i3 magazine

The European Network for Intelligent Information Interfaces

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The European Network for Intelligent Information Interfaces

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Winter issue: Swansong

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It's a little strange to be writing the editorial for the final issue of i3magazine. Déjà?!! It seems like just the other day that I embarked on my first issue, throwing my arms and keyboard up in the air: "Who are these people, what is that bug image about, and what can they possibly mean by 'intelligent' information interfaces?" Four years later I am still intrigued by the notion of intelligent interfaces and I still wonder about that bug (or is it an alien?); but at least I know who the people are. "From the beginning we were a community," says Patrizia Marti in this issue, and many others echo that feeling.

i3net is about to finish and such junctures need some kind of marking, a reflection on what we let go off and what must not be lost. It was in this spirit that I asked some people who were involved in i3 how they look back on the initiative. Their replies – too many to publish them all in i3magazine, but the full versions are on the i3 website – make wonderful reading. "*We were a community*" stands out. And "*It worked*": it was serious and fun, new kinds of collaboration emerged, there was huge value in the research per se and in the development of new research practices, and a lot was learned.

But what also stands out is that it continues to work. There is now, in Kathy Buckner's words, "a vibrant and established research community with a sense of going places." Collaborations continue and working practices explored in i3 have consolidated and become embedded in other EU projects. And i3 has paved the way for new but closely related initiatives, such as the *Disappearing Computer* (with a new call for proposals within FET proactive launched on 17 December 2002, see www.cordis.lu/ist/fetdc2.htm for more information) and *Convivio* (i3net's successor, which officially started on 1 January 2003; see pp 22-23 of this issue for more).

So this final issue of i3magazine signals a closure but not an ending. The network may be disappearing but the community is very much alive. It's a community of people who are, as Alan Munro puts it, "generally not satisfied with the safe and the narrow and the accepted." Other articles in this issue illustrate that that still holds: Australian aboriginals, aura, serendipity, cathedrals, resonating minds… – it's all there, in the context of technology, often surprising and often inspiring.

To those (blessed people) amongst you who will miss i3magazine: I will miss it too, as I sometimes miss i3 friends. But there will be a successor: look out for *Convivio magazine*, which will be edited by Achilles Kameas. The first issue is due to come out this autumn; sign up with Convivio (p 23) if you want to continue to be part of it all.

Links to the Web sites of all the i3 CI projects can be found on:
http://www.i3net.org/i3projects/links.html
Information about the ESE projects can be found on:
http://www.i3net.org/schools/

Series

Journeys across i3

Part 2

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"Nothing is experienced by itself, but always in relation to its surrounding, the sequences of events leading up to it, the memory of past experiences…"

Kevin Lynch, Image of the City

In this series of articles featured exclusively in i3magazine, Jakub Wejchert takes readers on a series of "journeys" that explore the design of interactive systems. In the first of these articles he focused on *method* and *process*; in the current one, he gets "down-to-earth" and explores the contexts of *location* and *place*. As before, Jakub refers to examples of i3 work (as well as some of the more recent work under the "disappearing computer" research programme), as landmarks on the journey.

When designing interactive systems, *context* can be thought of in different ways. In the simplest sense it can refer to the "position" in which some activity takes place; the more expansive notion of "location" gives some connotation of immediate surroundings; and finally, the richer, and more intricate, term "place" can have many qualities and features associated with it. How do these notions affect the nature of interaction? And how should we design IT systems that take these notions into account? This article gives some examples of research that has tried to reflect these different contexts.

Context and cognitive abstraction

So far, IT has had very little to do with context. Development has been inspired by the metaphor of a "wise machine" that solves abstract problems, or a "text book" or "library" that gives access to conceptual knowledge; or by the overriding idea of trying to "reproduce reality".

The earliest of these, the "wise machine" metaphor, dates back to the origins of computing and is one of the basic tenets of AI. The *Turing test*, in fact, tries to establish whether a machine could replace a human being in a conversation at-a-distance. Essentially, the objective is to see if people can be led to believe that they are conversing with another human being as opposed to a machine. This has strongly influenced much of the development of IT over the last 50 years.

More recently, the metaphor of "text book" or "library" has had a particular influence on the development of word processors, multimedia systems, internet and the Web; the latter, in particular, was inspired by the notion of a virtual library resource available to researchers internationally.

In a similar vein, the concept of "reproducing reality" has been spearheaded by computer graphics and virtual reality. Instead of going to a real museum we take the PC tour; instead of playing a real game of chess with a friend we play a game with the PC; instead of chatting to neighbours on the street corner we socialise in chat rooms on the internet…

These metaphors and concepts have stimulated incredible advances. Because IT is a completely malleable and transmittable medium, text can be copied instantaneously to thousands; models can be constructed and deconstructed at will; and games of chess can be replayed *ad nauseum* against an infinitely patient algorithm…

However, many of the advances inspired by the "wise machine", "text book" or "library" metaphors have left out something important. In particular, what has been forgotten is that human activities occur in real situations and contexts. As a result, things become abstracted and stripped of their context. The broader significance and meaning of everyday activities through which we engage with the real world are lost. There are no subliminal clues to absorb, no sensations to trust, and events are remembered as facts rather than parts of full episodes. In other words, the metaphors have supported "cognitive abstraction" as opposed to the experience of being physical human beings in a physical world.

We should remember, however, that the human capacity for cognitive abstraction was developed only comparatively recently. Humans have been adept at absorbing peripheral, subliminal and implicit information from their environment for millions of years. They have also been using tools for a very long time: our predecessors started using crude stone

tools as long as two million years ago. Cognitive abstraction, on the other hand, appeared on the scene much more recently: the pictures in the Caves of Lascaux date back to a little over 10,000 years ago, and the Mesopotamian pictorial symbols (which became the basis of writing) date to only 5,000 years ago.

Cognitive abstraction is indeed quite different from knowledge of the "here and now" and "being in the world". Such knowledge is embedded in our tools and surroundings. Intuitively we know how to use a hammer because of its shape and weight distribution – as Heidegger put it, such knowledge is "at hand" and "within the world". This difference can be further illustrated by considering the process of learning to ride a bicycle. We learn to ride a bike through a combination of intuitive knowledge and real-time experience: pushing on pedals and pulling on brakes, adjusting our weight, gently touching the handlebars… By contrast, imagine trying to learn to ride a bicycle from a manual — that would be ridiculous, if not impossible!

In addition, context-related information is usually easy to absorb in memory; it is, in fact, associated with a specific form of episodic memory. Abstract information, on the other hand, tends to be much harder to absorb and often requires deliberate effort. Think of how often you have forgotten a password or phone number; yet when you let you fingers do the walking, you automatically remember the sequence you need to type …

What needs to be explored is how to support the *human cognition of the physical*, of *embodied knowledge* and, in more general terms, *how to support knowledge of* "how" rather than "what". It is in this direction that some work on tangible media and ubiquitous computing have started to look, and it is this direction that some of the work in i3 and the disappearing computer have started to explore.

Linking IT with position

Imagine a busy city street. It will be full of static information such as street signs, advertisements, road names, arrows in various directions – an apparent maze of conflicting information. Almost all of this information is linked to the local setting; almost all of it is, in fact, context-specific. Yet strangely enough we navigate this maze easily and will often not be consciously aware of all the information embedded in the environment. We are used to such static context-relevant information. But information that changes dynamically according to context is a different matter, and we know less about effective ways of navigating this kind of information.

As far as I know, one of the earliest projects that linked information with position and orientation was the i3 HIPS project. In this project Patrizia Marti (University of Siena) and others developed an information system that could be finely tuned to a person's exact location and orientation. A specially-adapted palmtop would track the person's path in physical space and relate this to a "path" in information space — a body of text, images, anecdotes, and so on. The HIPS palmtop used an infrared configuration (and GPS version for outdoor use) that relayed visual and audio information, depending on where a person was and what he or she was looking at. One specific demonstration was built for a museum setting, with the system displaying different information depending on which painting or artwork you looked at. The palmtop also adapted in real-time to the person's "visiting behaviour"; for example, basic information was not repeated unnecessarily every time you looked back at the same picture.

Visitors using the HIPS system in the Museo Civico of Siena.

The COMRIS "parrot", worn here by project coordinator Walter Van de Velde.

In this example, context-based information was linked to location, orientation and the way in which a person moves. These are the kind of basic notions that are likely to play a key role in the construction of environments with spatially-distributed information services. Clearly, people need a sense of continuity in such environments, and we need to understand better how information exchange should play out when people move, talk and do things in groups in real settings.

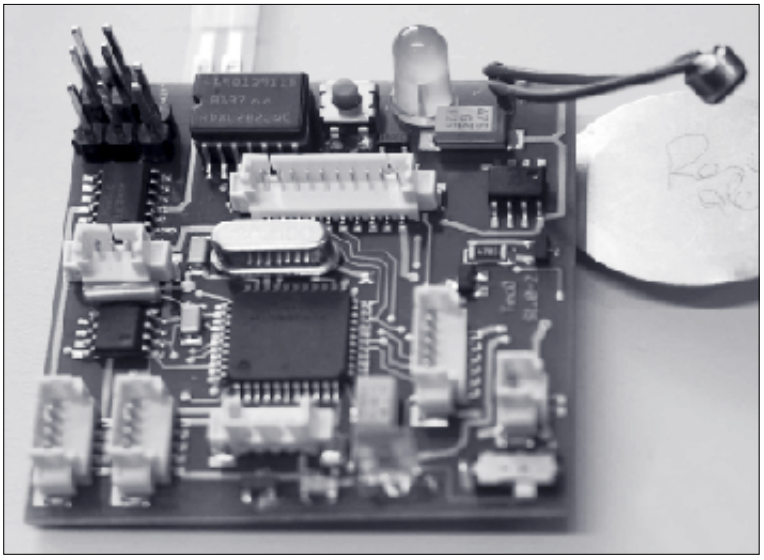
A different but related i3 project, COMRIS, headed by Walter Van de Velde (now working with France Telecom, Paris) looked at how a large number of context-aware wearable devices could be used in a group setting, and developed another experimental system with more sophisticated context awareness. A number of wearable "parrots" (placed on the shoulder and talking to the user via an earphone) would give wide-ranging information about the physical environment and which other "parrot" wearers might be worth talking to. The navigation system was based on a society of agents that match various contextual cues.

In a more recent project under disappearing computer grouping, SMART-ITS, Hans Gellersen (Lancaster University) and Bernt Schiele (ETH Zurich), in collaboration with colleagues at the Victoria Institute Göteborg and Karlsruhe University, demonstrated how we might in the future get rid of manuals by embedding various sensors and actuators into the physical components of a furniture kit. When you assemble the kit, LEDs indicate correct positioning, while other actuators indicate when screws have been turned sufficiently. This is a particularly nice example of supporting knowledge of things "at hand" rather than having to decipher the manual (based on cognitive abstraction).

All three of these projects illustrate how a physical environment can affect and change interaction. They provide a glimpse of how in the future we might better support a range of location-related activities, by linking physical space and information space.

A sense of place

Consciously looking at modern buildings can be quite shocking: rows and rows of apartment blocks, sprawling office complexes, hotel chains, shopping malls and fast-food joints, inter-linking highways… Rather than giving us a sense of place, they all exhibit the same "insipid same-ness". Moreover, almost irrespective of where you are, you can access the same information through television and the internet. The uniqueness of a particular place can become virtually obsolete. Ever-faster transport, too, contributes to the gradual erosion of our sense of place.



A SMART-IT sensor board with processing, memory, five sensors and four actuators.

Sameness can be reassuring, creating a sense of being at home anywhere. But it also leads to a mundane, monotonous existence. And the dream of "information anywhere anytime" adds to this sense of 'placeless-ness' by flooding places already lacking a sense of place with context-independent information. Some "post-modern" thinkers have attacked "monotonic modernism" (examples include Baudrillard's "America", Maffesoli's "The time of Tribes", Koolhaas' "Mutations"…), and re-emphasized individual preference and the significance of the local. But we still have a long way to go, particularly with respect to how new technologies should be developed.

Contrast modernism with so-called 'pre-industrial' or 'primitive' cultures and societies. In contrast to stark technological modernity, the myths and legends of Australian aboriginals, Native Americans, Celts or ancient Greeks exhibit a great reverence for place as something alive, something that can reveal itself and "talk" to people: "*Country is alive with information for those who have learned to understand*" (from Deborah Bird Rose's study of life and land in an Australian aboriginal culture) .

Most of us would not choose to live the primitive lifestyle associated with such societies, but that should not mean that we become destined to live without a sense of belonging. We are coming to a cross-roads: either technology should adapt to a sense of place, or we map modern technology onto everything -- and lose a sense of place altogether…

What is "a sense of place"? It can have many attributes: a particular quality, image, look and feel, material and texture, some kind of coherence and "legibility". Kevin Lynch (1960) describes legibility of the urban landscape as "the ease with which its parts can be recognised and can be organised into a coherent pattern". A place can also have a dynamic aspect, reflecting how it has evolved, how people move in it. Christopher Alexander (1977) thinks of a place as defined by its "pattern language", for example by the typical encounters and flows of participants within it. Place can also refer to the memories that people associate with it.

