Università
degli Studi del Molise

NEOTHEMI

ICT and Communicating Cultures

Edited by
Claudia Saccone

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UNIVERSITÀ
DEGLI STUDI DEL MOLISE

ARACNE

www.aracneeditrice.it
info@aracneeditrice.it

00173 Roma
via Raffaele Garofalo, 133 A/B
(06) 72672222 – (06) 93781065
telefax 72672233

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To Raffy

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Prof. Giovanni CANNATA
Rector of the University of Molise, IT

INTRODUCTION

The University of Molise has recently celebrated the opening of the University Library, an absolutely relevant structure in its relation with its territory, and a witness to the importance of the local realities in the national context. It is easy to host new guests in a real site and show its virtues, beauties and peculiarities. Not so easy, but as pleasant and most useful, is to lead new virtual publics through an interactive site and introduce the virtues, peculiarities and dynamics of a project that, through a pioneering use of ICT, spreads over Europe the cultural heritage of 10 different countries.

Neothemi – with its educational contents, its site, its publications and its tools, as well as its network - is the outcome of a culture of cooperation based on the creation of a network that, rising from the University of Molise, connects to each other numerous Institutions Europe-wide. It is worth underlining such concepts in introducing the products of the final conference – the third one, after Budapest and Helsinki – that took place in our own University. Young Universities have the moral duty to accept the challenges of the third millennium with regard to the international cooperation, culture, exchange of good practices.

The occasions of dissemination are crucial points in a project's life, especially when this links the intercommunication between different and distant realities to the educational use of the new technologies in their function of web weavers. The concepts of mutual acknowledgement and exchange between cultures, and of respect of the self and the other remain crucial, though just as important are the love and safeguarding of one's own background and, at the same time, the pleasure arising from sharing this very richness.

Local realities in Europe are richer than ever expected: our regional cultures are full of values that match with other local cultures: to know and respect them brings both safeguard and progress. Such process concerns not only the less visible local cultures, but seems to concern also those, better known, which are spoiled by superficiality and inattention arising from an exhausted experience.

"Neothemi - ICT and Communicating Cultures" not only reflected the efforts of three years of funding, investments, relationships and progress, but proved also an important start point for a culture enriched by the correct and wise use of new technologies. Such good use is not only related to the technical skill and tools' versatility, but especially to the naturalness with which the ICT has favoured the real dialogue and the integration of diversities. We are convinced that the virtual museum of Neothemi – synergistically implemented by the participating countries – can be a vehicle of mutual acquaintance, a facilitator of access for the most diverse social categories, a tool of enjoyment and knowledge at the same time.

The impetus coming from pilot projects as Neothemi is a matter of pride for such a young and dynamic University as ours. It is time to open a century by starting experimentations, and show that in the era of global interconnections of knowledge, as well as competences and technologies, local realities can be leaders in the cultural and civil international progress.

Introducing such work is a further occasion, for our University, to celebrate for having welcomed and promoted such a significant project, and for having provided it not only with a suitable logistic support, but with a constant nourishment made of engagement and participation, that make its outcomes the sound basis for a better tomorrow.

Claudia SACCONE
Università degli Studi del Molise, IT

A PREFACE: NEOTHEMI METAPHORS AND CROSSED PATHS

"This text is a galaxy of signifiers, not a structure of signifieds; it is reversible;
we gain access to it by several entrances,
none of which can be authoritatively declared to be the main one"
(R. Barthes, 1974)

"I produce texts, therefore I am, and to some extent
I am the texts that I produce."
(R. Scholes, 1982)

"Human beings are hardwired into the storytelling process – whether they are the ones spinning the tales or those listening to them….The difference between the eras is reflected in the way these stories are structured" (Lunenfeld, 2000). As editor I am the spinner of this tale and all the contributions are part of a story, a hypertext, which is not simply organized into a linear sequence of bound pages but is in itself a network of units with hot spots or interactive links.

Lunenfeld called 'unfinish' the aesthetic of the digital medias defined as discontinuous, dialectic and virtual as well; the introduction to a volume rooted in digital technologies is therefore a piece of writing ready to be completed, updated and 'finished' over and over again.

Is this volume about communication?

Is this text about digitalised culture?

Is this book a metaphor of a metaphor of a metaphor?

Communication is about exchanging information and it is a process where the sender is usually making the message maximally understandable, yet being able to read between the lines and especially to glimpse alternative views has become more and more important. "Interpreting a book...requires us to make a choice about what key to use to unlock it…" (Rabinowitz, 1987) and in fact F. Kermode stated, better than many others, the importance of an

interpretation in every form of narration. "Hope," he says "is the fatal disease of the interpreter" (Kermode, 1979), therefore – despite the historical crisis of the theories known as the "death of the author" (Foucault, 1969 and Barthes, 1968) – hypertextuality brought forward once again the idea that reading a text, no matter what kind of text it is, still is a way to make your own text of it.

As G. Landow has pointed out, in fact hypertexts have become the standard way to convey information and to give readers a large freedom of choices which changes the parameters of the communication game. "Hypertext writing both emphasizes and bridges gaps and…. brings with it implications for our conceptions of text as well of reader and author" (Landow, 1994). A text becomes therefore a work in progress, an open–ended piece of writing which calls for a writer who values collaboration and an active reader. A topography, the so called 'topographical writing' by M. Joyce (1995) is offered here to navigators who can choose a personal reading path through this book, thus making it into a totally different form; alternate routes are valued and the reader's notes and responses to the text may take the form of more texts supporting or contradicting the one offered. The interactive reader who is invited to join a common and collaborative communication with the writer, seems to perfectly counterbalance the notion of the 'impatient user'. The 'waiting operator' of the early automation has been replaced, as T. Nelson prophesized, by "a new kind of user: slam bang, sloppy, impatient, and unwilling to wait for detailed instructions." (Nelson, 1977).

To organize the material in hyper–textual format and to address a creative reader is in line with a volume such as this, collecting contributions from eleven European countries (Denmark, Finland, France, Germany, Greece, Hungary, Italy, Norway, Portugal, United Kingdom) around the issues of virtuality, learning and cultural heritage. The World Wide Web is in fact the largest hypertext known, navigators are devouring information at incredible speed and culture in our post–modern world is dominated by media screens. And yet this collection of essays is not in favour of network idealists brushing aside any concern with the use of new technologies. Some of the contributors in fact express their worries about an uncritical use of ICTs; we would rather support a more objective position between the unlimited idealistic faith in progress on one side, and the 'Luddite' resistance to virtuality on the other. To favour a balanced position is to embrace M. Heim's 'virtual realism' while being aware that "The cyberspace dialectic sustains opposition as the polarity that continually sparks the dialogue, and the dialogue is the life of cyberspace." (Heim, 1998).

This book is a collection of selected papers presented at the Neothemi project (The New Network of Thematic Museums and Institutes) Final Conference held at the University of Campobasso, Italy, 8/9 October, 2004. Some are the result of parallel sessions and some of the workshops organized to disseminate and promote an interaction on the areas covered by the project. The multifaceted philosophy of the project is conveyed in the choice of organizing the essays both as a hypertext and in a traditional way, linearly following the five parts (Introduction to ICT and Communicating Cultures, Cultural Heritage and New Perspectives, Virtuality and Learning, Neothemi: Thematic Outcomes, Neothemi: Final Evaluation). This project develops around a virtual museum, as a clear metaphor of preserving and sharing different national cultural heritages through ten countries' pavilions, electronically constructed and each representing a different national identity. Neothemi chose the metaphor of the museum because of its being a network of institutions whose main aim was to find an open but regulated way of allowing local cultures to compare themselves and interact effectively in a global project. Cultural heritage, based on the recollection of the past, is a driving force in shaping the identities of both individuals and communities, and at the same time it travels with them towards the future and globalisation. We are well aware that a book is a highly sophisticated technological tool – as pleasurably and provokingly suggested by U. Eco in 1994 – therefore, even if the virtual museum is certainly the most powerful image to convey the project's ultimate aim, nonetheless both the choices and the same organization of this volume are consciously and strongly metaphorical.

Each country with an individual–national cultural heritage has built its own themed 'pavilion' but the project has encouraged the creation of links between the different perspectives gained from countries with different historical and cultural experiences. Neothemi itself being a website and a virtual environment is but a hypertext were navigators can choose their own path; the content of communication is determined by the way it is conveyed and the medium shapes the message. The organization of this volume is trying to translate the project onto the page, and computer screens have their paper counterpart bearing the same message.

The metaphor can be carried farther, has Neothemi simply produced contents or is it a network of institutions promoting collaborative learning, social and emotional involvement, and creative personality development? If the hypertext is one of the ways to stimulate a collective production, then it is again the best way of symbolizing a collaboration where all steps of the process have been negotiated stimulating a global perspective and critical thinking.

What are the hot spots encoded in this volume to allow the reader to navigate through its pages?

Neothemi key–principles have always been connected with education supporting collaborative learning through the use of new technologies and with the dissemination of cultural heritage through a virtual environment: our 3D museum. Therefore all contributors have concentrated their efforts around one or more of these issues: *Methodology, Experience/Practice, The Arts, Museology, Virtuality, Cultural Identity.*

In the first three parts of the volume different crossed readings are suggested every time the following icon appears  and two blank pages at the end of this preface are left for the reader giving space to personal choices and permitting more individualised paths.

Aren't a hypertext, Neothemi, and more generally the World Wide Web, but a continuous work in progress?

Before weaving threads among pages and giving multiple entrances and suggested paths, which will be visually shown in the book, all the text units are presented in detail.

Borrowing Barthes' definitions, this 'writerly text' is more akin to a constellation and I choose to cut it up into fragments here called 'lexias' or units of reading. Abstracts of the contributions are offered in order to encourage valuable reflections and to help engaged readers in reshaping this book according to their own personal agendas. All authors of the following papers were active presenters in the parallel sessions showing the high value of cultural exchanges and cooperation across national barriers.

LEXIA 1

Archaeology is the realm of earlier periods, it is the study of what history and culture have transmitted to our present. It is usually difficult to bridge the gap between tradition and modernity but keynote speaker *P. Mauriello* makes us understand how new technologies and tools can successfully help the reconstruction and preservation of the past. Nowadays, in fact, non–destructive ground surface geophysical prospecting methods are progressively more used for the investigation of archaeological sites and for physical and geometrical reconstruction of hidden artefacts.

Virtual excavations are the only means for local reconnaissance and discrimination, prior to any excavation work.

