at Imperial College and the University of Montpellier.

BioMap: Integration and Analysis of Biological Data

Funding: The Wellcome Trust

LKL project team: Nigel Martin, Alex Poulouvassilis, Efstathios Sideris

Project description: This project aims to combine experimental biological data with integrated genomic and protein data resources, in order to understand how genes operate and to predict outcomes of events such as drug treatment and disease. We are integrating this data into the BioMap data warehouse and developing sophisticated techniques for searching, analysing and visualizing the integrated data.

Centre for Crime Informatics

LKL project team: Peter King, Roger Johnson

Project description: An important theme in Computer Science is that of Knowledge Management, a development from work in Advanced Database Systems. This area seeks to gain more and greater understanding from large volumes of data and information, with its visual presentation being a key feature. An important application area for this work is in the investigation of crime, fraud and security breaches.



Camcorder Cultures

Funding: AHRC

LKL project team: Rebekah Willett, Maria Pini, David Buckingham

Project description: This project represents the first comprehensive analysis of people's everyday uses of video camcorders in domestic settings. It aims to examine the processes and products of amateur camcorder use, ranging from parents' recordings of family celebrations, to children's horror film spoofs, to semi-professionals' self-consciously 'artistic' shorts.

One-third of UK households with children own digital camcorders, and many more own analogue equipment. How do we understand this everyday cultural practice?



EPALS: Expertise Profiling and Location System Building and Classifying Profiles of Experts and Expertise from Heterogeneous Online Information Sources

Funding: the Police Information Technology Organisation (PITO)

LKL project team: Mark Levene, Boris Mirkin, Rajesh Pampapathi

Project description: Like many organisations, the Police Information Technology Organisation (PITO) sees the expertise of its employees and workforce as one of its greatest assets. This project aims to provide PITO with tools and techniques that allow employees to share their knowledge, know-how and skills. We are exploring principles and developing the algorithms for analyzing and building profiles of people, where the relevant information may be dispersed among heterogeneous information sources.

A User-Oriented Planner for Learning Analysis and Design

Funding: JISC, the University of London Centre for Distance Education

LKL project team: Diana Laurillard, Jonathan San Diego, Darren Pearce, Tim Neumann

Project description: This online interactive pedagogy planning tool is being developed in collaboration with educational practitioners. They define their requirements for an online tool to support their current learning design practice, and test the extent to which the prototype implementation takes them beyond their current practice, and supports a shift towards greater use of learning technology.

iCLASS

Funding: European Union

LKL project team: Neil Selwyn, Kit Logan, Faezeh Seyedarabi

Project description: The iClass project centres on the development of an intelligent, cognitive-based open-learning system, which is focussed on creating a self-regulated, personalised learning environment that is adaptable to individual learners' needs.

iSPIDER: A Pilot Grid for Integrative Proteomics

Funding: BBSRC

LKL project team: Nigel Martin, Alex Poulouvasillis, Lucas Zamboulis

Project description: iSPIDER is developing an integrated platform of proteome-related resources, leveraging standards from proteomics, bioinformatics and e-science. We are grid-enabling existing proteomics data resources, creating new resources, producing new middleware technologies for the integration of these resources – including tools for data integration, workflows and data analysis – and producing visualisation and other client tools for biologist-end users.

MyPlan

Funding: JISC

LKL project team: Alex Poulouvasillis, George Magoulas, Hassan Baajour, Nicolas Van Labeke

Project description: The MyPlan project is developing, deploying and evaluating techniques and tools that allow personalised planning of lifelong learning. The project brings together stakeholders from a broad range of institutions committed to providing lifelong learning opportunities that enhance career development and widen participation. The MyPlan project builds on the concepts and software developed in the earlier L4A// project (see page 6).

Pervasive Navigation

Funding: HEFCE

Project team: George Roussos, Mark Levene, Dikaios Papadogkonas

LKL project description: This project investigates navigational assistance tools in the situations brought about by ubiquitous computing. In ubicomp, material and digital objects co-exist in a single environment which possesses both spatial and information characteristics - a fact that presents new challenges to users or visitors in finding their way to the particular objects or information that they are seeking.