So how could technology enhance a sense of place? Let us think first in terms of material and texture. In the past technology has sometimes been made more palatable by hiding it; for instance, old large glass transistor radios were embedded in wooden cabinets. The future home, too, may have a PC embedded in wood, but this is only a superficial way of enhancing the static aesthetics of place. What could be some deeper interweaving of IT with place in the static sense?

Here is an example of how a static sense of place could be enhanced in original ways through the use of materials and IT. This particular example involved the use of water, as a symbiotic medium that both delineated a space and incorporated IT projections. The ideas were born within the i3 research project eRENA, which explored a range of so-called "mixed reality boundaries". The work, developed mainly by John Bowers (KTH, Stockholm), Steve Benford (University of Nottingham) and Jeffrey Shaw (ZKM, Karlsruhe), was designed to make the boundaries between real and collective virtual environments more fluid and engaging.

One of the most original and impressive examples of these is the "*Rain Curtain*", which acts as a boundary between the viewers' and the participants' space by projecting a vertical sheet of water through which one has to walk in order to pass from one space to the other. Images of the performance space are projected in real time onto the shimmering water curtain that produces a gentle noise. The rain curtain has three fundamental properties of an effective boundary: visibility, audibility and permeability. It also generates a calm, ephemeral atmosphere, and has an almost "magical" quality. For those who don't want to get wet every time they participate in the environment, the group has also explored dry curtains, made of thin perspex sheeting, which one can walk through and onto which images can be projected. If we want to create places that are more engaging and natural, the use of natural materials linked with information technology could play an important role.

The rain curtain.

The previous example illustrated how place can be enhanced in a static sense. An important aspect of a place is the dynamics of people carrying out activities in a place. In the disappearing computer project Ambient Agoras, researchers Norbert Streitz (Fraunhofer-IPSI, Darmstadt), Saadi Lahlou (Electricité de France, Paris) and their colleagues are working on providing place-related services and place-relevant information. The project is inspired by the notion of "genius loci" (from Latin, "the feeling of a place") and the idea of people becoming more 'at home' in future working environments. It explores the paradox of ubiquity and place-dependency by developing a range of smart artefacts that are mobile as well as embedded in the architectural environment. For example, the *GossipWall*, a large ambient display with light patterns, provides awareness and notification information to people passing by, such as the activity level or presence of people in the building.

To a large degree, we almost take for granted that IT has succeeded in bringing us information any place, anytime. The question that remains is how certain kinds of information may better "belong" to a place, or in a sense become part of it. The two examples given above address just a part of the open research questions relating to the design of future ambient systems, i.e. IT systems that are intimately integrated with our everyday world.

Conclusion

Up until recently, information technology was developed (either consciously or subconsciously) under a number of context-free metaphors (such as the "wise machine", the "text book" or the notion of "reproducing reality") and has used a range of techniques to further these aims. For the human being, most of these have led to the support of conceptual abstraction or a form of reproduced reality. However, as we start to look to the real world (rather than the world of the machine) for inspiration, we must consider real objects, real people and real places.

Thus, as we start moving towards environments in which computing becomes less explicit and more embedded into the fabric of everyday places and activities, the role and nature of everyday objects, locations and places will all come to the fore. It is in this realm that architectural, anthropological, psychological and skill-based concepts are likely to play a major role. And it is from these areas, and from some of the early experiments illustrated in this article, that we may learn important guiding principles for the design of future "computer-less" environments.

The examples given in this article provide but a small glimpse of how researchers are beginning to incorporate the contexts of location and place, and how these are being explored through mixed media and context-sensitive tools. In the long term, as we move towards a "knowledge-based society", we have to ask: "Have we been supporting only one kind of knowledge up to now"? and "How can we best support different kinds of knowledge"? To do this we need to support a diversity of things we understand by "knowledge" – ranging from the cognitively abstract, through to knowledge that is "at hand" and embodied in our physical everyday world, to sequences of past events, and our memories of past experiences… This will involve rethinking what we mean by "knowledge representation", constructing new forms of "flows" between content and context, and exploring the balance between the "global" and the "local".

Perhaps in the future we will look back to our pre-industrial roots as inspiration – back to a reverence for "place", "location" and the importance of the "being within the world" and the "here and now"… Perhaps in the future, we will live in a world that is more "alive" and more "deeply interconnected" than we can currently imagine?

Sensing a person passing by, the GossipWall, an ambient display, notifies the person by showing personalized light patterns.

The opinions expressed in this article are those of the author and do not necessarily reflect the position of the European Commission.

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The ViewPort, a mobile wireless networked device, displays detailed information augmenting the GossipWall and provides opportunities for interaction.

Feature

Searching for the lost aura…

Challenges in the design of new media environments

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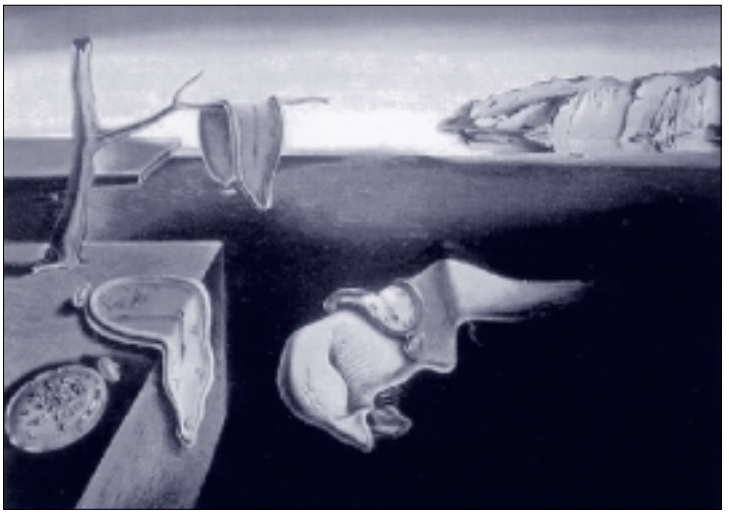
Does the development and diffusion of new information technologies lead to improved communication dynamics and stronger communal cohesion, as might be expected? If we consider this question a paradox emerges: the idea that greater capacity of transmission results in more efficient communication and, eventually, the creation of more connected communities, turns out to be elusive.

The reason for this is that "real" communication involves much more than the mere transmission of "pure" information – important though that may be. First of all, real, effective communication is based on a complex exchange of *different kinds of messages*, both verbal and non-verbal, which include information conveyed by posture, gestures, intonation, facial expression, and so on. Moreover, interlocutors do not only exchange messages with *strategic information* and structured data; they also exchange *free content messages* which are extremely important for the interaction and the relationship between the people involved. And finally, the *environment* in which the interaction takes place plays a fundamental role in communication, since it carries important social and cultural information and helps us to spot relevant differences in cultural and social customs and behaviours. And for communication to be effective, people need to create a mutually agreed common context of interaction, a space of shared knowledge, shared values and a communal memory.



Salvador Dali: The persistence of memory, 1931.

In short, when communication takes place in a physical setting there is a rich context that we, the interlocutors, become part of. *Real* communication is based on a synergy between "pure" information and the context in which this information is produced and received. In new media environments, on the other hand, communication dynamics are much more complex because all these things need to be constructed. Yet if communication technologies are to enable "real" communication between people and communities (rather than simply transmitting "pure" information), these issues need to be addressed.

Observations such as these have led to a heated debate on memory, community and communication, the complexities and opportunities afforded by communication in cyberspace, and the corresponding challenges for new media design. The rest of this article touches on some aspects of this.

Memory of the present moment

In 1931 the surrealist painter Salvador Dali, in his painting *The persistence of memory*, depicted human memory as melting watches, with the watches serving as symbols of the mechanical passing of time; in other words, the painting contrasts human memory with "mechanical" time, that is, time conceived as a succession of predetermined structured instants.

New information technologies seem to reverse this relationship between time and memory. CNN-style simultaneous reporting, the Internet and other communication technologies have created what the French philosopher Paul Virilio calls "*memory of the present moment*", memory which, rather than disappearing (as in the actual relationship between time and memory), dilates! There is no longer a "here", but everything is "now". It is like a temporal magnifying glass, a glass that does not focus on a point in space but on a moment in time. From such a perspective, the technology functions like a telescope for memory. The telescope lets us see what we cannot normally see in distant space; in the same way, the Internet and computer technologies let us see what happens in the most fleeting instant of time. The live media coverage of the September 11 events is a poignant example of this.

Virilio uses the comparison of the caretaker of the shopping centre who, by means of multiple live video cameras and multiple screens, watches and controls the environment without moving. With the advent of new technologies many of us have started living in a similar relationship with our world: we can see things live and act on them without being there and actually experiencing the situation.

Information is becoming available in increasing amounts these days, and being transmitted at increasing speed. But the speed at which information can be reached should not be confused with the speed and depth at which it is processed. In fact, a frequently-heard criticism of cyberspace communication and information access is that the processing of information, the process of absorbing it, the sedimentation of its content, paradoxically becomes weaker because individual and communal memory do not have the time to assimilate it. Virilio calls this a new kind of pollution, *dromospheric pollution* (from Greek *dromos*, race).

Collective intelligence and memory

So memory involves a process of sedimentation and assimilation; or, as Pierre Lévy puts it, it is necessarily a process of synthesis and interpretation. Memory belongs to the present, it makes the present and throws light on the future.

An important aspect of memory is that it uses, and is fed by, collective intelligence. This brings us to another aspect of new media in the memory debate. A remarkable property of new communication technologies is that they allow for a way of making objective and external – that is, independently observable – the subjective dimension, in a flexible, almost organic way. The *World Wide Web* illustrates this. Everyone is creating different web sites with multiple links, different paths of knowledge; and these links reflect, objectify, the connections we make in our minds, individually or collectively as communities.

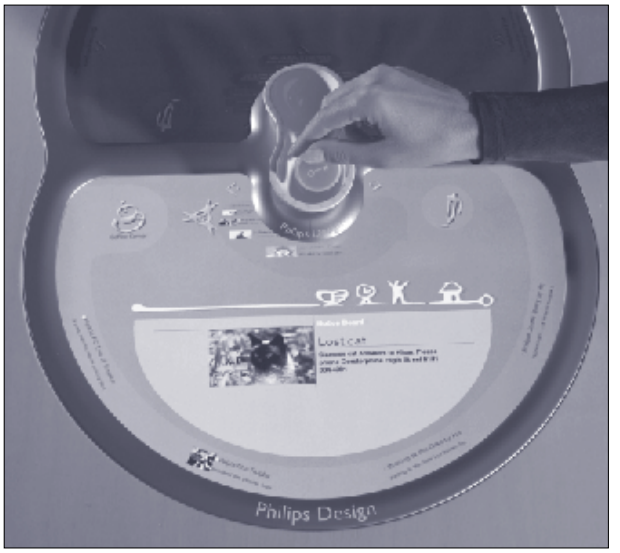
There is no doubt that the advent of the Internet has drastically changed the relationship between producers, diffusers and receivers of information, allowing *ordinary people* to participate in nourishing communal memory. One could even argue that the development of cyberspace contributes to the realization of a fundamental anthropological trait which Serge Moscovici defines as *myth making*.

We are all mythmakers because, with an almost insatiable thirst, we all participate in the fabrication of little myths: things that everyone talks about and that are at the heart of communities. We contribute to gossip because we need to be able to act and to rationalize our actions through the spoken word, and give our actions value by transforming them into something that can be externalized, by telling and sharing. We remember common things, and we remember things in common. The sum of all this results in collective memory and allows the creation and the maintaining of communities.

Memory, territory and community

A number of i3 projects[1] deal with these issues. I was involved in the Living Memory (LiMe) project, an important aspect of which concerned the relationship between memory and *territory*. As already pointed out earlier, physical places and community context are important mediators of information. To be better integrated with physical context and community life, LiMe interfaces were conceived in such a way that they could be distributed across local "territories" such as neighbourhoods' bus stops and piazzas, and be accessible in social environments such as café tables, schools and libraries.

At the same time, the LiMe information environments were designed so that all community members could access the system and feed the communal memory. We all *decorate* our houses with objects and precious souvenirs; in the same way, the LiMe system allows community members to decorate their communal memory and social spaces with informal and personal information, infusing the formal and historical community memory with their own subjective experiences and informal memories.



The LiMe interactive table, where people can access and interact with information.

When conceived of like this, new media environments make it possible for us to become actively involved in the construction of our collective memory. And in doing so they help us realize (or at least that is the hope) what Edgar Morin defines as a *poetical vision of life*. Morin reminds us that human beings need to preserve a cultural heritage so that they can lead not only a utilitarian or functional life but, more importantly, a poetical existence. On such a view, new technologies are no different from man-made old creations: use and individual experience confer on them a value and a sense, and we need to use them in a way that helps us realize a poetical vision.

Connecting communities

In the context of a collaborative research project I was involved in [2], I have recently been observing communication dynamics in collaborative learning environment. In the project, students from two universities, MIT (USA) and Miyagi (Japan), developed a small housing project. American students designed houses for a Japanese site, and vice versa. At various stages of their remote collaboration the students consulted their partners abroad and criticized and finalized each other's work. Each group took advantage of the opportunity for on-line consulting to outline cultural characteristics of American and Japanese society, lifestyle and houses (such as the cultural conception of houses and families, spaces and relationships between family members, social hierarchies, dimensions of houses, number of bathrooms in each unit, where they could place the laundry, and so on). To achieve this, communication was based on methodical simultaneous use of interactive tools, including email, web chat, a specific web-site, and *Netmeeting* and *Picturetel* for sharing applications and video-conferencing.