High–resolution data acquisition and tomographic processing procedures are applied in cultural heritage geophysics, as well as in micro–geophysics for

monument preservation. Two results are therefore described in detail: the study of the archaeological area of the city of Cuma in south–Italy and the assessment of the state of conservation of the Aksum obelisk.

LEXIA2

The use of new technologies, the branch of art chosen, and the methodology behind the research offer certainly a totally different insight in the text by *P. Worrall.* The investigation about ICT, communication, art and culture is glancing to the future with contemporary eyes. Sixteen hyperlinks constitute the media text by Worrall who invites the reader to think about the transformation of existing communities of practice into innovative knowledge communities. The large use of communication tools in everyday life is the technological counterpart of a new media learning where students can both gain experience being exposed to diversified materials and learn new cultural values. To enable the use of innovative tools, changes in the resources are required, and new approaches and ***methodologies*** can be either integrated within existing practice or be the central tool within a set project.

In ***art*** and design therefore new technologies can help to develop existing processes or produce new outcomes. While virtual galleries, museums and, more in general, exhibition spaces can be disappointing, an international network of practicing artists and art museums can help in overcoming unsatisfactory results. A selection of best ***practices*** is offered: firstly the European Schoolnet project, for an insight into the educational use of information and communication technology in Europe, and then one of its parts: The Virtual School with resources and services for learning activities. The Virtual School Art Department, in particular, aims at the development of new strategies for improving education through new learning models (new pedagogy), tools (materials and equipment) and environments (virtual platforms knowledge sharing). Some initiatives, like The Culture Box and Encounters Live, are described showing the use of recent approaches to respond to the 21st century digital citizen's needs.

LEXIA3

A critical look at the current situation of ***archaeological museums*** is offered by *G. De Benedittis,* who is warning the readers against the pursuance of the spectacular to attract the crowds, at the expense of quality. A description of the development of the role of the archaeologist and an overview on

weaknesses in the Italian archaeological museums is highlighted. Museums can testify to cultural heritage and reach the cultural enrichment of a community, offering a straightforward and objective reading of their contents. They have recently responded to this challenge by providing a ***virtual experience.*** The danger here is that a market demand for virtual reality in museums may give relevance only to an entertaining 'show' rather than to cultural communication. A proficient use of new technologies can certainly be reached without falling into the trap of technology for its own sake. The final suggestion is to recognize the intrinsic value of ICT, to favour an interdisciplinary approach where different skills and competences can together organize exhibitions, and a critical attitude to the use of virtual reality 'The point is not whether to use the virtual, but how to use it.'

LEXIA4

In the realm of ***art pedagogy,*** suggests *A. Kondoyianni,* technology combined with an experiential approach can promote a new creative learning ***methodology.*** This paper shows how successfully drama exercises and techniques can be applied in educational museum programs. Drama is an appropriate method for experiential learning, and information and communication technologies can facilitate knowledge and offer a valuable sense of success and enjoyment. Modern ***museums*** through the application of new technologies, can become stimulating centres offering scientifically structured learning environments mixing art and science. Besides the school environment encourages the acquisition of knowledge and helps develop social skills. The school–museum interaction is therefore the proposal for a creative learning through an experiential approach based on education and culture through the application of ICT.

The objective of the survey presented is to find out which drama techniques were appropriate to each kind of museum in order to fulfil the aims of the programmes, which were cognitive, social, affective, and aesthetic. A description of different exercises applied in three kinds of museums is presented before drawing conclusions.

LEXIA5

The creation of a themed data base for numismatics is indispensable nowadays for the management of the enormous amount of data emerging on, for example, coins in museums, archaeological findings and private collec-

tions. *R. Lanteri* offers an overview of how the need for creating a database has been felt in different countries. Spain, Germany, France, Austria, Bulgaria, Italy, Portugal, Romania, Slovenia, Sweden, Switzerland, have all starter projects in this field and the most significant DBs are at the British Museum and the American Numismatic Society.

The example, chosen to prove the necessity of an organized catalogue with the help of a computerised system, is the experience of the Misurata (Libya) treasure, the greatest finding relating to the first half of the fourth century A.D. currently known in the world, consisting of 108,000 coins.

A database for numismatic research, has been created for cataloguing and handling the data proceeding from this enormous amount of materials. Once available on the web, it will offer a kind of ***virtual*** numismatic ***museum,*** with various levels of access to information and images, for students, researchers and connoisseurs. Educational activities will be organized showing once more how new technologies and multimedia tools can facilitate knowledge and the acquisition of culture.

LEXIA6

To bring archaeology in line with the most advanced technologies and to render national cultural heritage the patrimony of everybody are among the main goals of The Archaeological Park and the Palaeolithic Museum of Isernia: La Pineta. Considerable discoveries have been made in the area, interesting both from the anthropological point of view and because of the presence of prehistoric finds. *A. Minelli* and *C. Peretto* leads us in a visit to this site with its exceptional wealth of material to be studied and restored. The two structures, the excavation pavilion and the Palaeolithic Museum, harmonise perfectly with the particular nature of the site for the interdisciplinary aims of research, conservation, education and development within its present–day context. The excavation pavilion has been the setting of various activities which have transformed it into a ***museum–laboratory*** and the site is imagined as an archaeological park to promote a fresh approach to culture and to the archaeological heritage through new ***methodologies.*** Experimental projects for archaeological research with the use of advanced technologies can at this point ensure that it does not remain the prerogative of experts in the field. Thanks to the use of a computerised laboratory and to the possibility of managing this data with the tridimensional model, it has been possible to reconstruct the extension of the archeosurface in its original complexity; and currently multimedia supports are concentrating their efforts to communicate the information and to encourage a greater degree of participation.

LEXIA7

ICT ***methodologies*** can be used valuably in the analysis of ancient pottery. *A. Naso* underlines the value of petrographical and geochemical analysis in the study of ancient pottery, both in the case of fine types, like the Etruscan bucchero, and coarse types, like Milesian amphoras.

The paper stresses the findings which have emerged from the application of modern methodologies to the analysis of ancient pottery and related clay products. The first part of the analysis is carried out in Etruria where oriental customs merged with Greek influence. The choice of the characteristic black *bucchero* pots, a ***national identity symbol*** for the Etruscans, highlights how archaeological and geochemical evidence can help in drawing conclusions. The second example is the trade amphoras from Miletus, once the most powerful colonizing city of Greece. The use of new technologies helped the findings, showing once more how cooperation between specialists in archaeology and archaeometry can overcome the limitations faced by a single researcher and reveal new perspectives.

LEXIA8

Can practice offer rich stimuli and promote networking? *A. Pieroni*'s research is based on ***experiences*** collected teaching ***art*** and visual culture in various contexts. Students from different backgrounds and courses are compared to show the strengths and weaknesses of their educational environments. University art history students, students attending a school of photography and industrial design students are shown through their works in the attempt to answer questions on ***methodology.*** Can an all–inclusive notion of visual knowledge be taught? The negative reply is followed by practical suggestions on how to bridge the gap between the educational aims of acquiring knowledge and expressing yourself through your work, and between conceptual students or practice–based students. Three different agendas, one for each of the groups examined, are offered supporting a common approach where creative reactions are encouraged within a conceptual framework.

LEXIA9

Music is the ***artistic expression*** chosen to analyse early childhood experiences of Finnish pre–service elementary teachers and their connections with their musical self–concept as students. *H. Ruismäki* and *T. Tereska* present the results of research both at a theoretical and at an empirical level through the use of a questionnaire to gather data.

The significance of music in the early stages of childhood and the close relation to the total personality and feeling of self esteem is proved, showing a considerable correlation between the individual's musical expertise and early ***experiences*** of music in life. The paper studies the development of children's singing abilities and the meaning of singing from an ethno–musical point in communities where culture is based on oral traditions and music plays a very significant role, like the Saami people in Fenno–Scandinavia and among Australian Aborigines. Folk poetry singing is also emphasized as an essential element of the Kalevala tradition, one of the main epic ***cultural expressions*** of Finnish culture. A relevant suggestion is consequently offered to music educators, pointing out the importance of a positive encouragement of the child's musical interests and the sensitivity required by students in daily work.

LEXIA10

Technology should be mainly used to convey cultural contents thus overcoming the accuses of being only a cold communication tool. *R. Sacchetti* reports on two ***experiences*** of cultural exchange with secondary schools in Andalusia, based on theatrical activities. In both cases Italian and Spanish students worked together on an original text in Italian, Spanish, English and French, and performed it during their visits to Spain and Italy. The paper therefore recommends sharing cultural contents throughout Europe, the use of theatre as technique and of communication as method. Historical and social comparisons are created in the plays and the students–actors in the scene are like 'living clicks' in a general hyper–textual performance. New technologies used in the performances are effectively ***communicating cultures*** and the final products are but virtual reconstruction of universal ways of life which can be totally expressed only in the great poets' work.

LEXIA11

To find an answer to the crucial question whether new technologies and multimedia applications can be effective in the learning process, *K. Fitzgerald* presents the results of a research on the impact of an interactive CD in teaching and learning Irish traditional dance. Dance is the form of ***art*** analysed in this paper and defined, from the eighteen century, as a complete system of education in Ireland. Is it possible to merge technology with dance? The pedagogical strategy to teach solo dance and the figure dance is consid-

ered in terms of the achievement of learners and teachers and the quality of the learning experience itself. Motivation appears to be the key of success; 'active learning' and 'learning at your own pace' are, in fact, at the foundations of an effective ***methodology.*** When dance is concerned, the medium must be capable of engaging the learner not only intellectually but instinctively, and the tutorial type system presented is, therefore, the successful computer–based educational method. The feedback from the potential users of the CD at an initial stage allowed modifications and the final product proved itself to be effective in dance education under three different perspectives: education, ease of use and entertainment value.

LEXIA12

Virtual reality is far from being an obscure concept, *L. Giannini* and *C. Nati* involve nursery school children in an interacting 3D environment and chat–line with adults. Before the case study, a reflection on the nature of a network in itself is stimulated through a model borrowed from the economics environment. The educational system and, more specifically, the school system, is analysed as part of the larger learning macrosystem and the introduction of ICT causes an enlargement of the model to include virtual spaces. The experience with children and the use of 'Active Worlds' web applications shows how new technologies can be used, in conjunction with traditional tools, in an educational programme. The use of virtual reality together with everyday reality and imagination stimulate a more collaborative learning environment where the pupils are invited to take part actively in the production of knowledge. A ***methodology*** which strongly values childrens' ***experiences,*** also permits a constructive opening to the external world.

The whole programme of seven years of work is accessible through links in the text, and educational, didactic, relational and behavioural objectives are presented with a selection of further experiences to motivate teachers in using new technologies and favour a network of exchanges.