PREEL (Learning Technologies Unit Project)

Funding: HEA

LKL project team: Learning Technologies Unit: Harvey Mellar, Magdalena Jara

Project description: This project is one of nine HEA (Higher Education Academy) Pathfinder Pilot projects. The project sets out to bridge the gap between e-learning research and e-learning practice within the Institute of Education, and to demonstrate how this was done in such a way as to be of value to other higher education institutions.



ongoing projects@lkl...

ProCeSS: Process Envelopes for Cement-based Stabilisation/Solidification

Funding: Department of Trade and Industry
LKL project team: Mark Levene, Kevin Keenoy
Project description: Treatment by stabilisation/solidification (S/S) with cement-based binders is an option for wastes from the chemical and metal industries that cannot be prevented or reduced. A process envelope specifies ranges for a set of parameters that result in an acceptable product. This project is developing process envelopes for generic S/S of the most common or problematic residual waste types. This will guide the use and marketing of S/S by industry and enable confident approval of S/S by regulators.

ReMATH: Representing Mathematics With Digital Media

Funding: European Union
LKL project team: Candia Morgan, Niall Winters, Richard Noss, Dusanka Nikolic, Ken Kahn, Jihad Alshwaikh
Project description: The ReMath project aims to address the problem of wide-ranging dissatisfaction with the state of mathematics education in Europe and the weak impact of research and development work on using digital technologies for its improvement.

SUPERCOMET and SUPERCOMET 2

Funding: EU/Leonardo da Vinci programme
LKL project team: Harvey Mellor, Tim Neumann
Project description: Combining modern pedagogical methods (eg. collaborative learning and student-centered problem solving) with computer animations, the SUPERCOMET project aimed to develop a computer application that would connect the intriguing phenomenon of superconductivity with the curricula subjects of upper secondary schools in several countries. The SUPERCOMET 2 partnership consists of partners in 15 countries, and will handle the challenges of localisation and adaptation necessary to make successful translations of the SUPERCOMET materials.

Techno-mathematical Literacies in the Workplace (TmL)

Funding: ESRC/TLRP
LKL project team: Richard Noss, Celia Hoyles, Phillip Kent, Arthur Bakker, Chand Bhinder
Project description: The TmL project investigated the mathematical and technological skills needed in workplaces. Working in the manufacturing and services industries, it used ethnographic techniques to identify the mathematical practices in use and, together with company trainers and managers, co-designed 'learning opportunities' to support employees in developing the TmL required in their work.

some of our recently completed projects...

HOMEWORK

LKL project team: Rose Luckin, Darren Pearce, Josh Underwood
Project description: The Homework project developed an interactive learning system which enables children between the ages of 5 and 7 to learn and practice Key Stage 1 maths using a range of multimedia technologies - both in the classroom, and at home with their family. Researchers found that using HOMEWORK improved communication between parents, teachers and learners; provided continuity between home and school learning; made numeracy learning more engaging for many learners; increased participation and enjoyment in homework (by parents as well as pupils); and may have increased the effectiveness of time spent learning.

L4A//

LKL project team: Sara de Freitas, Ian Harrison, George Magoulas, Adrian Mee, Martin Oliver, George Papamarkos, Alex Poulouvassilis, Dave Wilson
Project description: L4A// has targeted the independent lifelong learner by creating a system that records and shares learning pathways. The L4A// pilot allows learners to access information about learning opportunities in London, plan their own learning pathways, and maintain and reflect upon their individual record of learning throughout their lives. Learners can share their learning plans and pathways with other learners, in order to support the formulation of future learning goals and aspirations.