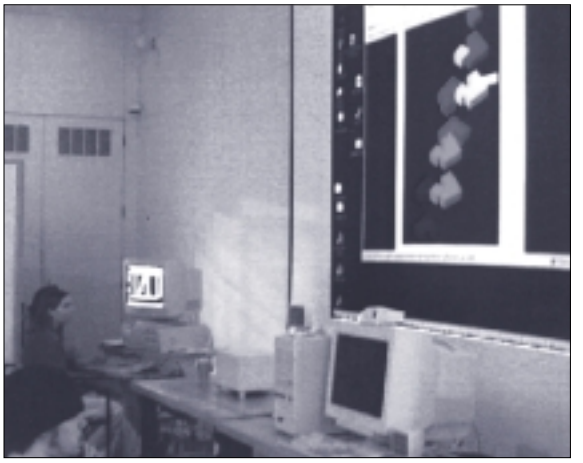
The design projects were quite successful but observing the communication process involved highlighted the need to improve collaborative environments. What are the real challenges in this respect, what are the real difficulties facing the design of such new media environments?

In his essay *The work of art in the age of mechanical reproduction* (1935), Walter Benjamin draws attention to ways of reproducing and transmitting the "aura" of a work of art. The aura contributes to the authenticity and uniqueness of the artwork and the wholeness of its message by reflecting the artist's vision, and by linking the artwork intractably to a *here and now*.

How could this feeling of uniqueness that is consumed in the moment with intangible density be transmitted, communicated or reproduced? As we have already seen earlier, a similar question arises in the context of new communication technologies. As we can access information anytime and anywhere, globally and locally, despite physical and time differences, there is a constant need to contextualize information within a "*here and now*". Moreover, given that technology is improving constantly and binary information can be transmitted 'easily', it becomes increasingly necessary to transmit what Benjamin defines as the "aura", in other words, the synergy of the moment and the tradition, the immaterial (as well as the material), the intangible (as well as the tangible) and everything that cannot be reduced to the pure binary transmission.

What new media environments lack, and what constitutes the real challenge in designing interactive communication technologies, both in technical terms and in terms of communication dynamics, is exactly the capacity to transmit the whole content of the

Students communicating and sharing information with overseas colleagues during a remote collaborative workshop.



Students presenting and criticizing a design project carried out in a remote collaborative environment.

information, which becomes crystallized in the synergy between the information and its context. As I already said earlier, communication does not only consist of transferring strategic, planned, formal or structured information; it is also tactile and informal, visual and empathic. Contextualizing information in this way means interlacing disseminated information and enriching it with its *aura*, within the social and cultural context. This is the challenge that faces new media environments.

The next step in designing new communication and interactive media environments should therefore focus on the realization of what has been called *Universal with Tonality*. During a communication exchange, people need to share not only universal information on which all the interlocutors agree, but also the tone and other subjective dimensions of the information. "Universal" refers to the strict information content of the message, and the ability to share this is certainly important; but this information has to be accompanied by the "Tonality" of the message, that is the aspects of communication that are less visible and perceptible, but that complete the communication and make it effective and meaningful. Examples of this include free content messages, cultural references, interaction rituals, the social imaginary, the various inclinations and nuances that each society attributes to a different concept, and so on.

To conclude, the richness of communication is based not only on the exchange of information but also on the "density" of the exchange. Communication can be effective only if we consider the multiple elements characterizing the complexity of social interaction. People have been communicating for thousands of years: social interaction is based on a variety of common languages and on the sedimentation of culture, complex rituals and social habit. To be effective, new technologies need to learn from old social dynamics. The double challenge for designing interactive media environments is that they have to help people share information with *universal* meaning, as well as including others aspects that make up the *tonality* of the information.

Footnotes

1 See, for example, the i3 Connected Community programme: http://www.i3net.org/i3projects/

2 I am referring to the *Computational Design for Housing* remote collaboration workshop research (2000/2001) conducted at MIT in collaboration with Irene McWilliam at Philips Design. The *Universal with tonality* hypothesis, discussed further below, refers to this research.

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Federico Casalegno carries out research on interactive communication in connected communities and new media environments. He was involved in the i3 project LiMe. His book on the project, "*Memoria Quotidiana. Comunità e comunicazione nell'era delle reti*" ("Everyday memory. Community and communication in the networks era") explores the synergy between the evolution of new media, social memory, knowledge and connected communities.

See http://www.memoire-vivante.org

More recently Federico has been collaborating with the Future of Learning Group at the MIT Media Lab, and he is currently pursuing his research at the MIT School of Architecture and Planning. He is involved in "Collective Intelligence in remote collaborative environments", a joint research project with the Pierre Levy's research chair on collective intelligence at the University of Ottawa.

Nothing lasts, nothing is lost

i3: 1996 – 2003

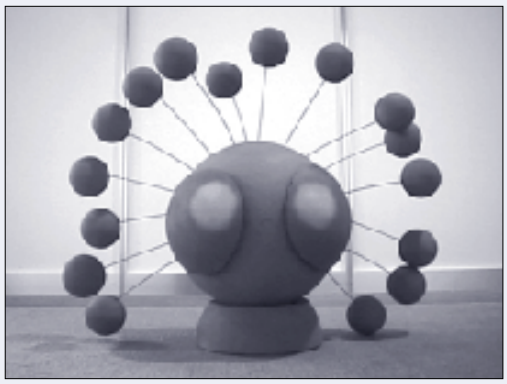
Some of you will remember the first beginnings. In 1996, an EC guide inviting proposals under two new research schemata opened with the description of a new initiative of Esprit Long Term Research, which aimed at

> *"… a radical departure from present-day man-machine interface concepts[…] under the assumption that this must be guided by a long term vision combining human, societal and technological factors." (EC Guide for Proposers)*

The initiative was i3, not a mathematical society but cubic power, lower case "i", standing for intelligent information interfaces. The research schemata were *Connected Community* and *Inhabited Information Spaces*. And the rest is (a bit of) history, now moving into the past tense: the story of i3.

Did i3 make a difference, and will it have an impact beyond its lifespan? Did we learn anything that should not be forgotten? Or are we left, in the last instance, with a sense of "so what"? There must be as many slants on i3 as there were people involved, and the story seems too rich to solidify into a single account. So we give the last word to some of the people who shaped i3 through their involvement in i3 research and other i3 activities (reviews, CG, conferences, working groups, future probes, i3 books…). How do these people remember the i3 years, with that measure of hindsight that creates distance and clarity?

i3 magazine



"I remember the first time I heard of i3net, six years ago, about the time that the first two programmes (Connected Community, Inhabited Information Spaces) were in preparation. At Philips Design we were working on the Connected Community story, and at some point we got this 50-page fax of the i3 proposal by Ole Bernsen and his colleagues. To me, just fresh out of art school, it read like science fiction, and the authors seemed high from the sky. It took me some time to get a grip on it all.

Much later I discussed the experimental character of i3net with Ole and Rosella Magli in a hasty meeting at Brussels airport. At the time it seemed to me like we were all subjected to this crazy European experiment, trying to reorganise our thinking, our way of doing projects and even our way of organising ourselves and relationships between projects – all at once.

What I realised only much later was that the i3 initiative had created something like the small freetowns that we had in the Netherlands and in Scandinavia back in the seventies: a place where everything is possible and where people live in a happy state of anarchy outside the official state. The point is not that i3 was a hippie thing but rather that whatever you may think of it, i3 and i3net created this space of freedom and anarchy that I think is the soil for any really new creation. And it worked."

Job Rutgers is Senior Design Consultant at Philips Design Eindhoven. He was involved in LiMe and POGO.

Teamwork: second i3 Annual Conference, Siena 1999, LiMe and POGO people.

"I first joined i3 in 1996. At that time i3 was mainly an idea, an aspiration, which a group of visionary people turned from an ambition into a challenging reality. Many memories, episodes, achievements and failures over the years have remained in my mind.

First, maybe the strongest feeling I still have is that from the very beginning i3 was a community. People working in the network not only tried to pursue the objectives of their own projects but also adopted a shared way of thinking about technology for ordinary people that was visionary. Many different kinds of professionals contributed to this vision: artists, designers, engineers, psychologists, computer scientists… They all experienced the problems of communicating and collaborating with others from very different backgrounds, but the vision they shared was so strong and exciting that none of them gave up. In this respect i3 demonstrated the feasibility of bringing together engineering, design, and human sciences, and of co-evolving innovative scenarios and their enabling technologies as equal and mutually-feeding factors.

I would say that in certain cases these people's creative thinking and their capacity to generate innovative scenarios was so ahead of their time that it revealed the immaturity of existing technology in supporting such visions. I still remember the time we installed the HIPS tourist guide in the Museo Civico in Siena. In the project, we concentrated on designing a new experience of visiting museums and, after three years, it was a pain to see our poor tourists going around the museum with heavy "portable" fujitsu tablets hanging from their necks (our ideal PDA didn't exist at that time), jumping on wires (the batteries of the tablet lasted only 10 minutes) and shaking their heads to detect IR sensors. Nonetheless the novelty of those design visions in terms of human experience was convincing enough to involve people fully in the trials and to overcome embarrassing situations.

I think the merit of i3 was to have demonstrated that innovation cannot be successful without the capability to generate scenarios of human experiences that make sense of the technological development. This capability is still a rare quality of IT research nowadays, and far from becoming standard practice."

Patrizia Marti is a researcher at the Communication Science Department, University of Siena, where she teaches 'Technologies for education'. She was involved in HIPS and POGO.

Debate: First i3 Spring days, Sitges 1999.

"When I joined i3 as partner in a project in the Connected Community area (Campiello) I had experienced only classical "stand-alone" European projects, either as part of the mainstream key actions or as part of the basic research arena — nothing like being part of a network of research programmes the size of i3. And the first impact was quite shocking: we were asked to put a lot of energy into common events, into making others aware of what our projects were doing, into giving interviews… There was a focused determination on the part of the EU to support the establishment of a multidisciplinary research community that I had never seen before. Like many others I already had my own communities – CSCW, HCI, Knowledge Management … – and the effort I put in was sometimes due more to the Commission asking than to any perceived immediate personal benefit. I was sceptical, also because I could see that the cost put on the projects for supporting this process was high.

It is only now, after some time has passed by, that I can truly see how that new experience, and the whole learning process associated with it, has not only created value per se but also paved the way to other initiatives that can benefit from all that experience. I think I am not wrong when I say that without the experience accumulated in i3, the Disappearing Computer initiative would not be as successful as it is, or as well-organized. It seems to me that there is a whole community of researchers interested in new technology for ordinary people, a community that has learned, and keeps learning, how to create a European critical mass. The bootstrap for multidisciplinary research was achieved through i3, the necessary sensitivity to interaction design and social study has been nurtured and sustained --- those things are not lost. Now new initiatives can be more focussed.

This is a big value in my eyes: to have sustained and created an attitude toward technology that is truly usable, that is truly responsive to user needs. And this leads me to the second point I wanted to make, about how to measure the value of these big initiatives. I care particularly about this point, because while I know that a lot of value has been created (not only along the lines described before, but also in individual projects), I sometimes encounter people who cannot see this value.

The community was big, there was good work, for sure, as well as not so good work. When I am asked to be precise and quantitative about the overall value I do not have an answer, since there were many projects and many of them I don't know a lot about. My suggestion is simple: I would like to see the list of the papers that were published in truly relevant conferences proceedings or journals (scientific value), and the number of patents and products that have been originated (commercial value).

The long-term value can be argued on a cultural level, but only when we can show these things – papers, products, patents – will we be able to prove to the sceptical, too, how much good work was done."

Antoinetta Grasso is Project Leader inside the Contextual Computing Group at the Xerox Research Centre Europe and was involved in Campiello. She is a member of the Convivio Steering Group and will co-oordinate Convivio's "Evolving" into a sustainable long-term community.

"Thinking back on my involvement with i3 brings many things to mind. My background was firmly in the Inhabited Information Spaces camp but I ended up working on Campiello, a Connected Community project — so one of the things that i3 meant to me was a change in the direction of my research.

What attracted me to Campiello, and thus to the rest of i3, was the prospect of creating technology useful to a community, with a community, and putting the technology to the service of that community. As part of this "community on" process I have memories of being in Venice trying to use my limited Italian to explain to people how they could use a paper-based user interface to communicate, working with designers on the aesthetics of an interface as well as just its functionality, hearing about the difficulties of transporting large multi-function devices across Venice by boat, and setting up animated ambient information displays in Venice's naval museum. A lot of fun in other words, but with serious research behind it. How can information technology better support communities and people who are not computer literate? How can we move away from the tyranny of the desktop and web-based interfaces to give people something more appropriate for them, their situation and their community? I think in Campiello we made some progress to answering these questions. Our answers weren't complete, but they were a start. A step in the right direction.

So, I think in Campiello, and i3, some good things were achieved, but I do have some regrets which I think could apply to other projects as well. My biggest regret with Campiello was that having got a system that worked we weren't able to deploy that system for longer than a month's trial. A month's trial is OK for validating that some software more-or-less works but it is not a long time in the life of a community, and it is not a long time for evaluating the effect of a new system on a community. I also feel that having made use of the community to provide content for the system we did not give enough back. I feel that if we are really to create research projects that work with communities then we need to rethink the standard research project. As well as the standard two-to-three year "let's do some research and get something working" phase, there should be a longer term element in which there is time and *money* for giving the results back to the community. Only in this way will we know if what we produce has value beyond papers in conferences and journals that the community members will never read."