LEXIA13

Metaphors, the earliest and the most central tools of learning, are studied with a mixture of theory and practice by *U. Oksanen.* A constructivist concept of learning is supported through an analysis which is focused on linguistic metaphors, mainly referred to concepts such as information, knowledge and technology. The examples provided are therefore also a study on how to

refer to the 'information and communication' society where new technologies are seen as predominant. The analysis shifts to the theory and ***methodology*** of structural semiotics, and visual metaphors are chosen to exemplify it. Concepts and views in visual ***art*** education and semiotics are, therefore, showing the adoption of an interdisciplinary approach.

LEXIA14

Virtual reality is the focus of *Petrone*'s paper and, after a brief historical survey, the term 'virtual' is analysed in its different aspects. As opposite to reality, virtuality is nowadays widely used in connection with the learning environment. New technologies offer open possibilities but the control, the selection and verification of the mass of information present in the virtual world is still a negative counterpart of progress.

Virtual museums are different from real ***museums*** and it is possible to highlight the positive aspects connected with the availability of information and the consumers' interaction.

Neothemi is rooted in the belief of the advantages of offering the consumer an interaction with the system and the possibility to travel along the road he chooses.

A model for integration of knowledge was set up to permit the exchange of information and the organization of a fruitful network of institutions. A working ***methodology*** able to provide a framework of reference is at the core of the possibilities offered by new technologies in the project facilitating the integration of working practices, experiences and learning between all the participants. The task of communicating and promoting culture has therefore been shared among a network of institutions.

LEXIA15

M. Raevaara presents us a master degree teacher training programme to provide qualifications for ***art*** teachers in Finland. The experience in the Virt@ programme stresses the use of e–learning and e–pedagogy and the importance of changing practices and methods to teach art. More generally, reforming art and design education is recommended through the challenges of web–based art teacher education and networking possibilities.

How to combine students' personal freedom and teachers' ambition with collaborative learning? How to promote new ***methods?*** Sharing collaborative ideas and comments, together with a respect for a traditional audiovisual ori-

ented knowledge of art, can be the basis of a constructive use of new technologies and art education. The use of ICT plays a great significance in people's everyday life and art education, therefore it should develop motivation in teachers and students through new methods and updated contents. The paper shares with the readers the ***experience*** of how to overcome predictable initially encountered difficulties and encourages the teachers to reshape their courses and the students to reflect and assess their learning.

LEXIA16

Virtual Reality technology and its relationship with the World Wide Web, by the Virtual Reality Modelling Language is the content of *A. Venditti* and *M. Granatiero's* study. The way of looking at Virtual Reality Systems is by adopting a taxonomy: the Zeltzer's Cube, to classify the user's behaviour in terms of Autonomy, Interaction and Presence.

The technology used to create the Neothemi Virtual Museum is described according to the kind of "experience" offered to the visitors. VR systems can expose users to a transmitted reality, to a synthetic world model based on a real one or, as in Neothemi, they can offer a pure–synthetic imaginary world. The sophistication of the pavilions, the interaction with different objects in each pavilion, the possibility to move freely in the 3D environment all provide a complete and natural experience of the phenomena.

Part III of the volume is of a different nature, it is a collection of the contributions of Neothemi partners which were presented in the form of workshops at the conference in Campobasso. The authors have been the curators of each national pavilion and, dealing with the communicative function of the museum, they have contributed to support the interesting parallel between museums and the mass media. "Museums are in many respects like other contemporary media. They entertain and inform; they tell stories and construct arguments; they aim to please and to educate; they define, consciously or unconsciously; effectively or ineffectively, an agenda; they translate the otherwise unfamiliar into the familiar and accessible." (Silverstone, 1994). These partners' 'stories' could certainly be interweaved with the other papers but the intention is more pragmatic. The reader can experience the results of the practical educational experiences developed within the project and be stimulated to take part to similar cooperative networks. Collaborative learning and a revised role for both students and teachers together with the use of new technologies can help to go beyond traditional teaching. " Textbooks are

static and usually out of date by the time they are printed…Students have little opportunity to gain access to raw, unfiltered even contradictory information with which to challenge their critical literacy." (Wilson, 1988), this is certainly not true any more with the internet and, besides, a self–aware use of the WWW can therefore make learning about different cultures and situations no longer one–dimensional but rounded and textual, as shown in all the following contributions.

U. Sørensen describes the valuable material created in the Danish pavilion "Folklore and Traditions" and its five sub–themes: Family parties and celebrations, Folk tales, Daily life, Folk songs, ballads and ditties and Prehistory. Danish and European teachers from both primary and secondary schools can benefit from it and use it as a resource website in their planning. Besides, the role of the Danish partner is summed up through the involvement in the Neothemi conferences. At the Neothemi Launch Conference on June 2002 in Budapest, the famous Danish bog pre–historical finds were the focal point. From this initial step the cooperation with local museums and libraries have directly resulted in the creation of an innovative educational website on The Tollund Man, a famous bog body of The Iron Age. At the second Neothemi conference in Helsinki in September 2003 the attention was centred on different topics of "Daily Life", while at the final Neothemi conference in Campobasso in October 2004 the work was concluded by focussing on the famous national storyteller Hans Christian Andersen. "He was a man with demons, dreams, yearnings and visions. He was a man of flesh and blood." able to communicate his culture and traditions. Famous authors are a valuable source of inspiration in education and new ways of sharing information are to be found.

Innovative models of cooperation between institutions is therefore the suggested methodology to provide educational resources to a broad variety of target groups.

Exploring cultural heritage and values as seen and understood by children and students is chosen by Finland, where the method of examination of cultural phenomenon is a socio–cultural animation. The aim is to encourage social communication and cultural interaction and to learn from the past. The theme chosen in the paper by *S. Karppinen* and *R. Kärkkäinen* is 'Built heritage' (buildings, sculptures and other constructions, artefacts, parks, and all hand made items) which contributes to create national identity. How can children capture these culturally meaningful elements as part of their own growth? The experience with students and pre–school children in a day care centre revealed how children see culture around them giving the opportunity to examine some historical buildings in the centre of Helsinki. The second issue

is how to benefit from virtuality in the art learning process, when the art process needs social interaction. ICT should therefore be also used to promote and intensify interaction in the learning process supporting a constructivist student–centred approach.

To explore a virtual museum potential in its epistemological and pedagogical aspects was the main reason why the French partner joined Neothemi. *J. Delclos* stresses the advantages of a virtual and extendable gallery where any temporary exhibition can be set. The theme of the pavilion, "Arts and Cultures", chosen with a pedagogical aim in mind, has involved the History of Art and Archaeology students whilst beginning the adventure with those enrolled in a new vocational degree course in textile and tapestry arts. The international seminar on *Textiles on the web* which took place in December 2003 permitted a deeper reflection on the theme and the exchange of experiences among experts involved in the textile arts and the use of new technologies. From these exchanges, three significant examples are chosen from the papers by Audrey Mathieu Girard, Jean–Paul Leclercq and Jeqan–Marc Sauvier, confirming the advantages of bringing together ICT and research in Art History. Audrey Mathieu Girard presented one of the oldest textile databases in France belonging to the Textile and Decorative Arts museum of Lyon, Jean–Paul Leclercq introduced the software in use at the Museum of Fashion and Textile (UCAD, Paris) and Jean–Marc Sauvier described the computerized colour chart of the Mobilier National in Paris, used for the production of tapestries and carpets in the Gobelins, Savonnerie and Beauvais manufactories. The other parts in the French pavilion are then introduced stressing the nature of a 'work in progress' project which will be constantly personalized and enlivened by the students' academic work.

A different potential in virtual reality is suggested by *R. Blasius* who focuses his attention on the use of virtual reconstructions as important medium of remembrance. The project "Synagogues in Germany – A Virtual Reconstruction" rebuilt the evidence of Jewish culture and architecture in Germany, which had been destroyed by the Nazis, by means of 3D CAD (three–dimensional computer–aided–design). Technology allows us therefore to visualise those elements of the architectural past that have not been reconstructed, like the synagogues. In the future it may be possible for visitors to meet in virtual spaces creating communication and stimulate an interactive form of remembrance. This hope for the future has a dark side, will new media stand the test of time? If the programs become obsolete, all data, which represent our era, are at risk to disappear with them and therefore ideas and suggestions are given to protect data for the future.

Virtual museums are especially useful for those who are not able to visit the sites personally, and this is the perspective offered by *C. Bánfalvy*. The socially or physically disadvantaged and those without appropriate financial background for travelling can profit from virtual museums enormously. This is why Hungary has chosen to represent culture and heritage through the theme of how "Europe works": what forms of work can be found in different countries, how work is perceived and performed in different countries, how the ordinary citizens of Europe are integral parts of a European division of labour and how people participate in work and migrate between labour markets in a united Europe. Work is an organic part of culture and it is directly related to the everyday life, so all the elements of work are socially determined. Work is culturally shaped and besides it appeared in art from the most ancient carvings and paintings found in caves. An interactive presentation of the culture of work in Europe is therefore not only enjoyable intellectually but useful in social terms as well. It serves the interests of learners and it is a useful material for educators.

The same concept is stressed by *A. Gallivan* who choose 'Ordinary People' as title of the Irish pavilion. The universality of the theme is connected with the specific skills of craftspeople who worked in stone, bronze, iron, gold and timber. They were artists and the historical and cultural importance of work is confirmed in Ireland through examples from Neolithic to the Modern Age. A methodology involving students is then described where the contributions were dedicated to preserving traditions, through the medium of film, web pages and CD–ROM presentations of local museums. The analysis of the theme is carried on showing links with the other countries; material was provided for the section dedicated to student work in the Norway pavilion, a common interest was shared with "Buildings, Nature and the Environment' in Finland and more linked readings are suggested in a reflection whose last note is for the development of the peace in Europe.

Students' involvement and the necessity of a new methodology in teaching is confirmed by the experience described by *L. Molfese, G. Lazzari* and *A. Briante*. Traditional ways of teaching are obsolete, considering the inputs coming through multimedia which have caused a change in the way children's minds work. Their experience with the first two classes of a primary school near Naples shows how reframing teaching can encourage a more spontaneous approach and, through creativity, promote a critical awareness of new technologies. The children were introduced to the use of computers through activities teaching basic multimedia concepts and eye and hand control (hand/mouse). The first adopted teaching methodology was 'from scribbling

to shapes' where the pupils were asked to produce some simple graphics through virtual scribbling. The second teaching methodology 'the meaning of the puzzle' stimulated effective team–work asking children to draw pictures, to cut and shuffle them and then re–build the drawings. Both experiences exposed the children to the rich cultural material created through Neothemi giving them the possibility to come in contact with other countries and new perspectives.