Making Games

LKL project team: Andrew Burn, Caroline Pelletier, David Buckingham
Project description: The Making Games project was funded by the ESRC and the Department for Trade and Industry, under the PACCIT-link programme. It involved developing an authoring software for computer games for use in education, in collaboration with Immersive Education Ltd. The final software, christened Missionmaker, is currently being trialled at schools and colleges across the UK.

WebLabs

LKL project team: Celia Hoyles, Richard Noss, Yishay Mor, Gordon Simpson, Ken Kahn
Project description: WebLabs investigated creating new ways of representing and expressing mathematical and scientific knowledge in European communities of young learners (10-14 years old). The focus was on collaborative construction, description and interpretation of how things work. The project designed tools in ToonTalk, a state-of-the-art programming system in which abstract computational concepts are represented by concrete animated analogues.

Rhetorics of Creativity

LKL Project team: Shakuntala Banaji, Andrew Burn, David Buckingham
Project description: The Rhetorics of Creativity project reviewed both academic and policy constructions of the notion of creativity, in the context of current UK arts, economic and education literature. It identified nine rhetorics, from those of genius and cognitive psychology, to play theories and democratic signification, and examined the manner in which, and in whose interests, these rhetorics are currently being deployed.



kaleidoscope@lkl

The Kaleidoscope Network of Excellence project (www.noe-kaleidoscope.org), funded by the European Union, comprises over 1000 researchers at more than 90 research labs, institutions and private businesses, spanning 25 countries across Europe, as well as Canada. Its goal has been to shape the scientific evolution of technology enhanced learning. LKL has played a key role in making this complex and ambitious project a success. Richard Noss, Co-director of LKL, was also co-founder of the Kaleidoscope Network of Excellence. Kaleidoscope has funded a broad range of international multi-disciplinary TEL research activities, with a notable proportion of these being led by London Knowledge Lab researchers.

Impact of Technology Enhanced Learning on Roles and Practices in Higher Education (Kaleidoscope Jointly Executed Integrated Research Programme)

LKL project team: Martin Oliver

Project description: This project explored the impact of new forms of technology on roles and practices within higher education. A specific area of interest was how best to support staff through the changes that occur when technology enhanced learning is introduced.

Learning Grid (Kaleidoscope Special Interest Group)

LKL project team: Alex Poulouvassilis, Kevin Keenoy, Dionisis Dimakopoulos

Project description: The Learning Grid SIG is exploring the development and deployment of Grid Technologies to support large-scale distributed e-learning applications. The SIG produces a quarterly newsletter, and organizes several international workshops each year.



Learning Patterns for the Design and Deployment of Mathematical Games (Kaleidoscope Jointly Executed Integrated Research Programme)

LKL project team: Niall Winters, Dave Pratt, Yishay Mor

Project description: This project developed a methodology for bringing researchers and practitioners together in the process of developing technology enhanced learning environments. It captured practices at the interface between design, development and deployment, and focused on building solutions to common problems at a social and technical level. These generalisable solutions have been made available in the form of design patterns.

Learning and Technology at Work (Kaleidoscope Special Interest Group)

LKL project team: Richard Noss, Neek Alyani

Project description: The Learning and Technology at Work SIG explored how learning practices in workplaces, and the knowledge required for work, are being transformed by information and communication technologies. The SIG also investigated new models of learning and innovation, and new conceptual tools to support work-based learning and e-learning, in a range of different contexts.

MUSTEL (Kaleidoscope Seed Grant Initiative)

LKL project team: Kevin Walker

Project description: The objective of MUSTEL is to integrate international research on technology enhanced learning in museums, to analyse existing installations and best practice, and to recommend design principles grounded in a common theoretical perspective on learning that will be useful for future research in museums.

Philosophy of Technology Enhanced Learning (Kaleidoscope Special Interest Group)

LKL project team: Jan Derry

Project description: The Philosophy of Technology Enhanced Learning SIG aims to develop understanding of the significance of new technologies for knowledge and learning, and in so doing, to explore the nature of knowledge and learning by exposing underlying presuppositions informing design and use.