Dave Snowdon works at Xerox Research Centre Europe and was involved in Campiello. He is the editor of the i3 book on Inhabited Information Spaces.

Working with local communities: Campiello joined forces with the Scuola Pier Fortunato Calvi when it tested its system in Venice in May and June 2000.

Learning is ESE: the ESE programme placed children at the heart of i3.

"I recently found myself thinking about i3, thanks to a wonderful meeting I attended in the Netherlands on "Interaction Design and Children". The organizers from the University of Eindhoven thought they were putting together a small workshop to think about how we design new technologies for children. What it turned into was a conference with almost 100 people in attendance from all over the world. As I sat there among many familiar faces, I realized this could never have happened without i3 and the Experimental School Environments (ESE) research. While it has been almost a year since our projects have finished, you could still see the energy and the excitement for this area of research. To be fair, only a small number of the talks over the two days were by former ESE members, but I still had the feeling that the momentum was there thanks to what i3 had started. While it is gratifying to see some of the ESE research continue in some form or another, what is even more gratifying is to know that this research area concerning children, technology and learning will be carried on for many years to come (as a note: next year's conference on "Interaction Design and Children" is already being organized and details will be announced shortly).

In looking back at my own experience as a part of the ESE research projects, I have to say that it taught me a great deal: (1) it helped me to understand how to coordinate research between partners, between sites, and between countries — an experience not often possible for an American; (2) it helped me to be explicit about the research I was a part of (the concept of hundreds of pounds of "deliverables" each year is not something that has ever been expected from the United States National Science Foundation); (3) it helped me to focus my own research more clearly on storytelling and information access for children, both of which my team continues to actively pursue; and (4) it gave me the opportunity to share my cooperative design research methods for children with many other researchers in Europe (it is gratifying to see so many others bringing children in to their technology design experiences).

In addition to these more personal changes and opportunities, my experience with i3 gave me the courage to talk to my own division director at the National Science Foundation (the equivalent of Jakub Wejchert at the Commission) to challenge them to fund more program initiatives like ESE. I am happy to report they listened, and many more programs are being funded in the US concerned with this area of children, technology and learning.

So while i3 is coming to end, I can safely say it has had a strong impact on my own research, the European research in this area of children and technology, and the research funded by the United States. As for me, I continue to wrack up my frequent flyer miles running over to Europe working on my DC project, InterLiving. I also continue to enjoy my relationship with the Royal Institute of Technology in Sweden and the EU."

Allison Druin is Assistant Professor at the University of Maryland, USA and the Royal Institute of Technology, Sweden. She took part in the KidStory Project and is currently involved in the DC project Interliving.

"I felt privileged to take part of the ESE initiative as a reviewer – and as a highly motivated end-consumer, since I am also a researcher in the field of digital toys.

In retrospect the i3 ESE initiative gives the impression of a bold attempt to initiate interdisciplinary, innovative and explorative research – explicitly stating that work methods could and should be explorative. When reviewing some of the projects in Siena –99 I didn't have this perspective, but now, at a larger distance, it becomes visible how much effort this took in improvising, devising new work formats, creating a common understanding among project partners, and so on. It is a positive sign that – in spite of initial difficulties – so many of the ESE collaborations are still in vigour within the DC programme.

One problem many of the projects ran into was the fact that technology development didn't go in the direction it was expected to at the start-up phase. The 3DVR applications didn't get the energy of a pursued commercial development. On the other hand, the focus on physical interfaces and physical spaces has continued to be relevant. This says something of the difficulty to plan for three or four years ahead in working with new technologies. The international/interdisciplinary project teams needed those years to set up working practices, but content-wise shorter project spans could maybe have been better, allowing to readjust the direction with respect to technological advances.

From this point of view I find it regrettable that the 6th framework seems to move towards even heavier project organizations, making it difficult for small partners from organizations with a shorter planning/funding horizon to participate.

There is one more emerging practice in i3 that I hope will be pursued in future research programmes: the exploration of alternative forms of presenting research – and disseminating it to a broader audience outside the circle of peers.

Exhibitions, books, "cultural probes", graphical layout in order to facilitate the understanding of complex sets of data: there were many inspiring examples of how to present research in order to open up both visions and discussions to laypeople.

Ironically some of the reports that were most outstanding in this sense were stamped "CONFIDENTIAL" – and shown only to two reviewers and an EU project officer. This is regrettable, because some of these deliverables could be extremely important in raising the standards for communicating research."

Åsa Harvard is a senior researcher at the Interactive Institute, Malmö, and was a reviewer for i3.

Some i3 projects made the international press. Here: a glimpse of the NIMIS computer-integrated classroom, which appeared in Time magazine, February 26, 2001.

The LiMe coffee table, featured in TIME magazine (Time Digital, February 26, 2000) in the article "Not very PC" by Jennifer L. Schenker.

i3 magazine

"Looking back is always informative and can help to shape what we do in the future. For i3 we can look back on both technological innovation and the development of novel working practices.

During the lifetime of i3 we saw the development of personal assistants that recognise the space around them (eg the COMRIS parrot); the exploration of mixed reality boundaries within the artistic world (eg eRENA); the development of agent supported interfaces embedded in everyday artifacts (eg the Coffee Table in LiMe) under the themes of Connected Community and Inhabited Information Spaces. In the ESE projects we saw the development of technologies to support story telling and other learning activities for young children. But how much was there that we didn't know about when we started those projects back in 1997? Perhaps most significantly texting (SMS) was in its infancy - we didn't know that people would want to communicate with each other like that. Napster, with all the legal implications that flared up around its inception, wasn't in use. What we were doing in those early days was exploring the potential use of technologies that were still around the corner. Imagination was one of our greatest assets.

Creative tensions were rife - software developers were learning how to work with concept designers. Ethnographers were learning how to do 'rapid ethnography' and interpret their findings in a way that would support concept design and prototype development. Rapid prototyping was … well… rapid… though sometimes for those waiting to get on with evaluation it didn't seem to be so rapid. In a way we were all, within those multidisciplinary, multicultural teams, learning how to work effectively with each other. Having just come back from the DC Jamboree in Gothenburg I'm delighted to say that I can see that some of these ways of working that we were exploring have now become embedded in EU projects. Consortia have gained from the experience of the early projects and been able to improve on the working practices they were previously tentatively exploring..

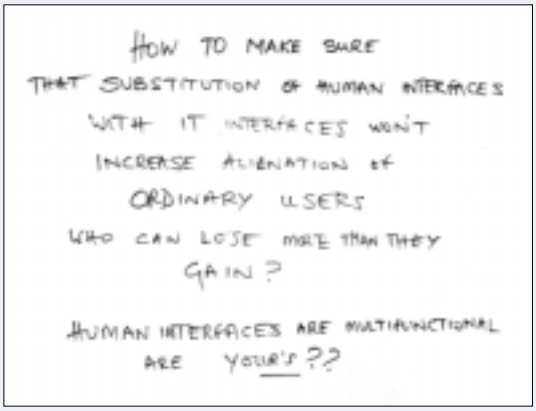
Much more has happened too. At Gothenburg I felt I was observing a vibrant and established research community which had a real sense of going places. There was a feeling of collaboration and co-operation, not only within projects but between projects. My hope for the future is that we can continue to learn from our past experiences – be adventurous, take risks and continue to inform IST research."

Kathy Buckner is leaving her post at Queen Margaret University College in January 2003 to take up a position of Senior Lecturer at the School of Computing, Napier University, Edinburgh. She was involved in the LiMe project, and acted as reviewer of DC projects at the 2002 Jamboree.

"Perhaps the rhetoric was too idealistic and communities cannot be so easily connected in the face of political and economic might. Information spaces are inherently abstract and complex and it will be a while before the information infrastructure disappears into the walls. I still think that we need to shift the paradigm of interaction, properly, from 'interacting with' to interactive technologies as media. But that is easier said than done. Perhaps i3 has had influence here. Would the Doors of Perception conference be looking at 'flow' if it were not for the philosophy and methodology of i3; where architecture meets artistry and comes to information spaces?

There is no doubt that there is now a community of researchers in Europe with some sense of a shared agenda, vision and conceptual base. And i3 must take some credit for the building of that community."

David Benyon is professor of Human Computer Systems at the School of Computing, Napier University, Edinburgh. He was involved in Persona and was co-chair of the i3 International Conference "Community of the Future" (Siena1999).



Voice for all: feedback from "ordinary users" at the second i3 Annual Conference, Siena 1999.

"The results, as well as papers and special issues, came in unquantifiable ways. I remember a lot of laughter in hotel bars, and odd, sometimes disconnected conversations covering a multitude of territories, and occasionally a sense of real intellectual excitement when a bunch of people see a whole new set of possibilities arising. Maybe someone needs to collect and archive all the crumpled napkins which served as temporary whiteboard and notepad, brimming with diagrams, scrawled writing and red wine stains. Often, I think, the final project results didn't go as far, or were not as radical, as we had hoped. But I don't think that is such a disappointment.

Maybe what i3 did was to create a bunch of people from radically different backgrounds who can find a way to work together, and who are generally not satisfied with the safe and the narrow and the accepted. I hope this will go forward in some way. Did i3 create these people? No. It provided the conditions for these people to thrive. We need things like i3. I do hope it has offspring."

Alan Munro is a researcher at the Department of Computer Science, University of Strathclyde. He was involved in Persona and is currently part of the DC project Gloss. He was a member of the i3 Coordinating Group and contact point for the i3 Future Probes.

Convivial gatherings: there were many of them — this one captures a toast at the i3 Spring Days 2001 in Porto.

"Those involved in i3 over the past few years have probably read many times about the role of design in the research schema. For us designers i3 was THE schema. For the first time researchers and companies in Europe were asked to investigate and develop "*new human-centred interfaces for interacting with information, aimed at the broad population*".

i3 opened the door to a variety of competencies: technology, human science, design, art and business were there. It was the right community. And it was the first time that such a rich and complex multi-cultural, multi-disciplinary community cooperated.

For us as designers it wasn't always easy. We sometimes had to work hard to overcome the heritage : "Technology is the 'serious' part of the story"; "Human factors and sciences are 'scientific' "; "Design claims to know about individuals and humans, bridges technology with everyday uses, and deals with aesthetics".

I do believe designers played a crucial role in building the dialogue between users and technology: but that doesn't mean design merely follows users' needs or advanced technology features. Design tries to orient users' expectations and technology potential with ideas of the future. We were often perceived as arrogant, like those who want to drive the whole story and know where to go from the very early scenarios.

I also believe design was the element that facilitated the thinking about research methods and approaches. This was probably because design culture is open enough to hold complexity and diversity and to mediate between diverse components of the process (which probably means it is not 'scientific' at all).

Through i3 projects we all learned the finest lesson: investigating meaningful innovation implies a high level of complexity, and there's no way to manage complexity other than to partially abandon one's rigid methodologies and creating tools to open up the dialogue (the *cultural probes* in Presence are a – perhaps overused – example in this respect).

i3 was all about knowledge sharing and building the dialogue. i3 was a Connected Community. To see the results of i3, even in terms of design, one must look at the different competencies and practices: how they have been modified, the languages they speak, the tools they manage, how they measure innovation or success…

Finally, i3 demonstrated that developing research and managing complex processes can be pleasurable, and that serious results don't need to exclude a sense of aesthetic and self-irony. We had fun, we learned a lot about our job, we shaped the way we design with technology, we formed a small community of "interaction design experts" still alive around Europe.

This is i3 now: a network of people who shared an experience of intense work and deep knowledge-sharing in a common attempt to understand what designing technology for people means.

This is what I feel the research world is losing after i3: thinking that research on technology is possible and can reach the highest insights, without any discourse on the quality of the relation between humans and technology."

Elena Pacenti works as service designer and interaction designer at Domus Academy. She was involved in Campiello, LiMe and Presence.

"i3 was a great adventure - it widened my horizons and explored issues of research and development which could not be touched on by projects alone. The sharing of quite different philosophies, research aims and methodologies and the interaction with society, industry and commercial exploitation has created a clearer identity for the work I do and a confidence in my relationships with partners which would have taken much longer otherwise.

Richard Millwood is Reader & Apple Distinguished Educator at Ultralab, Anglia Polytechnic University. He was involved in the éTui project, and was a member of the i3 Coordinating Group.

"We miss it [i3]...the regular bi-annual commitment, the developing community, and especially the multi-professional discussions around shared problems. If we ever are involved in developing a research and development programme from scratch we would use it as a model.."

Ingrid Pramling Samuelson is a professor at the Department of Education, Göteborg University. She was coordinator of the CHAT working group.

"I think this was only the start. If we allow ourselves to have visions of what's beyond the horizon of today's technology and society, there's hope."

Mikael Fernström works as Research Officer in the Interaction Design Centre and as a Lecturer in the CSIS department, University of Limerick. He was involved in KidsLab.

"As we are all trained in collaborative and networked processes we should promote the idea of continuation! We should refresh the i3 concept and place the i3 network and i3 magazine at the centre of the IST programme. The new i3 initiative must be a powerful instrument for networking, disseminating (via the magazine), organizing conferences and producing conference proceedings, setting up exchange programmes, student forums and support schemes for artists-in-residence and guest researchers, and so on."