In Italy a different experience is described by *A. Panzera* in Rome. The initiative 'The Colours of Thought', originated in Neothemi, was presented at the Casale della Cervelletta and formed part of the project 'Adopt a monument' for schools. The active participation of secondary school students made them totally responsible for the nature of the material produced. Two different moments of the project studying the relationship between 'the city' and 'knowledge' are described within the Italian theme of the city. In the 2001/2002 the work was centred around well–known places providing knowledge like the Laurentian Library of Florence, the Vatican Library, the most famous Italian literary cafés, the University of Padua, the Neapolitan coastline redolent of the past, named after Admiral Caracciolo. In 2002/2003 the research needed to be more dynamic, exploring knowledge through a close contact with an artist who could make the students understand the interaction between the personal dimension and the physical world. Veronica Montanino taught about her experience of contemporary art and helped the organization of a creative workshop. The paintings created by the students were exhibited in the park and the farmhouse of Cervelletta, the 'monument' chosen by the school, which was badly in need of restoration and refurbishment. The value of the experience and its outcomes are described with a particular emphasis on the team group approach.

Methodology is the target of *M. Peluso's* piece of writing which presents the positive effects of adopting cooperative learning techniques in working with students. In the three year activity learners have become more flexible, able to solve problems and to adapt their different views in order to reach a common agreement. Dealing with different perspectives has given a deeper knowledge of the Italian cultural heritage and the opportunity to feel part of the even wider European cultural heritage. The last part of the contribution is about the organization of the Danish–Italian–Irish workshop which can offer supplementary material to realise the approach favoured within the Neothemi network. The activities to encourage participants to start new Comenius 1 projects were organized in a sequence (Warm up activities, Slide show presentation of each national pavilion, Group discussion and Feedback),

and a copy of the Worksheet handed out to participants in Campobasso during the conference workshop is provided at the end.

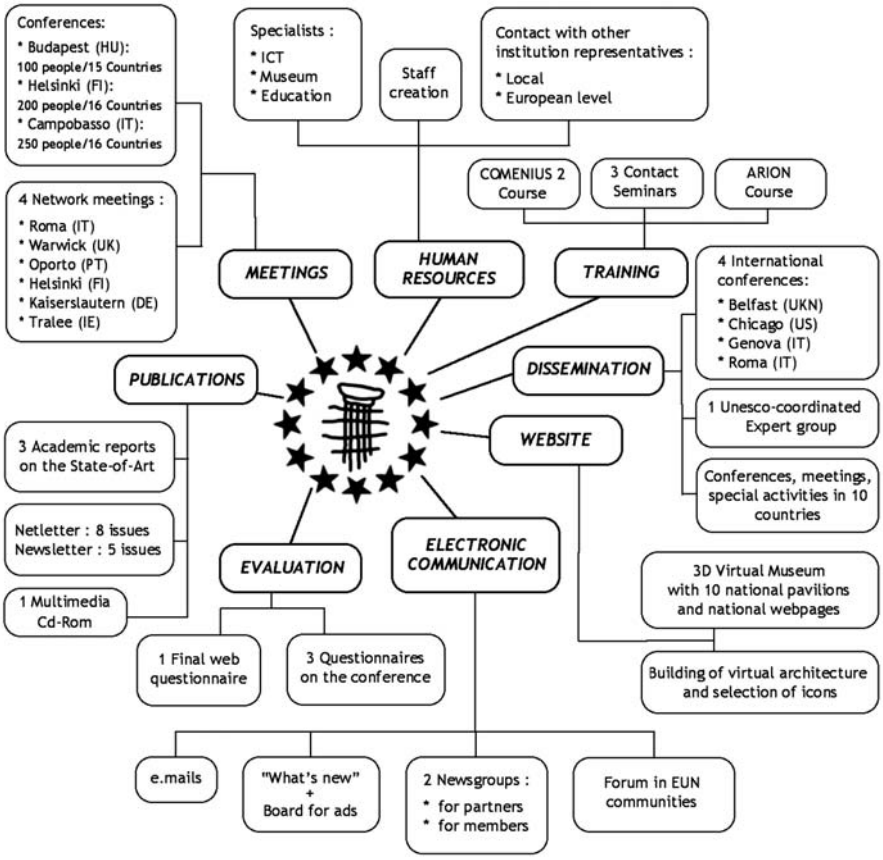
What approaches were favoured in Neothemi, and the reasons behind these choices is given by *I. Langseth* and *S. Neill* in a paper which encourages situated learning. All the strategies used promoted a more active participation of learners and stimulated an active users engagement. Discussion in the class was often suggested to motivate a more dynamic student commitment even if often the educational material is generally engaging enough in itself. To be faced with themes chosen and produced by other students of different nationalities helps discussion between different groups, and encourages individual choices and the presentation of personal views. The strategies widely used include problem–solving activities like guessing activities, pictorial quizzes, true or false questions. Besides an additional approach has been to make hyperlinks within and between national pavilions to encourage learners to view a topic from different angles. Different examples and suggested paths are given providing a support for educators in using the website.

The explanation of how the Portuguese website 'Educational Heritage' is organized and how to use it in a scholarly context is given in *M. Felgueiras*' contribution. 'School buildings' is the main theme because from the different typologies of buildings one can interpret the changes in education politics and pedagogical orientation. Knowing the history of school buildings is to travel through time and be aware of the importance that communities gave to scholastic education and the place which children had in society. Buildings are not only physical places but they are 'lived spaces' which can communicate a lot about cultural and social values. For example, the localization of buildings within a city reveals the social importance given to education in that period and in that part of the country. The comparison of different realities is stimulated in a journey within cultures. In addition an historical survey of school buildings in Portugal is given, showing how they were inhabited in different epochs, and links are offered with the other sub themes: games on the playground, books and didactic material, and school furniture.

Part IV Neothemi: Final Evaluation is by the keynote speaker *S. Neill*, who was in charge of drawing conclusions about the project both at the conference and within the partnership. In his paper he presents the assessment of the on–line survey carried on to investigate why and who had been using the Neothemi website. "Firstly, it was desirable to assess whether the intended educational audience had in fact been using the site, though the site was intended to be available to general users as well. Secondly, there had been

concern at the planning stage of the project that factors such as inadequate computing provision, and fears of children accessing unsuitable sites if allowed to use the internet, would inhibit usage. It was also desirable to assess how general attitudes to using the Internet for education related to attitudes to the Neothemi website." (Neill, 2005) The benefits and problems are shown and differences between teachers and students are explored by factor analysis and shown into separate tables. On the whole Neothemi seems to have reached its main targets making cultural heritage more accessible, helping students to understand their own and other cultures better, and offering an educational use of new technologies.

To conclude, here is the mind–map of all the Neothemi outcomes in three year activity.



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Here is the list of suggested crossed paths, if you are interested in one or more just look for the right icon in the volume's pages.

METHODOLOGY:

- P. Worrall,
- A. Kondoyianni
- A. Minelli & C. Peretto
- A. Naso
- A. Pieroni
- K. Fitzgerald
- L. Giannini & C. Nati
- U. Oksanen
- M. Petrone
- M. Raevaara.

EXPERIENCE/PRACTICE:

- P. Worrall
- A. Pieroni
- H. Ruismäki & T. Tereska
- R. Sacchetti
- L. Giannini & C. Nati
- M. Raevaara.

CULTURAL IDENTITY:

- A. Naso
- H. Ruismäki & T. Tereska
- R. Sacchetti
- K. Fitzgerald.

MUSEOLOGY:

- G. De Benedittis
- A. Kondoyianni
- R. Lanteri
- A. Minelli & C. Peretto
- M. Petrone.

VIRTUALITY:

- P. Mauriello
- G. De Benedittis
- R. Lanteri
- L. Giannini & C. Nati
- M. Petrone
- A Venditti & M. Granatiero.

THE ARTS:

- P. Worrall
- A. Kondoyianni
- A. Pieroni
- H. Ruismäki & T. Tereska
- R. Sacchetti
- K. Fitzgerald
- U. Oksanen
- M. Raevaara.

As previously written, these two blank pages are left to the readers to list their own individualised paths.

Acknowledgements

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Above all I am deeply thankful to the rector of the University of Molise: Giovanni Cannata who has always supported the Neothemi project and to Sean Neill, University of Warwick, partner and friend, for his commitment and valuable help.

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Claudia Saccone
Neothemi co–ordinator

KEYNOTES

Introduction to ICT and Communicating Cultures

Paolo MAURIELLO
Università degli Studi del Molise, IT

LOOKING AT THE PAST WITH MODERN EYES

Nowadays, non–destructive ground surface geophysical prospecting methods are increasingly used not only for investigation of archaeological sites, but also for physical and geometrical reconstruction of hidden artefacts, which we can frame in the definition of a virtual excavation. The problem is exactly the same encountered in medical sciences, where tomographic techniques for imaging the interior of the human body are widely adopted. For as concerns archaeological sciences, non–invasive geophysical prospecting methods are to date the only means available for local reconnaissance and discrimination, prior to any excavation work, especially when a consistent multi–methodological approach is adopted, according to a logic of objective complementarity of information. In fact, a detailed representation of the invisible configuration of the explored areas and of the space–time evolutions of the interaction processes between artefacts and their hosting matrix, are primary knowledge in the case of archaeological research.

For this reason, high–resolution data acquisition and tomographic processing procedures are increasingly applied in cultural heritage geophysics, as well as in micro–geophysics for monument preservation.

In this paper, I present two geophysical results obtained in different fields of application: a) the study of an archaeological area located in south–Italy and b) the assessment of the state of conservation of the Aksum obelisk.

The geophysical study of the ancient town of Cuma

Cuma, the most ancient western Greek colony, founded by the Greeks of Eubea, in Campania in the second half of the VIII century B.C., constitutes one of the fundamental links in the study of the ancient city–planning of colonial Greek cities. Paradoxically, we know just a little bit about the urban space organization of that city, which lies almost unexplored under private orange

grooves and vineyards. Aside from public and holy buildings on the Acropolis and in the Forum in the lower town there are few elements pertinent to the urban texture. We know almost nothing about the spatial organization of the oldest period and we can rebuild a little of the road grid of the Roman age, for which the only evidence is formed by some short features still visible and by those found in the excavations, both emergency and systematic, carried out in the 70's and 90's. Different from the other Greek colonies, the city of Cuma has been recently the object of systematic archaeological research. In this context geophysical prospecting was performed with the aim to image the urban texture in the area between the Forum and northernmost walls. The whole set of geophysical maps (Mauriello, 2002) are shown in the sequence of horizontal tomographies of figure 1.