Semantic Web and e-Learning (Kaleidoscope Jointly Executed Integrated Research Programme)

LKL project team: Peter Wood

Project description: This project explored the use of semantic web techniques for improving access to e-learning resources. In particular, the project investigated a number of e-learning scenarios in order to determine their needs in terms of semantic annotations or metadata, and proposed areas in which further research was needed.



first impressions

I have been crossing boundaries for much of my research career, and so my recent move to the London Knowledge Lab from Cardiff University's School of Social Science is a consistent one I think...

For instance, whilst my broad research focus has long been education and technology, I have attempted to address the topic from as many different perspectives as possible. I am primarily a sociologist, but my work regularly crosses over into policy, communication, media and cultural studies and, in my weaker moments, social psychology. The Knowledge Lab allows me to mix with some fantastic people in all of these disciplines within the University of London and, crucially, to come into contact with many more technologically-minded scholars. For someone interested in the sociology of technology, I am always conscious that I am not as technologically-minded as I should be. My move to the Knowledge Lab is already changing that!

One of my passions is writing, and I have written for academic journals as far flung as the journal of Time and Society and The Arab Psychologist. But I am also keen to get my research findings across to as many people as possible, a tactic which has seen me featured in a number of unlikely places, from the pages of the Big Issue to BBC Radio Four. Again, I hope that the move to London will provide me with more opportunity to diversify this side of the research process.

Finally, in terms of actual research projects, the Knowledge Lab is already allowing me to move into areas I would not have considered a few years ago. As well as experiencing the joys of being co-opted onto a twenty-two partner EU research project, I have found myself putting in proposals to look at the experience of distance learners in Africa and Asia and, most excitingly, poverty reduction in marginal indigenous communities in southern Mexico. This latter project arose from a recent approach to the Knowledge Lab from Imperial's Centre for Environmental Policy – the sort of offer that derives from the economies of scale associated with the University of London.

I am also finding lots of interesting people within the Lab to collaborate with. Already, cursory conversations have led to burgeoning proposals for projects on digital creativity amongst older adults and, more prosaically, ICT use amongst undergraduate students. If only half of these plans come to fruition then my research will have taken off in unexpected directions... which is exactly why I chose to move here in the first place!

Neil Selwyn joined LKL as a Senior Lecturer on 1 April 2007

a visitor from the fourth dimension



The LKL's ground floor social space is graced by the presence of a large, multi-coloured and intriguing sculpture. In fact, this is an inhabitant from a higher-dimensional geometrical space, realised as a 3-dimensional 'shadow', in the same way that sunlight shining on a 3-D geometric shape creates a 2-dimensional shadow on a wall. The model shows one of the more complex members, the 'omnitruncated 120/600-cell', of the family of polytopes, 4-dimensional analogues of polyhedra in 3-D.

The model is constructed from a special geometrical construction kit called Zometool (www.zometool.com). The construction was made over two days in August 2006, during the 'Bridges London' Mathematics and Art Conference held at the Institute of Education and LKL (see www.lkl.ac.uk/bridges), by a large team of conference participants, led by Zometool experts from the USA. The model has nearly 20,000 individual parts. After the conference, the LKL offered to be a permanent home for the model, and further work on permanently installing the model in suspension is just being completed.

Watch the LKL website for the appearance of a new section which will illustrate the model and explain its mathematical features. Or simply take time to enjoy the visual pleasure of looking at the model, and be sure to walk around it to experience the different symmetries and sub-structures.

Acknowledgements. The Zometool parts for the model were donated by Paul Hildebrandt of Zometool, Inc., Colorado, USA. Local work on installing the model at LKL has been done by a skilled science-mathematics-art team, consisting of scientist Michael Green of the National Institute for Medical Research, mathematician Edmund Harriss (Imperial College), artist Gary Woodley (Slade School, UCL), and computer scientist Scott Vorthmann, a Zome expert in the USA [www.vorthmann.org/vZome]. All of this considerable work has been done as a labour of love, for which the LKL is most grateful.

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