Monika Fleischmann & Wolfgang Strauss work as media artists at the MARS Exploratory Media Lab, Fraunhofer Institute for Media Communication. They were involved in eRENA.

Enter Convivio - please turn the page and read on.

The above are excerpts from some of the responses we got. All full versions can be found on the i3 web site (www.i3net.org/news/i3views), with apologies to those whose views we were not able to include in print.

Vive le réseau!

Achilles Kameas
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A vibrant community of academics, researchers, practitioners and industrialists has emerged in recent years around the i3 and Disappearing Computer (DC) research programmes. As these programmes end, it is time for this community to consolidate, evolve and realise its potential. As is clear in the previous article, many people feel that the bonds, channels of communication and support services created through i3/DC should not be lost.

Roll in Convivio…

Convivio, "the new network", will kick off in January 2003, after a lengthy process of reflection, consultation, negotiation and (sometimes fierce, but always fruitful) exchange of opinion. In consultation with Jakub Wejchert, and seeking the support of a broad base in the community, Giorgio de Michelis, Norbert Streitz, Wendy Mackay and others have drawn up a proposal that outlines both the larger vision for the community as well as concrete mechanisms for supporting it. Convivio will be managed by a (rolling) Steering Group of 16 people, representing a balanced mix of countries and disciplines, and will capitalise on experience accumulated so far.

One of the distinguishing characteristics of our community is the careful attention paid to the nuances of everyday life. Technology is not seen as separate from the lived reality – and quality – of people's lives, but as deeply related. To be strong, our community and its supporting network must be open and alert to what is happening, not just within our own circles but in the world at large, and seek an international impact. We hope to affect research agendas and priorities at the industrial, political and social levels.

Convivio's main aims, therefore, are to:

- help the community to collaborate and share knowledge and expertise; and
- ensure maximum visibility for the community's work and guiding ideas.

So if you…

…feel part of this emerging multi-disciplinary, pluralistic and multi-cultural community;

…share the community's vision of a new discipline that draws on the interaction between art, design and technology and is informed by sensitivity to the diversity of everyday human activities;

…believe in the importance of open discussion about the purposes and underlying values of new technology;

…agree we need to integrate issues of sustainability, aesthetics and quality of life into our research and technological development; *and*

…agree we need wider forms of participation in the design process to achieve this

then

you are invited to join Convivio now!

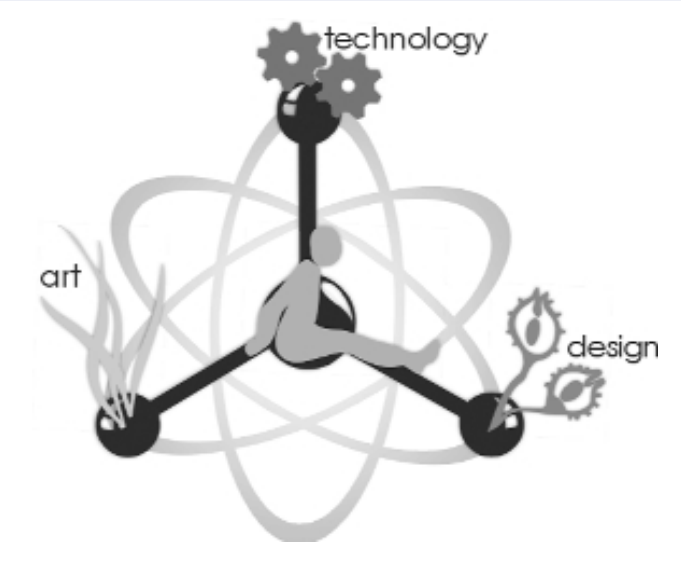
Join us and you will

- receive Convivio magazine on a regular basis (first issue is due autumn 2003);
- be invited to take part in Convivio's activities; and
- benefit from Convivio's support services.

Convivio is an Italian word (used by Dante Alighieri as the title of his first book) which has given rise to related words in many other languages. For example, the English adjective 'convivial' means either "enjoyable because of its friendliness" or "enjoying the company of others". We feel that the idea of being together, sharing knowledge and experience, and supporting "conviviality" through the design of new ways of interacting with technology (and with each other, with the help of technology), expresses well the common perspective of our community.

He who claims "Man is a living tree"
First says what isn't true
And, having said what's false, leaves much unsaid;
But possibly he sees no deeper.
...
And further, he who paints a form, if he
Cannot become this form, cannot portray it;
Nor can an upright tower be made to bend
By a river flowing far away.

(Canzone Three from "The Convivio" by Dante Alighieri Translated by Richard Lansing, 1998)



Artwork by Nena Karagianni

Convivio will provide our community with the channels it needs to articulate its vision. It aims to become an independent association, eventually serving as a permanent host and support system for community members."

Membership

Convivio accepts research organizations as associates and individuals as participants. To apply for either of these, please send an email request to *Convivio* (Convivio@disco.unimib.it).

Services

Web site: news, forums, contacts

Publications: community magazine, proceedings

Exhibitions: presence of community's research

Vision building: promoting the community to all audiences

Summer schools: ensuring sustainability through diffusion

Conferences and workshops: increasing coherence and pluralism

Mobility support: exchange

Convivio Steering Group

Chair: Giorgio De Michelis (University of Milano Bicocca, Italy)

Co-chairs:

Wendy Mackay (INRIA, France)

Norbert Streitz (Fraunhofer IPSI, Germany)

Web services: Gillian Crampton Smith (IDII, Italy)

Publication services: Achilles Kameas (CTI, Greece)

Exhibition services: Steve Benford (University of Nottingham, UK)

Vision: John Thackara (DoorsOfPerception, The Netherlands)

Summer schools: Yngve Sundblad (KTH, Sweden)

Conferences: Susanne Bodker (University of Aarhus, Denmark)

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Members:

Liam Bannon (University of Limerick, Ireland)

Christian Heath (King's College, UK)

Steven Kyffin (Philips Design, The Netherlands)

Richard Noss (Univ. of London, UK)

Riccardo Antonini (Consorzio Roma Ricerche, Italy)

Designing the right thing (and designing it right)

The i3 interview

Gillian Crampton-Smith
Interaction Design Institute, Ivrea
gcs@interaction-ivrea.it

i3 magazine

In a majestic setting at the edge of the Aosta Alps, very much in Italy yet close to Switzerland and France, lies the "city of Ivrea", once a Roman garrison camp, now a small town with a rich history. Industrial giant Olivetti began producing typewriters here in 1908 and, thanks to the social vision of the Olivetti family, Ivrea benefited throughout the last century from urban growth that promoted the harmonious combination of industrial activity with society and culture.

Very much in this tradition, Ivrea has recently also become home to a brand-new education and research centre in Interaction Design, the Interaction Design Institute. Funded by Olivetti and Telecom Italia, the institute has already established a strong and varied programme encompassing teaching, research, workshops and research visits. Its director is Gillian Crampton-Smith, who will be familiar to many i3 members and friends. Gillian brings a rich fund of experience to her new position, not in the least because of her long involvement with London's Royal College of Art, where she established the Computer Related Design Department. Under Gillian's guidance, the CRD Research Studio achieved an international reputation as a leading centre for interaction design.

There are many links between RCA (which was involved in i3 projects Presence and LiMe), the Interaction Design Institute (which hosted the first i3 Summer School in September last year) and the i3/CONVIVIO community. Gillian is also one of the founding members of CONVIVIO, and will be a member of its first Steering Group. With the Interaction Design Institute now embarking on the second year of its postgraduate course, and i3 evolving into CONVIVIO, this seemed like a good time to talk to Gillian, looking forward and back.

Interview by
Mimo Caenepeel
University of Edinburgh
mimo@inf.ed.ac.uk

Can you tell us a bit about the Institute's origins, its first beginnings?

Ivrea is Olivetti's hometown, and Olivetti felt it would be good to start a postgraduate institute to research and develop interaction design, and to train young interaction designers. In April '99 they decided to go ahead with this, and we opened our doors on the 19th of December 2000 (Olivetti was very keen to start in the year 2000,and we just made that). We have a new building, or rather an old building which used to be the Olivetti research centre and which has been completely renovated for us. I moved to Italy in January 2001 – I had been dividing my time between London and Italy until then - and in October we got our first students. So we finished our first academic year, and are just starting our second.

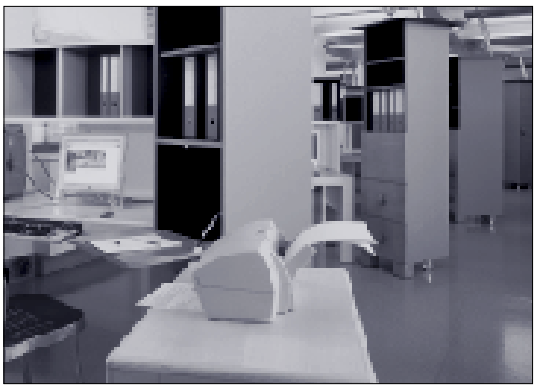
Was there a larger vision behind the initiative?

In the 80s, and perhaps more so the 90s, Olivetti started to lose ground, and lost a lot of jobs here in Ivrea. One of the points of having us here – as well as a new department of the University Turin in media studies, situated just opposite us — is to make Ivrea much more of an educational and cultural centre, to move from the factories of the past to the factories of the knowledge economy. We are playing a part in that, that's one of the reasons for having us here. Another motivation was to bring the ideas of interaction design which are — I think it is true to say — more developed in other parts of the world, to Italy, and to companies in Italy.

Yet I always associate Italy very strongly with design.

That's right, and in a way what we're trying to do is to build on the wonderful strengths that Italy has,

The 'Blue House', home of the Interaction Design Institute Ivrea.



Detail of an open space studio.

particularly in fashion, furniture design, and industrial design, and bring those strengths to the industries of the new economy.

How is the education programme beginning to unfold?

We have about 50 students altogether, 25 in each year, selected from over 100 applicants each time, which is pretty good for a brand-new course.

That suggests there's a need for this kind of education.

Definitely. If you think of the number of interactive systems and products that are being designed and implemented, there clearly is a huge need for research and education. Maybe there aren't a huge number of jobs just yet, but certainly at the Royal College of Art, all my students who were looking for jobs in industry have got them.

The institute seems to have a strong international orientation.

Yes. We are lucky to have many interesting visiting researchers, visiting professors, from all over the world; and our students and staff, too, are from something like 20 different countries, including Japan, India, North and South America. So it's very international, and all courses are conducted in English.

But we do have Italian classes for all the people who come here (as well as English courses for Italian students), and intensive courses for the faculty in summer. Contact with people in the area is important. And we've already had some good contact with the city of Ivrea: they helped us with a student project that looked at mobility, at how information technology could support mobility in the Ivrea area. We worked with the head of urban planning on that, and it's good to have that kind of contact, that kind of exchange.

It is too early to really assess the programme but we had an open day at the end of the first year of the course, and we were all very pleased with the work that the students have done so far. Obviously in the first year there are a lot of things to work out, decisions to be made as to how best to do things, but I think the results so far have been tremendous. We have quite a few international advisors, and they were very complimentary too. But there is a lot to learn, and we've been spending the summer planning this coming year with its new intake of students, and looking at whether and how to adjust the programme.

The postgraduate course takes two years. In the first year students do a lot of short projects, while in the second year they focus on doing a thesis, on a topic which they pick but which usually falls within one of the institute's three broad research areas.

What are these research areas?

The first one we're calling *Personal Technologies*, and it is really about the qualities of interaction with a system. The technology might be wearable computing or desktop computing, the point is that it's a one-to-one relationship.

The second area we're interested in is called *Connected Communities*, and it's about knowledge sharing and representation, amongst people who have similar interests or work together for instance. The name is intended to remind people that knowledge is in people's heads, not in data, and that it's therefore very important to think about the social context of knowledge-sharing systems, as well as the data itself. We want to start a community website, and we're going to be using this website as an experimental framework, or test-bed.

Franco Debenedetti, President of the Ivrea Interaction Design Institute.

The third area that we're interested in is what we've called *Tomorrow's Services*, and that's really on a larger scale, a kind of systemic scale, such as big systems in cities. The project about mobility that I just mentioned is part of this, and for that kind of project you often need to bring together different stakeholders and get them to work together. In the case of mobility, for instance, there's the city, the transport companies, maybe service providers. As well as having to be useful for the user, projects like this have to work at a systemic social and political level. It's not enough for us to think "Well, what would the user need?" You also have to ask "What is the process by which this thing (that we think will be a good idea for users) could actually come into being?"

So it is about how you connect with different kinds of organisations to make something that is good for the end user. That's one aspect of it. The other aspect is that more and more people, or more and more companies, are looking at making things that are *services* rather than *products*. I think that this is a general tendency, and it seems that a service is something that needs to be designed just like a system needs to be designed. So that's why we're interested in it.

You recently organised a workshop with an intriguing title: "pure play or pure pain", which focused on sustainable business models. Can you say a bit more about that?

I think this is a very important area for interaction design business: the business model has to some extent to be part of the design problem, since you are going to have to design whatever you design in a different way depending on how it is going to be sold to the customer, distributed, and so on. So it will make a difference to the design whether you have a purchasing business model or a service business model, for instance. This issue can't simply be tacked on at the very end, it needs to be thought of with everything else — what the product is, who it's for, where it's going to be used, how it's going to be bought, how it's going to be distributed, and so on. If we, as designers, don't think about how these things are going to have a sustainable business model, they're not going to see the light of day, we're simply wasting our time.