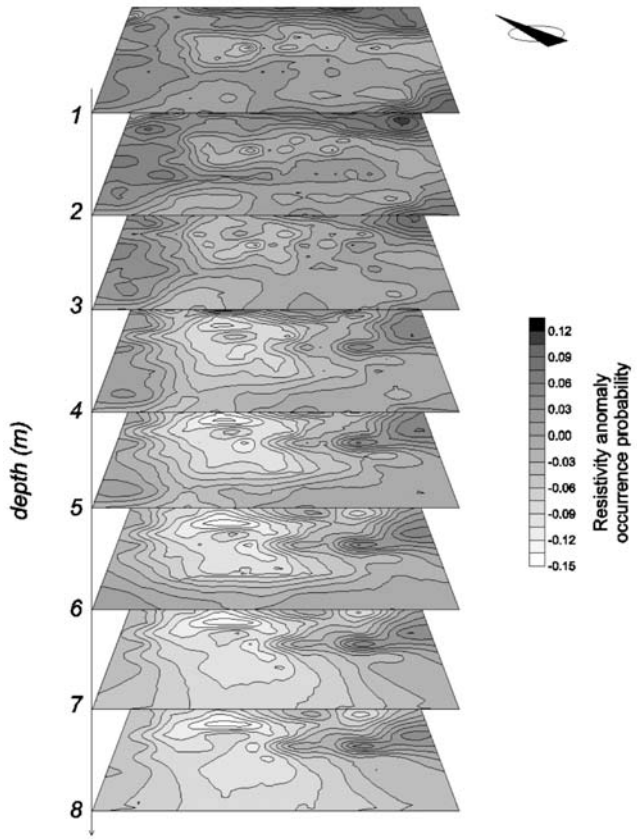

Fig. 1 – 3D tomography of the ancient town of Cuma

Many anomalies are evident in the tomographic plot, principally in the shallower part; here, strong and well delineated lateral variations denote a great complexity in the urban texture. A high resolution tomographic slice at the depth of 1.5m is shown in figure 2. A three block conductive system is present in the central part, whereas two resistive lines with directions N–S and SE–NW, respectively, are equally well resolved. The first set of anomalies are probably related to foundations of monumental buildings; the second one is probably the effect of the road grid of Roman age.

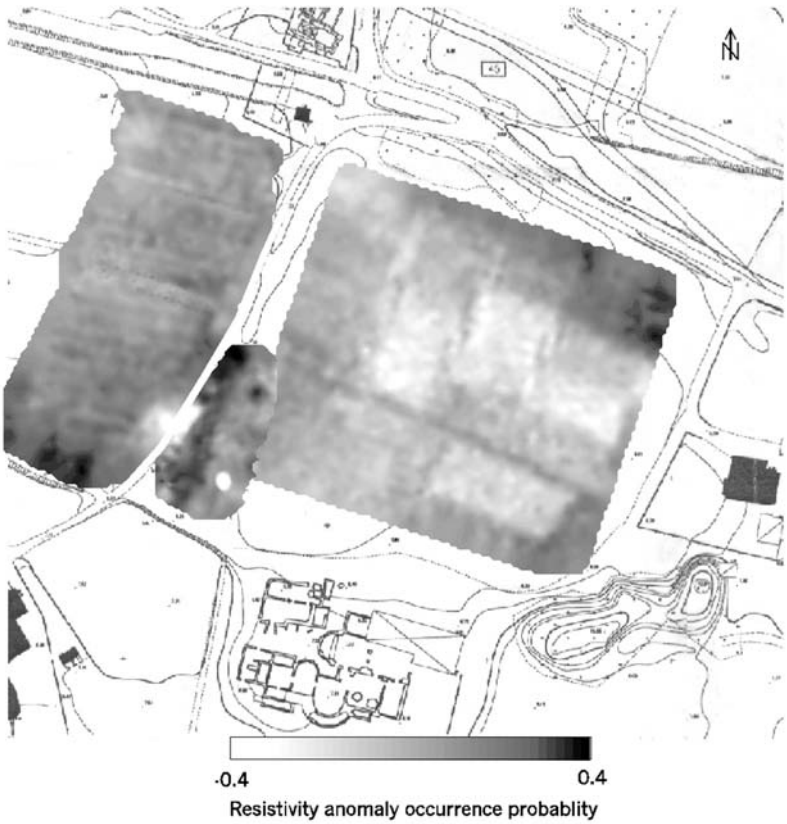

Fig. 2 – High resolution tomographic slice

The Aksum obelisk

The Aksum obelisk is a 24m tall column dating back to the 4th century B.C. (Cammarano F., Di Fiore B., Mauriello P. and Patella D., 2000). In 1937, it was transferred to Italy from Ethiopia in five separated blocks and then raised in Piazza Capena, in Rome. In the framework of the operating plan for the relocation of the obelisk to the original archaeological park of Aksum, Ethiopia, it was decided to perform detailed micro–geophysical surveys. These surveys were required to assess the state of conservation of the obelisk and to try to identify the exact position of the metallic pins that were used to reassemble the different blocks forming the obelisk. The obelisk rock material is a phonolytic nephelinite, easily alterable by weathering. Its exposure for more than 50 years to a polluted atmosphere conferred a notable importance on this tomographic study which did not expose the monument to the risk of further damage.

A micro–geophysical survey carried out with non–invasive electrodes indicates a complex pattern, due to the presence of the metallic pins and of pieces of similar rock added to replace missing parts. In particular, there was a diffuse inhomogeneity characterised by the presence of many close–to–surface sources of anomaly ascribable to an advanced state of alteration of the stone, all around the obelisk. Figure 3 shows a 3D tomographic reconstruction of the geophysical state of the obelisk in correspondence to a fracture.

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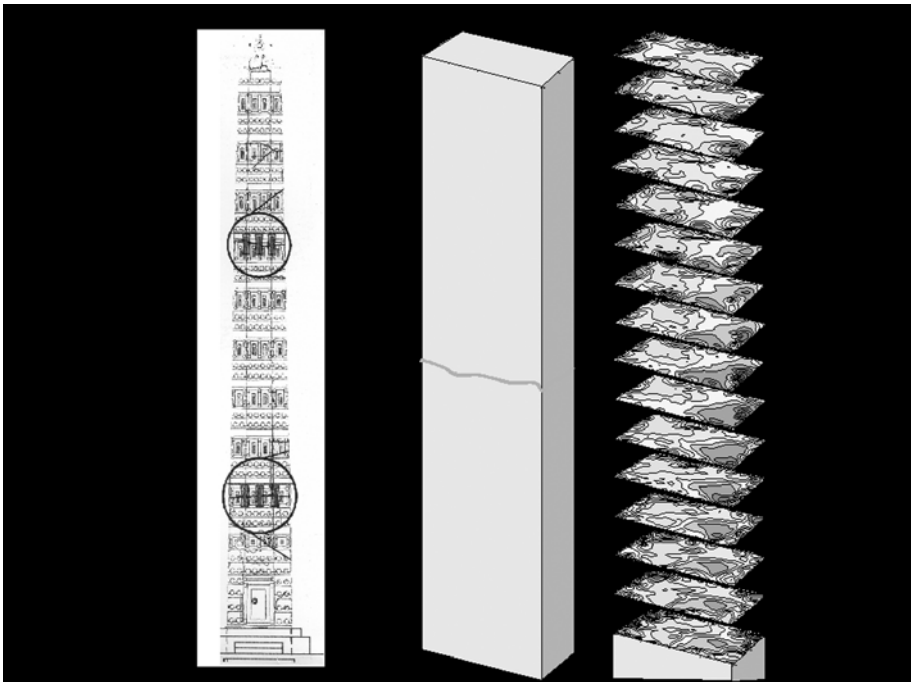


Fig. 3 – 3D tomography of the Aksum obelisk

Pete WORRALL
University of Central England, UK

ART MUSEUMS AND ICT – THE FUTURE?
New media text

Hyperlink 1 –

In 2004 text messages on mobile phones, email and the internet are powerful professional communications tools and data such as video, sound and pictures can be transmitted with messages across the world. This presents opportunities for instantaneous exchange of ideas and professional dialogue. Pupils in art and design can use these tools to exchange their identities in school working spaces, with art galleries using digital films and sound files or just through talking on a live conferencing link about their lives. This constitutes a technological brand of 'new media learning' as pupils can gain first hand professional experience as critical observers, commentators and curators of exhibitions, in real world situations as well as exchanging and learning from the cultural values and attitudes of a range of audiences including national and international peer groups.

Hyperlink 2 – Who am I?

I am a teacher, lecturer and practicing fine artist. For nearly 20 years I have used computers as significant medium to develop my theory and practice in the arts. In 1993 I was employed by a Microtechnology Unit in Birmingham as an Advisory Teacher, with a remit to support ICT in Art and Design and across the Curriculum. At the time, the Unit developed software, and peripheral devices, evaluated corporate software including beta test copies of forthcoming releases, provided professional advice, curriculum development. The technological developments taking place at the time were early email and internet experiments and the use of digital cameras and scanners. At this point in time technology was in transition from the analogue to the digital. These technological transitional points in history are interesting, as they only really become visible years later through examining the output and resolu-

tion of the technologies available at the time. It is worth noting that In many respects the years between 1990's represented an era of proving the value of computers to a sceptical art and design education community.

Biography
http://vs.eun.org/ww/en/pub/virtual_school/depts/art/team.htm

Hyperlink 3 – Super shiny machines

In 2004 new technologies are more mature and enable me to attend a live video net meeting with my colleague and fellow collaborator, Jukka Orava, in Helsinki. The live low resolution video simulacrum of my colleague stares at my video simulacrum in a small window on the screen, sharing information and points for action regarding the Virtual School Art Department website which will be posted onto a website shortly after the meeting. Perhaps it comes as no surprise that my working colleague is Finnish, living in an advanced technological society, 'where the cell phone is a broadband browser, a smart wallet, and a passport to the wireless community of the future and fellow citizens are content, 24 hours a day'.

Wired Magazine
http://www.wired.com

Hyperlink 4 – Digital Rationales

A rationale provides a logical basis for or explanation of beliefs, practices or phenomena and as digital media has become embedded in our working lives, there is a need for digital rationales. A personal rationale is always unfinished, subject to change and often dependant on professional development.