And this is much more the case now than in the past, when business models were not so various. In the past you took stuff, processed it in a factory, distributed it and sold it; and the business models were fairly simple. But now, with the e-economy, there's a whole raft of new experiments in business models.

At the workshop we had some very interesting speakers from various places. One of the things people talked about was *DoCoMo*, which is really happening mostly in Japan but which is nevertheless attracting interest here too. DoCoMo is the Japanese data telephone system and mobile phone system, which is based on HTML and which is full of lots of wonderful and varied services that people have designed for it. It's an amazingly vibrant environment.

What would you view as the greatest challenge for interaction design?

I think we are still facing the same challenges that we've had for quite some time really: to show people in companies the contribution that interaction design can make, not just to better services and products for people, but also to business. Because if things are better for people, they're also better for business. My impression is that customers are getting more discriminating and are acquiring more information technology, but that there's a lot of work to be done to make these things better-designed.

Here in Ivrea we talk about 'designing the right thing' and 'designing the thing right'. 'Designing the right thing' is deciding what it is we should be designing, by going out, observing users, seeing where the potential is for things that are useful and designable. 'Designing the thing right' means designing it so that it works well, so that it's easy and enjoyable to use, easy to learn, and so forth. Traditionally, the work of designers has been 'designing the thing right'. But information technology and communications technology design is different from, say, architectural, industrial or graphic design in that many of the things that we are designing didn't exist before. And so we're designing what the thing *is* as well as what the thing will be like. You can design something that is beautiful and works well and everything, but if it's not the right thing you're wasting your time.

What I see as special about Ivrea is that we're very interested in the relationship between the virtual and the physical, and so people around here can make electronic prototypes as well as things on-screen. Naturally some of the research areas are more geared towards the physical or towards the virtual, but we think it's important that their interrelationship is developed and designed. Ubiquitous computing is a very good example of this interrelationship between the real and virtual. And it's something which at the Royal College of Art we were working on for a long time, because there the department of computer-related design brought

together people from graphic design and people from industrial design.

You are one of the founding members of Convivio. Do you think there will be strong ties between Ivrea and the new network?

Definitely. Although the institute didn't open in time to participate in any of the 5th Framework projects, we intend to be fully involved in the next Framework.

Convivio will be a natural continuation and expansion of i3, but there is also a sense of something new, and, as is inevitable in situations like this, some tension between continuity and change...

I think it's inevitable that we build on what we've done before, because without what has gone before we'd never even be thinking about doing Convivio. But what we're hoping to do with Convivio, I think, is to make something which is not just based on the projects that happen to be funded at a particular point in time, which was perhaps a bit the case with i3. We're hoping to make some kind of "ongoing underpinning", still supporting projects that are running, of course, but also keeping all the connections and the links between partners and people, irrespective of whether someone is currently involved in a project or not. Because the danger is that when a project ends the people who were involved will disappear and no longer stay connected with the network. We hope to maintain that connection through things like the exchange of researchers, the organisation of conferences and workshops, and so on.

The fact that the new network is called *Convivio* really emphasises that we're interested in developing technologies for everyday life, and although many i3 projects also concentrated on that, the name i3, *intelligent information interfaces*, suggested something different. What we're saying through the name Convivio is that we're interested in the design of people's everyday life, and in so doing we're shaping the culture of everyday life. And I think that's very exciting.

All relevant information on the Interaction Design Institute and its mission, programme and people can be found at:

www.interaction-ivrea.com

"Mixed Realities" exhibitors SUBLIMINAL FURNITURE. (Tom Hulbert, Stijn Ossevoort)

"Mixed Realities" exhibitors COEXISTENCE. (Eitan, Mendelowitz, Rebecca, Allen, Damon Seeley)

"Mixed Realities" exhibitors EXPERIENCE LAB. (Michael Kieslinger)

Feature

A socially-positive approach to Media Design education

View from across the Atlantic

Brenda Laurel
Art Center College of Design, California
blaurel@tauzero.com

Digital Media? New Media? What to call a program for designers who will be working with the tools of the future? Brenda Laurel observes that it is becoming increasingly difficult to determine which media are "digital" or what is "new", and admits that she and her colleagues at the Art Center College of Design beat their heads against this problem — until they decided to look at media in a different way, as an ever-changing palette for designers. They named their two-year M.F.A. course the "Media Design Program", and developed a curriculum to teach design skills uniquely suited to the dynamic technical and cultural environments in which students on the program will eventually practice. The program emphasizes *media strategy*, *collaborative work*, and *research methods*.

At the heart of the curriculum of the Media Design program is a one-year "studio" required of all first-year students. In this "Super Studio" students develop a transmedia project up to the point where it could garner funding as a new company, service, or product. Socially positive themes contribute to the success of this approach. While most students have done some experimental work in their undergraduate studies, much of their work has focused on redesigning logos and branding systems for existing products and corporations. By beginning with a pro-social theme, we evoke fresh excitement and commitment. We also give students a new opportunity to contribute big ideas and to exercise their own personal voices.

In the first week of the studio we present two or three themes and ask the students to consider how those themes intersect. We employ strategic thinking and design research skills to specify a topic that addresses one of those intersections, and explore this topic's personal, social, and institutional contexts.The resulting project concept must employ at least four media types, and at least one of these must be interactive. Students identify the project's name, goal, audiences, value propositions, media strategy, and economic model. At the end of the term, they present their plan for critique by the MDP faculty.

In the second term, students design and test the component media types. Grouped in working teams, students act as leaders in areas that exercise their strengths and as contributors in areas where they can develop new skills. We design and refine our brand identity, and designs are mocked up, prototyped, critiqued, tested with potential audiences, and iterated. By the end of the second term we have a detailed project blueprint, with testing results to corroborate its potential for success. We have also developed a production schedule and many of the project's content and design elements.

The third term focuses on production. Working prototypes are created, critiqued, and tested. Collaborative work intensifies as students work across media types to ensure consistency. Halfway through the final term the focus begins to shift to the design of our project presentation, and we develop comprehensive project documentation in web and DVD formats. At the end of the term, we present the project to an audience of teachers, students, and corporate sponsors.

The Super Studio project is currently entering its third year. In the first year, the students began with the themes of the *human genome* and *education*. They developed a transmedia system designed to help teenagers learn about the science, policy, and ethical and medical issues related to our vast new knowledge of human genetics. Because many high-school students work with textbooks published before the inception of the Human Genome Project, our system – entitled *Code23* – meets a critical need in high-school education. Moreover, it helps young adults to become informed about issues that will be even more relevant by the time they are able to vote.

Last year's beginning themes were *energy*, *entitlement*, and *brand*. From there, students arrived at the grand strategy of addressing global warming; their strategy was to encourage the adoption of hybrid vehicles to reduce car emissions. The final project, *Upshift*, is a transmedia "company" that can attract customers for manufacturers and dealers of hybrid cars, and provides premium services to hybrid owners via wireless and web.

This year, we are exploring the *intersection of news*, *media ecology*, and *personal voice*. Students are currently investigating everything from fanzines, weblogs, and talk radio to the redesign of the *Wall Street Journal*. Ultimately, we will design alternatives to the traditional content, production, and publishing of news.

Our pro-social, transmedia approach in the Super Studio offers several advantages. Certainly, it motivates students to engage. Our rigorous process gives students a deeper understanding of market research – including quantitative, qualitative, and applied ethnographic approaches. They develop design research skills by studying personal, social, and cultural context and by analyzing the powers and weaknesses of existing design examples. They use improvisation and performance ethnography to approach design from the perspective of the intended audience. They design economic models to assure that their work will not fall into the dustbin of pleasant but non-actionable idealism. They develop collaborative work habits that accommodate both personal voice and shared vision. And the design processes they learn about in Super Studio inform their thesis project work and will eventually, we hope, inform their professional practice. More importantly, the students' work changes the way they think about design – who is for, how it is done, and what it can accomplish.

Our program also serves as an academic venue for research in the dynamics of social and cultural change. So far, we have developed Super Studio projects with the potential to make real changes in the world; and various car manufacturers, for instance, have expressed interest in the Upshift project. Whether or not our projects have a life beyond Art Center, we create robust models that demonstrate the muscular role design can play in cultural and economic change. Often, this work fills the gaps between traditional business, public institutions, and altruism in its potential to improve the lives of real people. At the end of the day, our graduates are prepared to produce and thrive in a changing world, with an ever-watchful eye on the public good.

Brenda Laurel is chair of the Media Design Program at the Art Center College of Design, Pasadena, California.

URL: www.artcenter.edu

Print explorations for Upshift ads.

Near-final Upshift homepage design. Note prominence of PDA downloads.

This year's students analyze newspaper design as part of their exploration of news media and personal voice.

Why should a computer be anything like a human being?*

* Mark Weiser, 1994.

Ewan Klein
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Could interaction design learn or benefit from looking at human interaction? Ewan Klein believes research into the fine-grain of human-human interaction could offer potentially valuable insights, and in this article he explains why. He also raises questions about trust and accountability in dealing with 'invisible' artefacts.

When we talk of interactive interfaces, what do we mean by 'interaction'? A first approximation might go as follows: the device receives input from a human, does some processing, and returns an output. This is a pretty crude characterization, of course: it would hold true of an automatic coffee dispenser. Nevertheless, it exhibits an important notion: you do something, and then the machine does something. In other words, you and the machine *take turns*. An exchange of two turns is not very exciting. But increasingly intelligent devices will offer opportunities for increasingly extended interactions in which turn taking may come to the fore.

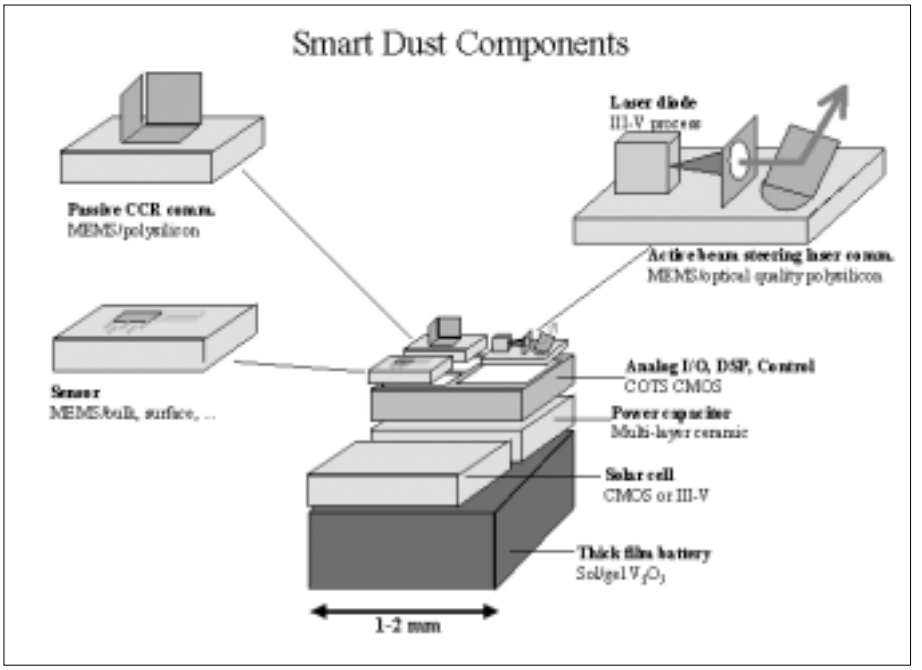
What do we know about turn taking in human-human interaction? Well, we know that it is pretty fundamental. Well before the advent of speech, babies start to participate in 'conversational turn-taking' with their caregivers. The adult will say something to the baby, and pause. Pretty much whatever the baby does (or doesn't) do, the adult will respond as though the baby had answered back. Within this framework of positive feedback, babies become more and more active participants in verbal interactions and games which involve turn-taking (like 'peekaboo')

In adult conversations, turn-taking is a finely choreographed art. When we talk with each other, we are very good at predicting when we can take our turn. We usually don't talk over each other: typically, there is little or no overlapped speech in dialogues. On the other hand, gaps between turns are short, lasting on average a few tenths of a second. What properties of spoken dialogue make this possible? This is to a certain extent an open research area, and in any case too complex to try to survey here. But at least two salient points are worth noting. First, there is recurrent structure in human speech, in the sense that utterances are broken into meaningful chunks, and there are various cues which allow us to predict when a chunk is about to end. And second, there is also higher level structure that holds between turns. For example, we expect greetings to be followed by greetings, questions to be followed by answers, requests to be followed by grants.

An early observation by Schegloff showed how easily new technology can be absorbed into these patterns. He noticed that when we pick up the phone, we respond as though someone has called our name: we say "hello" or "yes?". In other words, the phone call has the social force of a summons, and we respond accordingly. In the era of GUIs, physical manipulation has been the dominant metaphor. In the future, human-human turn taking could be just as potent a model.