In a digital context, it is noticeable that there are very few artists or educators prepared to speculate on the significant impact of ICT on the Arts during the last 10 years. What we are left with, in the case of digital media, a plethora of specific case studies and commissioned projects, governmental rhetoric published as statutory guidance and a deep mistrust by a large proportion of artists and art educators on the infiltration of electronic media, in disrupting the status quo and the high standards achieved through non–digital traditional arts practice.

It is clear that in planning this rationale, there may be different methodologies and approaches required, such as taking into consideration, the changes in infrastructure and resources required to enable ICT to take place.

Secondly, the application of ICT's may be viewed through their integration within existing practice or used as the central tool within a set project.

In writing a contemporary digital rationale consideration may be taken regarding the following components:

i. Infrastructure – consideration and planning taken with regards to the redesigning studio / gallery spaces to site new media.
ii. Electronic tools – the use of small, low cost portable, wireless / blue tooth, peripheral devices practices for different purposes – information, interaction, education.
iii. Electronic teaching and learning – teaching and learning through the use of interactive whiteboards for developing conceptual understanding through presentations to different audiences.
iv. Electronic media histories – understanding the context in which the current technologies have used by artists and evolved to date and may develop in the future.
v. Electronic learning – enhancing / developing existing knowledge and understanding in two, three dimensional studies with the addition of the fourth dimension as timebased studies.
vi. Electronic content and exhibiting – presenting / curating and assessing coursework in e–portfolio / sketchbook formats. Designing interactive multimedia and creating new art spaces through websites.
vii. Electronic communication – building art education networks through establishing a creative culture of e–collaboration and exchange.
viii. Electronic ethics – understanding issues regarding copyright, personal privacy, publishing and the digital divide.

Hyperlink 5 – Bits and Bytes

Deconstructing an art and design curriculum content into its constituent parts for the majority of teachers will result, at its most basic level on a bias towards two and three dimensional practice in art, design or craft employing a range of non–digital technologies. To begin to develop a digital rationale, it is clear that the strategic use of ICT may be selected as a tool to develop existing processes (through the merging of old and new technologies). Conversely, ICT can be used to enhance conceptual understanding and produce new outcomes.

At this moment in time, the following areas represent 'the elusive new' content zones.

(1) Digital timebased multimedia – controlling and processing time, space and performance;

(2) Interactive whiteboards – conceptual development and eportfolios;
(3) Internet – electronic communication and content.

I believe that these three areas constitute the most important and significant technological developments to impact on practice in the arts.

Hyperlink 6 – The Citizen as Data

State of the art–designer databases containing millions of inter related and cross indexed copyright free resources will be the future of the brave new electronic world. Most importantly, there will be a transferral from corporate / governmental content and control to personalised public content. In other words, it will be the computer user who will be the content and a range of information objects will be constructed from multipurpose intelligent personal digital assistants (pdas) and mobile phones, and these devices will exchange and hybridise data to create multimedia interactive information objects. Users will be able to create their own life long database and interfaces through websites.

Hyperlink 7 – Digital Toolkits

In 2004 multi function portable devices with large storage capacity such as digital cameras which can record audio, video and still images and portable computers, with wireless connectivity are providing more flexible solutions for artists and designers whilst teachers are beginning to make use of interactive whiteboards. Corporate software developers continue to produce expensive programmes that exclude many potential non western European educational users. There exists a great need for research relating to usability and suitability of software interfaces to include different users.

Hyperlink 8 – The Texture of Technology

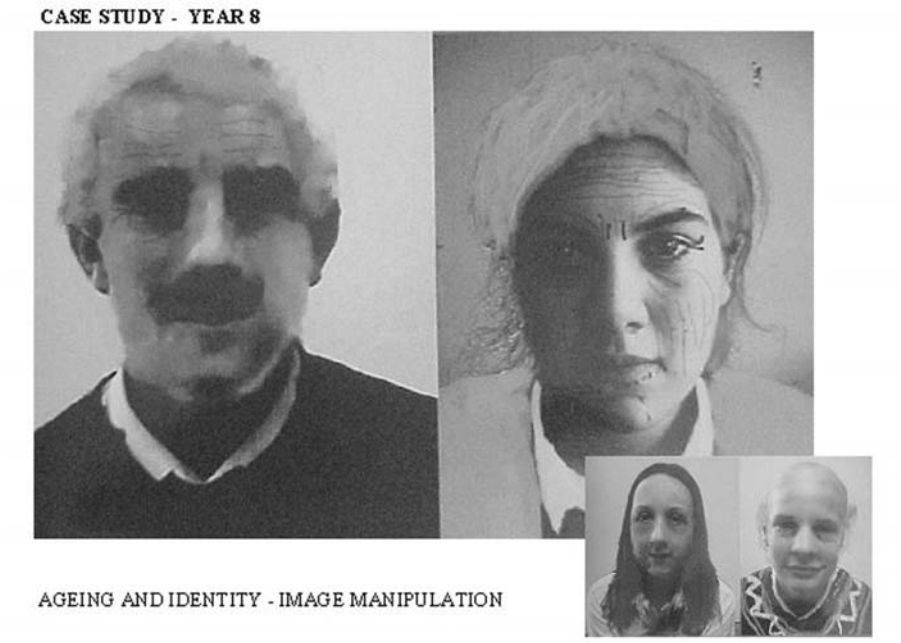
Digital content is predetermined by the users capacity to understand how to control and maximise the potential of the technological tools available. Older technologies produce unique electronic traces and art and design education 'users' should integrate the qualities of output resolutions within the creative process. Industry driven 'upgrade culture' is not the only solution in establishing effective practice. On the other hand new technologies continue to emerge as significant conceptual devices such as interactive whiteboards, which in this case are providing whole classes of pupils opportunities to pres-

ent complex conceptual research in a multimedia format. They also provide video conferencing gateways to geographically remote locations such as artists studios, universities and art museums. In the future coursework interfaces will be available on whiteboards for pupils to use including electronic portfolio storage space.

Hyperlink 9 – Digital Orthodoxy or New Contemporary Practice?

Digital imaging output in schools can be recognised by an over reliance on computer filters and special effects combined with cut and paste collages. This orthodoxy has little to do with creativity and contemporary practice and very few art and design teachers attempt to accurately contextualise the origins of these visual illusions. It is clear that digital media has more to offer – for example,

Through non (software) manipulated digital photography individual pupils can explore issue based themes, such as ageing, conflict or spiritual issues. Digital films and animation can develop a multi–media understanding of the integration / sequencing and editing of sound and movement.



Hyperlink 10 – Interface and Content

The limitless and unregulated range of information contained on billions of web pages generated in the name of the Arts through museums, cultural centres community groups, commercial companies provides a chaotic learning and research scenario for students and pupils. Quality control and ethics play a small part in the self motivated, interests of the majority of web company entrepreneurs. Questions regarding the function of websites, with regards to usability and accessibility are largely unanswered. Whilst information access and retrieval remains the motivation for the average web user, an increasing number of websites provide additional automated functions to invite the user to engage in other forms of activities such as community discussion groups, online exhibitions, live projects and virtual collaborations.

Classifying websites is problematic due to the ever changing landscape and architecture of technological infrastructures. Corporate and government agencies websites provide models of high levels of design, sophistication and functionality, and these sites are upgraded on a regular basis whilst in complete contrast the quality of the infrastructures and content on the majority of school websites is poor and static.

In my experience, museum and gallery websites can also be disappointing. Many are presented in an orthodox corporate style and the content replicates existing printed material. There is often no language translation for international users, and often no design features to accommodate pupils in schools with special educational needs. Copyright restrictions mean that we receive very limited amounts of low resolution visual information.

Hyperlink 11 – A Critical Context

The publication A Critical Context art and Design Education on the Edge, Cascade publications, 2004 provides evidence of 21st century curriculum development through the direct interventions of practicing artists and art museums. It offers an international perspective, in that it samples material from a growing network of global collaborators, and it asks questions of practice in relationship to the connectedness of shared aims and objectives in learning through art and design experience. Authors such as Rowena Riley (UK) challenges accepted and established views on access and use of galleries particularly as they relate to new audiences and special educational needs, whilst Marie Fulkova (Czech Republic) outlines a thoughtful and controversial choice of contemporary art practice in a school in Prague and Lucia Pimentel (Belo Horizonte) reminds us of the cultural divide in the development of digital technology in Brazil.

The accompanying CD ROM presents a visual summary of the 10 papers through an interface designed to accompany and further exemplify the text.

For further information regarding purchasing this new publication please contact Pete Worrall on Pjworrall@aol.com

Hyperlink 12 – Cultures of Communication

The European Schoolnet is an international partnership of more than 26 European Ministries of Education developing learning for schools, teachers and pupils across Europe. They provide insight into the educational use of information and communications technology in Europe for policy–makers and education professionals. This is achieved through communication and information exchange using innovative technologies and by acting as a gateway to national and regional school networks. Their activities are determined by the needs of the constituent members in collaboration with the European Commission and technology/business partners.

European Schoolnet
http://www.eun.org/eun.org2/eun/en/index_eun.html

The Virtual School is one of the projects within the European Schoolnet and is designed as an electronic space, where you can find resources and services for learning activities structured, initially, by subject areas. The Virtual School is a site for teachers to meet other teachers, a place for colleagues to exchange materials, ideas and having discussions on everyday problems. The Virtual School helps teachers to find quality resources with a European added value, on the Internet.

The Virtual School Art Department is supported by the Finnish Ministry of Education and the National Board of Education. Their representative in the steering group is producer Katja Nieminen (Finland) from the National Board of Education and Jukka Orava (Finland) is the co–ordinator of the Art Department.

The departments objectives and activities include:

- Bridging the gap between theory and practice of the digital technologies by considering both the learners and teachers perspectives and experiences.
- Understanding of specific and varying pedagogical processes to be able to produce digital materials and learning environments that meet the criteria based for teaching and learning in the information society objectives.
- Developing new strategies for improving learning through new learning

models (new pedagogy), tools (materials and equipment) and environments (virtual platforms knowledge sharing).
- Identifying barriers regarding accessibility and use of new technologies for teaching & learning and looking at solutions and priorities on a national and European level to improve access to technology.

Virtual School
http://vs.eun.org/ww/en/pub/virtual_school/depts/art.htm

Hyperlink 13 – Networking New Media

The Culture Box initiative presented an opportunity for artists of all ages to share and exchange their personal identities, life stories and cultural traditions through a virtual gallery situated on the Virtual School Art Department. At the time there was no multilingual translation tool available on the website and the following extract introducing the project attempted to take into account visitors to the site who did not use English as their first language.