Much has been made over the last few years of the notion that computers should be unobtrusive. Mark Weiser wrote: "*A good tool is an invisible tool. By invisible, I mean that the tool does not intrude on your consciousness; you focus on the task, not the tool.* […] *A computer I need to talk to, give commands to, or have a relationship with (much less be intimate with), is a computer that is too much the center of attention.*" However, in work with John Seely Brown, Weiser also noted the desirability of technology which could "*move easily from the periphery of our attention, to the center, and back.* […] *by recentering something formerly in the periphery we take control of it.*" Are there circumstances in which it might be useful to engage in conversations with devices which are normally intended to live on the periphery of our awareness?

Weiser makes the point, as many others have done, that human-human interaction is far from the only or the most desirable model for human-computer interaction. Indeed, it may often be better to follow Streitz et al (2001) in replacing the latter term by `human-information interaction'. Nevertheless, given the slightest pretext, human users will treat artefacts as intentional agents. As such, the artefacts are expected to observe both natural and social rules (Reeves and Nash 1966). The embodiment of the virtual in the physical has been pursued within the framework of Tangible Bits, but less attention seems to have been paid to the social persona of technological artefacts. Although Reeves and Nash's



Smart dust: a cubic millimeter device with a sensor, power supply, analog circuitry, bidirectional optical communication, and aprogrammable microprocessor.

observation may not extend across the board to ubiquitous computing, notice that even here we may talk about artefacts "communicating with each other", "working together", and "being aware of their context" --- all properties of social animals. So if users are going to treat artefacts as social agents, why not design them with that in mind? In some cases, we might even design them to talk to us.

As artefacts become increasingly autonomous and adaptive, it becomes correspondingly hard to understand and predict their behaviour. When artefacts are both ubiquitous and smart, how far will we trust them? 'Dumbing them down' so they can't do anything too important isn't an option which will appeal widely. Moreover, dependability isn't a straightforward matter of a single device behaving according to the (presumed correct) specification. It will probably be a long time before we can write detailed specifications that cover the emergent properties of groups of interacting intelligent artefacts. Equally difficult to anticipate are all of the environmental factors which might significantly affect the behaviour of a smart adaptive device. Moreover, users typically won't know how complex ubiquitous computing systems are *meant* to behave.

But suppose that artefacts had the ability not only to record their internal states, but also to articulate and explain the patterns of stimulus and response which contributed to their actions. If the device could explain its own behaviour, we might have some hope of understanding and controlling it. This would approach the ideal of self-documenting systems! Moreover, the option of using spoken interaction – particularly appropriate in the hands-busy environment of many domestic scenarios – is a natural way of pulling a device from periphery to centre. And it is also natural if we want our ubiquitous devices to be not just *adaptive* but also *adaptable* (Brusilovsky 1996).

Let's go back to another of the social skills that babies acquire in the first few months of life: shared attention. By four months, babies can follow the gaze of their caregivers, and equally, we will look at what the baby is looking at. Both baby and caregiver will point to objects and these objects will become the focus of conversation. In addition, babies will make eye-contact when they wish to interact, and will orient their gaze towards humans when they are addressed. If we start to design devices with useful sensors, and we also want to interact with them, it may well be useful to ground our interaction on the foundation of shared attention. Not only do we want the device to be able to sense the same thing as us, we also want to know that it is doing so. That is, we will look for feedback that the device is doing what

Shared attention: in interaction between adults and babies or small children, child and caregiver will often point to objects and these objects will become the focus of conversation. If we start to design devices with useful sensors, and we also want to interact with them, it may well be useful to ground our interaction on the foundation of shared attention.

we expect it to, and will try to interpret any overt behaviour (or lack thereof) as meaningful. If I ask you a question, and you don't reply immediately, I'll think that something is wrong: either you haven't heard me, or you didn't understand the question, or you're being deliberately non-co-operative. At the very least, if I'm intentionally interacting with a smart device, I want to know that it is open for business. It may be enough if there's a little green light, or an appropriate humming sound. But as I expend more effort in the interaction, I need to be reassured that the device is playing its part. An analogy can be drawn with the way that the listener in dialogue will regularly nod or utter acknowledgements like "mm-hmm" to indicate that she is still attending to the speaker.

What happens if we push ubiquitous computing to the limit? One portent of a dystopian future goes by the name of *Smart Dust*. This technology, currently under development by Pister and Kahn at Berkeley University, involves building large scale networks of wireless sensors, each node of which is miniaturized to a package measuring a few cubic millimetres. In future, such sensors could be "small enough to remain suspended in air, buoyed by air currents, sensing and communicating for hours or days on end." Pister and Kahn note that they are funded by DARPA, so at least some of the applications will have military relevance – espionage and 'tracking suspected enemies of the homeland' are obvious possibilities. Of course, this is one end of a spectrum of ubiquitous computing applications. Nevertheless, apart from the obvious question of privacy, trust and control will be pressing concerns. Maybe we need to be able to talk to Dust?

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Ewan Klein is Reader in the School of Informatics at the University of Edinburgh, and recently spent 18 months as Director of Natural Language Research at Edify Corporation. He has over 20 years experience working on research issues in natural language, and has been involved in numerous academic-industrial collaborative projects on the development of language technology. His areas of research include multimodal interfaces, natural language processing, and dialogue with intelligent systems.

Announcement

The Disappearing Computer initiative, in co-operation with the Convivio network, presents

Tales of the Disappearing Computer

told in public for the first time

21 – 24 May, 2003
on Santorini, Greece

Hosted by the Computer Technology Institute, Patras

The aim of Tales is to stimulate discussion and provoke scientific debate on the foundations, achievements and future development of research related to the Disappearing Computer (DC) initiative. Tales is addressed not just to the DC research community, but to anybody interested in interactive ubiquitous computing systems.

DC is an EU-funded proactive initiative of the *Future and Emerging Technologies* (FET) activity of the *Information Society Technologies* (IST) programme. Projects in the current DC initiative are scheduled to finish by the end of 2003; a follow-up call for a DC II initiative has already been launched. This is therefore a good time to reflect on the results of the initiative so far, to connect with related communities such as *Convivio* and *Presence*, and to look towards the future.

Tales will be told about

- disciplines and technologies that frame DC research;
- solid lessons learned from results to date, as well as fresh insights;
- difficult issues encountered so far, dire warnings about promising-looking dead-ends…; *and*
- promising ways forward.

Tales will be debated during

- plenary sessions with invited speakers and EU representatives;
- special sessions on results from ateliers, disappearing days and troubadours;
- half or full day workshops focused on specific issues or topics; *and*
- social gatherings around Mediterranean dishes and refreshing drinks, against the backdrop of the Aegean sun and sea.

There will be a poster area and a demonstration area. Extra meeting rooms can be provided on request.

Programme Committee

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For more info:

Tales website: http://ilios.cti.gr/DCTales
DC website: www.disappearing-computer.net

A call for proposals on sessions, workshops, posters and demos will be published soon.

All further enquiries should be addressed to Maria Tsokou (tsokou@cti.gr).

Workshop report

850 words about Resonating Minds

Resonating Minds, Royal College of Art, London, 15 – 16 October 2002

Jacob Beaver
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Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?

– T S Eliot, 'The Rock'

Back in 1995, Robert Blye, the American poet and therapist, gave a lecture in London about the restrictive emotional conditions of modern life. Talking of IT, he said, "*The Internet is not communication; looking into someone's face is communication.*" Blye's remark was prescient, for it begs questions that are only now beginning to be addressed by the IT community. What exactly do we mean by 'communication'? Indeed, what do we mean by the 'self' that communicates with others, and with itself? And how might IT foreground, rather than suppress, those intangible qualities which largely define our lives?

In October this year, the Royal College of Art hosted a two-day workshop called *Resonating Minds*. Sponsored by i3net and the RCA's Department of Interaction Design, the workshop aimed to initiate debate about 'mediators [IT tools or environments] that could enhance and exchange subjective experience'. The brief was conceived by Jakub Wejchert (EC), after discussion with Irene McAra-McWilliam (RCA) and others, as a way of testing the water. Is consensus possible across disparate disciplines about such a fundamental, yet elusive topic? What 'research pathways' might emerge?

The participants were a heterogeneous bunch. They ranged from the physicists John Taylor (King's College, London) and Pierpaolo Malinverni (EC), to computer scientists like Liam Bannon (University of Limerick, Ireland), social scientists like Federico Casalegno (MIT), the psychotherapist Erhard Mergenthaler (Ulm University, Germany), the philosopher Roni Aviram (Ben-Gurion University, Israel), interaction designers like William Gaver (RCA), and writers and artists. Many submitted personal statements before the workshop. Each was radically different in its concerns, methods and proposals, and yet there was one striking similarity. Among all the specialist jargon, certain words recurred: '*irrational*', '*magic*', '*aura*', '*meditation*', even '*soul*'. That seemed significant. After all, this would not be a powwow in a New Age tepee, but a colloquium in the ultra-civilised setting of the RCA's Senior Common Room.

But where to begin? With such an open brief, and so many different viewpoints, at first it felt as if we were all speaking a different language. At one extreme were the pure scientists, who tended to deconstruct any argument in search of the empirical nugget – they sought to *understand* the mind. Whereas the artists shrugged off such methodological hesitation in favour of making things – they hoped to *reflect* the mind. I started to wonder what was wrong with the old mediators, like pencil and paper, or violin and bow. There are so many spheres of human activity where IT seems to be the problem, not the solution. Take the workplace. How do you reduce stress and encourage self-reflection? As Pat Kane (Scottish writer and musician) observed, one obvious answer is to 'get people away from their computers'.

But then Michael Thomsen described a game called *Brain Ball*, which he created with colleagues at the Interactive Institute in Sweden. Two players sit opposite one another, with bio-sensors strapped to their foreheads. A ball is placed on the table between the players, which they are able to 'push' by inducing low frequency alpha and theta waves – in other words, by relaxing. An electronic equivalent of the Zen koan, Brain Ball forces users to reconcile the irreconcilable: winning means not winning, concentration means calm. Here, then, is a new type

Photographs by Brigitte Lelievre

of face-to-face communication, mediated by IT – a kind of conjoined meditation. This small example, which is literally a resonation of minds, may be an indicator of things to come.

The workshop ended with a host of speculative proposals, from the poetic ('a camera that uses your brain as film' by capturing happy moments through transcranial magnetic stimulation) to the educational (creating a multimedia timetable of history, to compare cultures across time lines), to the social (enhancing mobile connectivity to increase serendipity). It was clear that the search for 'subjective experience', however you define it, is a potent force in many domains – and across many domains. Nearly everyone agreed that the multidisciplinary approach to this topic, though problematic, had for that very reason been surprisingly stimulating.

After the workshop I went to my office, instead of going straight home. I wanted to check my e-mails, although this wasn't urgent. As I was staring at the screen, deleting all the junk mail, I thought of the talk Philip Tabor gave at *Doors of Perception 2*, in 1994. Following the lead of architecture critic Martin Pawley, Tabor likened the stained glass of a Gothic cathedral to the 'information architecture' of desktop displays. But Tabor went further, arguing that medieval scholasticism 'had a strong subjective aspect which valued ... revelation more highly than information. And light was the main vehicle of revelation'. Tabor concluded, '*When the monitor pours light over us like ... the jewelled radiance of the Gothic cathedrals, we are not just reading data: we are communing with what we see.*'

So was I really just checking my e-mails? Or was I also using the computer to reflect on the workshop – to communicate with myself – in the way that I might gaze out of a window at passing clouds?

Jacob Beaver works at the Royal College of Art, where he writes and edits the department's publications. He has worked both as a technical writer and as a copywriter, and has contributed to the London Review of Books and the Independent.

Conference report

Designing Interactive Systems

DIS 2002 conference. The British Museum, London, 25 – 28 June 2002

Ramia Mazé
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Interactive Institute, Sweden

i3 magazine

DIS 2002 was indeed time for – as its intention was – "serious reflection on designing interactive systems". Bringing together participants and audience members from a wide array of disciplines and locations for three days, the conference surveyed the state of education, practice, and future of the field.

The field? Comprised of designers and artists, technologists and engineers, educators and design method experts, practitioners, researchers, and students, conference participants represented the full diversity of perspectives in HCI and interaction design. But within this diversity there seemed to be a general desire to draw together and reflect on shared experience, with a hint of a quest to identify visions and visionaries for the future (perhaps most explicit in the title of Gillian Crampton Smith's talk: "*Who will design the cathedrals of information technology?*"). Bringing together pioneers in the field as well as a high proportion of students and young professionals, the conference had both enormous potential and an enormous task.

Varied and inspiring perspectives on design were put forth. Bill Moggridge, one of the founders of IDEO (and the person who coined the term 'interaction design'), presented video interviews with seminal figures in interaction design, among them Stu Card, the founder of *Google*, Takeshi Natsuno talking about *iMode*, and Durrell Bishop. Another design highlight was Tony Dunne and Fiona Raby speaking about their 'Placebo' project, where objects are designed to host a debate among users about the implications of technology. Pelle Ehn and Joy Mountford outlined diverse approaches to engaging students in the field.

These and other contributions were framed by an innovative conference format intended to support the activity of reflection itself. Panels and paper sessions with such topics as '*Approaches to teaching Interaction Design*', '*How do we prepare for designing the future*?', and 'Reflecting on Practice' dedicated half of each the session to guided and open discussion. Design projects were presented either academically (as papers) or experientially (as interactive exhibits, with deeper conceptual and implementation issues explored in panel discussions). New formats for audience participation included an '*Interactive Thread*' spanning the three days of the conference. Led by Wendy MacKay, this was a series of short, hands-on activities which engaged audience members in sharing, drawing and collaboratively mapping their experiences in relation to others. While this idea was admirable in its intention to introduce new formats for discussion and participation, not all the attempts were successful, due in part to the formality and inflexibility of the conference venue.