'Our culture is one of the most important influences in our lives, in fact we can't escape it. A culture box is a time capsule, it could be expressed and celebrated through a painting, drawing, collage, print, sculpture, installation about YOU – this could include your personal feelings about your ambitions, interests, friends, games, places, dreams etc. in the year 2003. Your culture box could relate to the things that you value most in your life, for example, your contemporary influences – music, sport, travel, people, art, architecture etc.'

Extract from website.

Hundreds of culture box art work and supporting text were submitted and exhibited electronically by artists of all ages from countries including Brazil, Romania, USA, Russia and Sweden, Finland and the UK.

A teacher from Sweden provided the following text to support her constructed image:

'The woven pieces are made on a two–shafted handloom. The weft in the blue warp is made of birch twigs, one of the most common tree species in our surroundings. I pick them as winter gives way to spring before leafing. The weft in the red warp is made of straws of rye, cultivated by my father in law in a field next to our school. The warp can contain almost anything out of ones life. It's the web of opportunities.

In complete contrast a Romanian seventeen year old pupil writes about her painting:

'Every silent breath of an apparently quiet nature is filled with the deep-

est sense of life. The same guarding force is present everywhere, in every movement and every rustle of a wild nature and at the same time in ourselves, in the shape of a restless eye – the eternal witness of things done but never spoken. No one escapes its piercing look. We are all constantly being watched by something or someone above our reach and understanding and our darkest thoughts and most sinful deeds are easily revealed to a mysterious, restless eye.

Culture box democratically presented all pupils, students and adults responses which were emailed to the team. it was a unique exhibition as it brought together different pupils cultural imprints and texts in a range of media, presented together to a European and global audience. As a model for curriculum development it signposted the potential for coursework to be contained on the web in eportfolios.

Culture Box
http://vs.eun.org/eun.org2/eun/en/vs–art/content.cfm?lang=en&ov=8737

Hyperlink 14 – Live Global Interventions

On Saturday the 11th October 2003 Drumcroon hosted a one day conference called 'Encounters Live' in collaboration with the 'Association of Advisers and Inspectors in Art and Design' (AAIAD) to explore some of the issues around 'New Media' in art and design education. The live part of the event involved the use of e–mail and fax to exchange images with students in Finland and Brazil. The event was carefully synchronised in real time so that electronic artwork was created, exchanged, developed and returned to user. This raised questions regarding the ownership of the work through the cultural intervention or brush strokes of the students in other countries.

Encounters (Live)
http://www.eun.org/eun.org2/eun/en/vs-art/content.cfm?lang=en&ov=30174

Hyperlink 15 – Futures

Business communities feed on the elusive future developments of technologies. Rather than pursuing the future, we have much to learn from the past. The wired world has yet to materialise for most of the inhabitants of our 'global village'. Embedding technologies is problematic, for example, digital photography, since its inception in 1990 has taken 14 years to begin to replace the chemical equivalent.

In the preceding hyperlinks I suggest that video conferencing, electronic interface design, navigation systems, issues related to the digital divide virtual learning environments, personalised content and special educational needs may constitute futures – however tomorrow will always be different.

Hyperlink 16 – Knowledge Communities

Projecting governmental planning into the future, it may be that a micro (local) rather than macro approach is required. Pedagogy embedding electronic communications such as video conferencing through interactive whiteboards will mean that local studio based arts workers or curators in art museums can become additional teachers in schools transmitting broadcasts live to school art departments and simultaneously onto a website. The transformation of existing communities of practice into innovative knowledge communities will take time and requires significant curriculum changes to accommodate the 21st century digital citizen, however it is beginning….

Pjworrall@aol.com

PART I

Cultural Heritage and New Perspectives

Gianfranco DE BENEDITTIS
Università degli Studi del Molise, IT

IF WE CAN CALL THIS AN ARCHAEOLOGICAL MUSEUM…
From the museum's archaeology to the archaeological museum

The interest in archaeological museums has been increasing in Italy over the past few years; in some cases there has been an attempt to revitalise them through a series of initiatives, more often driven by enthusiasm than by a proper understanding of the problems that need to be tackled, as though communication with the museum itself on their own ideas were a secondary issue. Increasingly the archaeological museum has come to be thought of as redundant; a kind of repository of the collective memory and for this reason maintained as part of the Cultural Heritage. It is nevertheless time to take a more critical look at the current situation. In many museums, there has been a drive towards increasing the number of paying visitors as the only valid measure of an exhibition's usefulness, in the American style, which has encouraged the pursuance of the novel and the spectacular to attract the crowds, rather than an emphasis on quality. The present crisis is the result of an overdue realisation that the museum is not the place we wanted it to be. In Italy, after the 1970s , the role of the archaeologist to some degree lost its way; English archaeologists tended to take the leading role in classical archaeology, while medieval archaeology was dominated by the Poles. In the past too the archaeologist used to adopt the role of historian of the art of ancient times, reading objects as iconographic documents of a past era; nowadays he has become more of an historian–anthropologist, concerned more with stratigraphy than with the objects themselves; and yet, despite all these changes, the archaeological museums have not adapted themselves at all.

This crisis also reflects the changes in post–industrial society which, while claiming that museums should be open to everybody, also asks for exhibitions which provide straightforward, honest and objective readings of their contents. Such a crisis is evident not so much in the big art galleries, where the

iconic message is self–professing, but in Italian archaeological museums, where, in spite of the requirement, the rigid layout of the 1800s has not yet been altered. The archaeological materials are often still shown by category, with little attention to their cultural content. The object is not displayed as the testimony to a culture, but as an object of great value which, in the eyes of the observer, means economic value; for example, Etruscan or Italic inscriptions displayed in museums and exhibitions: the preference is for spotlights which tend to hide the text of the epigraph, but to emphasise the support, whether it is bronze or some precious metal. The object which fits with the Roman–Greek aesthetic canons tends to be preferred, whereas anything else is dismissed as low culture, as for instance, the documents of Italic art, which actually represent other cultures very well.

On the other hand, display cabinets can be filled with a whole range of objects, which ignores the fact that this prevents the public from getting any historical–cultural message at all. In spite of the Hegelian lesson on art, we are still bound to a vision of the archaeological object as something unique, unrepeatable, untouchable, the product of an almost divine and mystic "ancient era", instead of as a document produced by the activities of men, the fruit of an ever–evolving culture.

In other cases, we see displays put on only for experts, where objects find no relevance other than in references to texts written by specialists for specialists. This allocates archaeological culture to an area reserved solely for connoisseurs, making conservation more important than discovery.

The organization of the routes round the museum, or the archaeological site, or even the exhibit, are considered secondary or unimportant aspects compared to the undisputable value of the container; sometimes, the communication which should arise from the route itself can even be subordinate to parts of the container, which have nothing to do with the message itself.

This leads me to the view that a museum should be judged on how well it embraces the notion that its role is all about developing knowledge. Users today expect that a museum will respond to their requirements: what is displayed should be comprehensible; there should be a stimulus to deepen one's understanding of the themes presented and to enrich one's own personal cultural experience. In some cases, museums have responded to this challenge by providing a virtual experience and high quality displays which have developed their ability to communicate with their audience despite the lack of any clear communication objectives. The danger here is that a market demand for virtual reality in museums may turn visits to museums into a numbers game in which archaeological exhibits become part of an entertain-

ing 'show' rather than a type of cultural communication. The other danger is that in an attempt to be more educational and worthy, museums can fall into the trap of being unimaginative, banal and obvious. I emphasise again that the value of the work a museum puts into preparing its displays cannot be measured in terms of paying visitors: what is important is the cultural enrichment of a community. The key to achieving this is the conscious harnessing of new technologies in communicating knowledge and culture.

The first requirement when designing an exhibition or display is to recognize that a museum is the bearer of scientific knowledge, and not the provider of a show; if we want to make good use of the technology that is available to us without falling into the trap of technology for its own sake, or style without content, we have to know how to recognize the intrinsic value of that technology. We need to use technology to simplify and find synergies within the complex, rather than to unnecessarily complicate the commonplace or simple by the application of technology. One of the first steps towards achieving the right balance is to realise that various skills are involved in producing a 'virtual' communication of an excellent quality. A traditional architect or an information designer cannot alone come up with the prefect design for an exhibit in an archaeological museum; there are other people whose skills will have much to contribute: interaction between the supervisor, the designer and the historian, for example, is more likely to create a good multimedia product appropriate to the museum. Along the routes round the exhibits one needs to consider ways of attracting and interesting the public. The brevity of the text in the panels and in the windows, for example, is important, so as to avoid people becoming bored. On the other hand, in a picture gallery time is not so much of the essence: what is important is the visibility of a picture. It is often thought that the introduction of screens with virtual images may satisfy the requirement for explanation of what lies behind an archaeological exhibit, either related to its context, or linked to the culture it is part of; and yet the screen can actually put the visitor off because it seems out of place within the museum, especially if provided in the form of a kiosk or with a keyboard which may seem to sit uneasily with an archaeological exhibit. This means that expensive multimedia systems can be underused. Some recent works (Simone, 2000; Ong, 1986) have underlined the separation between alphabetic writing and the oral and non–alphabetic vision, which still characterise two forms of intelligence: sequential and simultaneous intelligence. The former proceeds in steps, codifies its thought and creates knowledge; the latter has the ability to deal simultaneously with more data, but at the same time does not identify their order and hierarchical

sequence. The latter type of vision, the one referring to images conveyed through multimedia, and in the past through the cinema and the TV, has generated what Sartori defines as the "homo videns", characterised by an impoverishment in reasoning. It would be possible to organize the museum to satisfy the simultaneous intelligence, and accept without argument the current trend towards measurement of success by numbers, but there is no doubt that increasing the number of visitors would not favour the cultural growth of a community. It may seem that I am advocating not using virtual techniques in archaeological museums: this is not what I am saying. The point is not whether to use the virtual, but how to use it. The point is to know where the entertainment ends and the learning begins. One last observation: many people think of the virtual as being only to do with what arises from computer science, which is also graphically more complex; this would seem to be a limited view as we should remember also that the virtual includes also sound, words and light.

Our museums are considered to be quiet, contemplative places, where sound is perceived as a disturbance and a desecration; surely this is a misconceived view? Or, at least, we could start with the principle that the shorter the texts, the less bored will be the visitors?

Fig. 1 – Museo Civico di Baranello (CB), Italia.

Fig. 2 – Museo Civico di Baranello (CB), Italia.