The ambitions of the conference were high, from the wide array of content presented and the novel presentation formats to the strong visual identity of the event. And as a forum for reflection and discussion, DIS 2002 provided much food for thought. But in reflecting on the event as a whole, I feel much may have been left undigested. With such a range of experiences and disciplines represented, it seemed difficult to gain a comprehensive understanding of common issues and approaches. The impression I was left with seemed fragmentary and made me wonder how DIS, as opposed to related conferences, offers a unique view. On the other hand, what emerged most clearly was the diversity and dynamism of the field over the last few years — perhaps the value of the conference was as a forum for engaging such diversity and providing inspiring glimpses of possible futures.

Ramia Mazé is an interaction designer focusing on user-centred methods and strategies for prototyping new systems, products and concepts. Currently involved in research projects at the PLAY studio of the Interactive Institute in Sweden, she also tutors in the new postgraduate interaction design programme at Chalmers University of Technology, Stockholm. She has worked at MetaDesign San Francisco and Philips Research Lab in the UK and has a masters degree in Computer Related Design at the Royal College of Art in London. Together with Monica Bueno, she presented their project Mixers: *A participatory approach to design prototyping at DIS 2002*.

Home page: www.viktoria.se/~ramia

DIS 2002 website
www1.acm.org/sigs/sigchi/DIS2002/

No disappearing act

UbiComp 2002 & the Disappearing Computer Jamboree. Göteborg, Sweden, September 29 – October 1 2002

Lars Erik Holmquist
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The fourth International Conference on Ubiquitous Computing, UbiComp 2002, was held in Göteborg, Sweden earlier this autumn, in conjunction with the second Jamboree of the Disappearing Computer community. The venue was the beautiful *Draken Cinema*, a 1950's movie emporium with 713 seats and most of the original décor intact — including an amazing stage curtain portraying a traditional Viking Dragon ship!

The UbiComp conference series has attracted a growing interest in recent years, but this time it was exceptionally successful. Almost 200 full papers and tech notes were submitted, 27 of which were chosen for presentation at the conference. Posters, workshops and the new video category also attracted a large number of submissions. Sponsor interest was very high, which was particularly encouraging given the problematic current state of the IT industry. And attendance broke all records: almost 500 people took part in the conference – more than twice the number of any previous year! We had participants from almost all parts of the world, with Europe and North America dominating but South America, Asia and Africa also well-represented. And while there were more delegates from academia than from industry, industrial attendance was also strong.

Most contributions in the single-track papers programme described novel applications and technology for ubiquitous computing, but there were several user- and design-oriented presentations too (for those wishing to delve further, the full proceedings are available from Springer (LNCS 2498)). The poster programme was popular and included contributions by PhD students who took part in "the doctoral consortium", a one-day workshop held before the conference; this new addition to the conference formed the start of a community of PhD students in the field. A particularly successful innovation was the video programme, created to take advantage of the fact that the conference was held in a cinema! The programme spanned over 20 years of ubiquitous computing and gave a unique perspective on the field's development. The first evening ended with a screening of Steven Spielberg's *Minority Report*, and attendants were amused to see many of the technologies presented in the video programme make an appearance in this science fiction film!

A big part of the success of the conference can be credited to the fact that it was co-located with the Disappearing Computer Jamboree, where all 16 projects in this proactive EU research initiative presented interactive exhibitions. This was the second DC Jamboree, and it also served to hold the annual review for all DC projects. The projects worked hard to present their research in exhibition format – not an easy task, since it sometimes required moving entire research environments to Sweden! But the end results were worth it: the DC exhibition was very popular and worked well to raise awareness of the work carried out in Europe. The exhibition was also the favorite hangout for members of the press, and resulted in several news articles in which DC projects featured prominently.

All in all the UbiComp conference and the Disappearing Computer Jamboree were a show of strength at a time when, due to the economy and other factors, most conferences have suffered steep drops in attendance. There is a lot of exciting work being done in both of these complementary research communities, and the mix of academic papers, interactive exhibits and other types of presentations proved very fruitful. Next year, the UbiComp conference will be held in Seattle. No definite plans yet for the 2003 DC Jamboree, but here's hoping that both events will be even more successful next year!

Lars Erik Holmquist was general chair of UbiComp 2003. Web references:

www.ubicomp.org

www.disappearing-computer.net

A scene from the DC exhibition.
Pictured: Thorsten Prante (Ambient Agoras) and Ben Bederson (Interliving).

Book review

The Internet as a diverse community

Patrick Purcell
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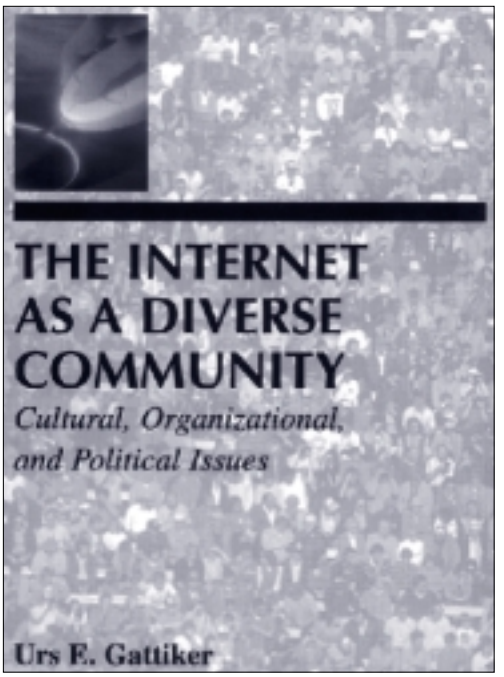
Urs E. Gattiker: The Internet as a Diverse Community: Cultural, Organisational & Political Issues. Larwence Erlbaum Associates, 2001. ISBN: 0-8058-2489-8

"*The Internet as a Diverse Community*" is the most recent in a series of volumes on the theme of *Telecommunications* from Larwence Erlbaum Associates.This volume lives up to its expansive title, presenting a full-context account of the global network that has come to inform and affect our day-to-day activities on a personal, social and work-place level. The author treats his subject from a broad range of perspectives - historical, cultural, political, socio-economic, legal, technological…

The specific issues discussed in the text — whether human rights, data privacy or national sovereignty — are well-detailed and fleshed out with case studies. The evidence presented reveals what a complex and multi-facetted entity the Internet has grown into since its historical origins as a communication facility linking a number of advanced research facilities just a few decades ago.



The many perspectives presented provide an interesting backdrop for the discussion of issues such as the call for free and unrestricted global access to information for everyone on the one hand, and demands for interventionist monitoring agencies to filter out subversive or otherwise undesirable information on the other. The author quotes a number of recent international case studies to illuminate this ethical dilemma, including examples of authoritarian regimes or regional value systems being challenged by globalisation technology.

Another important theme of the book is technology-mediated information processing and, in particular, how this has an impact on how we search for, locate and retrieve information in cyberspace. The author also discusses the social impact of the Internet - for example the growing digital divide, both within specific societies and between developed and developing societies - with supporting "chapter & verse".

While the role of the Internet as a communication infrastructure for geographically-dispersed communities is a major thrust of the book, the Internet's role in supporting co-located communities and neighbourhoods is also featured, in case studies which show how the Internet can increase the social cohesion that binds such communities.

The book seems to be intended for a wide audience (technical and sociological, public and private sector, academic and professional…) and is transparent in its structure, with a clearly-stated precis at the end of each chapter and valuable appendices (including relevant web sites). With its assembly of detailed hard facts it is hardly a "straight-through" read, particularly because the narrative doesn't always flow, and the language use is infelicitous in places. But the book does provide a valuable source of information for readers of various intellectual constituencies, not least because of its broad interdisciplinary base.

Future events

Links to all events on this list are available at http://www.i3net.org/mail/i3news/conferences.html

ICT'2003: 10th International Conference on Telecommunications
23 February - 1 March, 2003
Tahiti, Papeete, French Polynesia

CSMR 2003 - 7th European Conference on Software Maintenance and Reengineering
26-28 March, 2003
Benevento, Italy

CHI 2003: New horizons
5-10 April, 2003
Location: Ft. Lauderdale, Florida, USA

1AD: FIRST INTERNATIONAL CONFERENCE ON APPLIANCE DESIGN
6-8 May, 2003
HP Laboratories, Bristol, UK

CASA 2003: COMPUTER ANIMATION and SOCIAL AGENTS
7-9 May, 2003
Rutgers University, New-Brunswick, New Jersey, USA

3rd International Workshop on Smart Appliances and Wearable Computing
19-22 May, 2003
Providence, Rhode Island USA

UM-03: 9th International Conference on User Modeling Doctoral Consortium
22-26 June, 2003
University of Pittsburgh, Johnstown, USA

DPPI 2003: The Conference on Designing Pleasurable Products and Interfaces
23-26 June, 2003
Carnegie Mellon University, Pittsburgh, PA, USA

CHINZ 03
3-4 July 2003
University of Otago, Dunedin, New Zealand

ICALT 2003: 3rd IEEE International Conference on Advanced Learning Technologies
9-11 July, 2003
Athens, Greece

AIED 2003: AIED shaping the Future of Learning through Intelligent Technologies
20-24 July, 2003
Sydney, Australia

IEEE 1st International Workshop on Technology for Education in Developing Countries
12 August, 2003
Newark, New Jersey, USA

INTERACT 2003 - Bringing the Bits together
1-5 September, 2003
Zürich, Switzerland

HCI 2003 - Designing for Society
8-12 September, 2003
University of Bath

IVA 2003: 4th International Working Conference on Intelligent Virtual Agents
16-17 September, 2003
Irsee, Germany

C&T 2003: International Conference on Communities and Technologies
19-21 September, 2003
Amsterdam, The Netherlands

MCPC2003: Mini-track (Virtual) Communities and Personalization in E-Commerce Applications
6-8 October, 2003
Technische Universität München, Munich, Germany

ICOOL 2003: International Conference on Open and Online Learning
7-13 December, 2003
University of Mauritius

i3net member sites

Austria
University of Vienna

Belgium
European Schoolnet Office
Linc vzw
Public Library of Turnhout
Starlab (Closed 12-06-2001)
Universitè de Liëge
Vrije Universiteit Brussel

Denmark
Aalborg University
Aarhus University
LEGO System A/S
Soundscapes Studios
The Danish Isles - User Community
UNI-C
University of Southern Denmark, Main Campus: Odense

Finland
Åbo Akademi University
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Helsinki University of Technology
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SKYDATA
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SINTEF Telecom and Informatics
Telenor R&D

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IIIA - CSIC Consejo Superior Investigaciones Cientificas
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EPFL - Computer Graphics Lab
University of Geneva

The Netherlands
Compuleer
Doors Of Perception
Halmstad University
LOST BOYS content & usability
Meru Research
Netherlands Design Institute (Closed 31-12-2000)
Philips Design
Philips International
Technische Universiteit Eindhoven
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UK
3D Scanners Ltd
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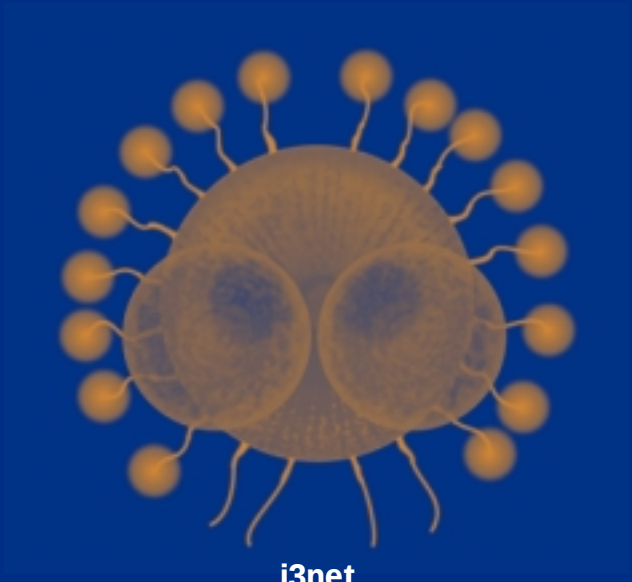

i3net

The European Network for Intelligent Information Interfaces

i3net, the European network for intelligent information interfaces, was created in 1996 to explore visionary, human-centred interactive systems for people in their everyday activities.

The global vision pursued by the i3 community is to help invent and shape the future through comprehending the basic structures and trends in society and in the life of the individual. Based on that understanding, i3 focuses on research lines that investigate new relationships between technology, people and design.

i3net has supported three research programmes: Connected Community (1997-2000), Inhabited Information Spaces (1997-2000) and Experimental School Environments (1998-2001). More recently it has also begun to adopt relevant organisations outside those programmes as member sites, and built links with closely related EC initiatives such as the Disappearing Computer (2000 – 2003). All this brings the current size of the community to about 450 researchers from around 150 organisations, one third of which are companies.

The mission of the current i3 interim network (March 2002-February 2003) is to provide continuity for the community while a proposal for a new network, supported by a broad panel of i3 members, is developed and negotiated. The name of this new network will be Convivio.

i3net Coordinating Group (CG)

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