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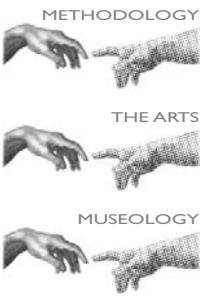
Alkistis KONDOYIANNI
University of Thessaly, GR

DRAMA IN MUSEUM PEDAGOGY: APPROPRIATE EXERCISES AND TECHNIQUES



Art pedagogy, as a dynamic and creative process, is constantly in search of new teaching dimensions that will arm learners with an understanding of how personal identity interacts with cultural diversity. Information and Communication Technology (ICT) not only provides new art–creation opportunities (Lunenfeld, 2000), but it can also add to any curriculum, transforming it so as to facilitate learning and offering a valuable sense of achievement and pleasure (Davies & Worrall, 2003).

According to Paizis (2003), in an age where technological advancement is producing societies of lonely individuals, there is an urgent need for a style of education that will be based on communication, instilling into its recipients a sense of social awareness and solidarity, and promoting human values. In this respect, social harmony, non–exclusion, respect for other people, help for the underprivileged, can all develop as a result of the cultivation of aesthetic sensitivities.

The new Network of Thematic Museums and Institutes (Neothemi), a European collaborative project involving thirteen partners coordinated by Professor Claudia Saccone, places the museum at the forefront for the application of ICT in teaching, art pedagogy and teacher education (Saccone, 2003).

Modern museums can be great enhancers of cultural and educational processes. Through the application of new technologies, they provide stimulating centres offering scientifically structured learning environments, combining past and present, art and science. Because they are attractive and offer practical ways of exploration, they invite the child as well as the adult to participate actively (Zafeirakou, 2000), thus becoming experiential arenas of lifelong learning (Lengrand, 1970). The school environment, on the other hand, promotes not only the cognitive, but the affective aspects of learning as well. It not only encourages the acquisition of knowledge, but it also helps develop social skills, establishes trends, encourages the expression of feelings, and shapes behaviours (Gotovos, Mavrogiorgos and Papakonstantinou, 1992).

The circumstances in which we currently find ourselves, necessitate interaction of the school with all facets of our social and cultural environment. The school – museum interaction offers alternatives for creative learning through an experiential approach, based on the self–involvement of the pupils (Kondoyianni, 2000). Therefore, a deliberate policy of cooperation between school and museum is now a prerequisite, a policy which will allow education and culture to become interwoven through the application of ICT (Buffet, 1998). Educational practice and research in museums can actively contribute to the formation of an educational philosophy through the bringing together of all the factors that contribute to the educational process. Moreover, museum pedagogy offers fertile ground for the development of alternative teaching methods (Nakou, 2001, p. 220). Today's museums are beginning to recognize that teaching is one of their core functions and structure themselves accordingly, providing children with tools to participate in fascinating activities, communicate with one another, and reflect on their environment, helping them discard their poor opinion of museums as boring, irrelevant and of no interest to them. Visiting museums is already perceived by many children as part of their leisure experience in a rapidly changing world, as an empowering and life–enhancing experience which raises their awareness to a level of respect and admiration not only for the culture of their own country, but more importantly for the heritages of all other nations (Karppinen, 2002).

Many theoreticians have underlined the value of the arts in education as a means of providing an important avenue for the development and creation of meaning for young children, in order to know and understand themselves and their worlds (Smith 1982, Wright, 1991). This concept applies to all art forms because symbol systems are integral to the arts (Wright, 1991). As Gardner (1982) points out, art encourages children to get involved in the manipulation and understanding of objects, sounds, patterns, colours, forms, shapes, all of which have the potential to refer to, exemplify, or express some aspect of the world. Through the arts, children can express themselves and become able to refer to their life experience (Wright, 1991), but they can also produce new experiences (Kondoyianni, 2000). Undoubtedly, high–quality experiences can be gained in a museum environment thanks to the combination of art, history, culture, and technology.

Art, and in particular drama, apart from the aesthetic and affective domain, also promotes the cognitive, social, linguistic and psycho–motor domains of learning, which influence one another intensely. The aim of art in education is the enhancement of a child's development through the acquisi-

tion of knowledge, the development of skills and creativity. Many researchers have come to the conclusion that the cognitive domain is strongly connected with the affective, aesthetic and psycho–motor domains, as well as with language (Best 1992). In addition, Jerome Bruner (1962) and Arnaud Reid (1986) have mentioned that the aesthetic knowledge gained from sensorial input connects with one's personal nature, gives an insight into the 'Self' and reveals one's place in the world.

According to recent research, drama is an alternative experiential learning method and a potentially holistic approach (Kondoyianni, 2000). We can define as 'drama in education' any activity which involves human beings in projecting themselves into an imaginary situation and using their voices and bodies to act out the characters and events they have imagined (McClintock 1984). According to Neil Kitson (1997), the value of drama can be seen in its therapeutic, diagnostic and cognitive developmental functions. Drama as the means for socio–cultural animation, (a pedagogical approach of Abbe, 1994) enhances pupils' development of their own individual way to interpret culture, values and objects, to find their existential values in this society and environment, and at the same time to put them into an historical perspective (Karppinen, 2002). The impact of drama expands beyond the functions of thinking, feeling, intuition and sensing to the four modes of functioning as Heron (1992) defines them:

Affective: embracing feelings and emotions;

Imaginal: comprising intuition and imagery;

Conceptual: including reflection and discrimination;

Practical: involving intention and action.

Drama offers to museum pedagogy an experiential learning model whose main contribution is cooperation. Extensive research shows that the implementation of cooperative learning techniques (positive interdependence, face to face interaction, individual accountability, social collaborative skills, group processing [Johnson & Smith, 1991]) results in higher achievement and greater productivity, more caring interpersonal relationships, and greater psychological health, social competence and self–esteem (Johnson & Johnson, 1989, Shopov, 1996).

The experiential learning model aims at the development of children's process skills and at the acquisition of knowledge, mostly in the form of facts, but also including concepts and generalizations (Sunal, 1990). It is a process whereby knowledge is created through the transformation of experience (Kolb, 1984). This model enables children to have first–hand sensory experiences during which they can practise their processing skills (Renner, Abraham

& Birnie, 1988). They develop sensitivity and self–consciousness, social communication and interaction skills. The students are encouraged to develop relationships with their peers and to be at ease with one another (Kurki, 2000). The teacher (the museum mediator) introduces aspects of the social sphere into the classroom (museum) and the learning process is enhanced through the children's interaction with this information (Gross, 1985).

The three major characteristics of this model are:

primary emphasis on process goals,

the importance of concrete and manipulative sensory experiences,

the absence of any specific content objective (Sunal, 1990, Ginsburg & Opper, 1980).

The following survey is part of some research entitled 'Museum and Drama in Education', which was carried out by students of the Department of Museum Education at the University of Thessaly (Kondoyianni 2004). 31 university–students worked on detailed educational programmes with a total of 636 pupils, 10–12 year–olds attending Greek state primary schools. The study concerned the evaluation of appropriate drama techniques applied in museum pedagogy, and it was divided between museums of archaeology or history (11 programmes), museums of art (10 programmes involving painting and sculpture) and museums of physics (10 programmes).

The objective of this survey was to find out which drama techniques were appropriate to each kind of museum in order to fulfil the aims of the programmes, which were cognitive, social, affective, and aesthetic. The methodology involved the use of the diaries of the students attending the programmes, their observation sheets, their evaluative group–discussions and the semi–structured interviews undertaken by the pupils after their participation in the programme.

Pilot study. The students collected and studied the museum educational programmes running in 31 Greek Museums in order to identify the techniques of drama that were used. The most popular exercises and techniques (as far as their width, depth and duration are concerned) were: joining in exercises (75%), role playing (49%), story telling (48%), relaxation exercises (45%), collaboration exercises (43%), mime (35%), drama scenes (32%), movement exercises (28%), discussion skills (27%), imagination exercises (19%), language games (17%), dialogues (13%) and sensory exercises (12%).

The students then moved on to an Internet investigation of 93 museums (57% American, 19% British) which apply drama exercises and techniques more widely, namely: joining–in exercises (87%), role playing (61%), collabo-

ration exercises (53%), relaxation exercises (25%), movement exercises (24%), simulation exercises (27%), frozen pictures (35%), living pictures (24%), story telling (18%), brainstorming (17%), forum theatre (16%), improvisation (13%), hot seating (12%), thought tracking (10%), mantle of the expert (9%).

Project

Level 1. Taking into consideration the results of the pilot study, three prototypical micro–teaching sessions were developed by the researcher and the students, one for each kind of museum, including chosen kinds of drama exercises and techniques.

Level 2. The students separated in three groups (two groups of ten members and one of eleven members) each group equivalent to each kind of museum. Under the researcher's guidance, everybody elaborated their own interdisciplinary educational museum programmes which were focused on Drama in Education.

Different exercises and techniques were freely chosen by every student for the planning of their programmes, according to the museum and the makeup of the programme each student was assigned to, in order to prove their appropriateness. This was done because we believe that a process like drama, not only has to cultivate a sense of responsibility, but also to unveil the creativity of the student–teacher.

Level 3. The students of the first group applied their programmes one by one in the Archaeological Museum. All the students were present and kept a diary of the whole process for each of the eleven different programmes. For each applied programme they had to fill an observation sheet on the reactions of the children as they related to the cognitive, social, affective and aesthetic domains. Following the same process, the second group applied its programmes at the Art Museum and the third group at the Museum of Physics.

Level 4. After application of the programmes, the students had a preliminary meeting of evaluation, during which they classified each programme's activities according to its cognitive, social, affective and aesthetic dimensions, following the constructive classification proposed by Seppo Tella and Marja Mononen–Aaltonen (1996). The evaluation of the records, diaries and observation sheets took place during three meetings, where they were analyzed with the participation of all the students. Finally, this evaluation was cross–checked against the results of the primary pupils' semi–structured interviews.

Findings

Using the time machine at the Archaeological Museum (79%) the children were able immediately to impersonate ancient characters; during brainstorming (64%) they demonstrated their knowledge and expressed their thoughts, concerns and experiences. The joining exercises (85%) gave them the opportunity to present themselves in a role – or choose not to – and become accustomed to the new environment. The spatial exercises (75%) concerned mainly the exploration of the museum, the observation of the objects in order to identify similarities and differences, the use of audiovisuals, reading exhibit labels in order for pupils to expand their range of knowledge and to recreate antiquity more vividly during dramatic playing. The imagination exercises (55%) were used as primary material for the development of short stories or as problem–solving aids, and the technique of 'hot seating' (42%) for the development of roles. These activities offered abundant stimuli for proposals, negotiation, critical thinking, creativity, language awareness and collaboration. The frozen pictures (38%) and the living pictures (35%) were used before the dramatic playing (52%) of a story created by the pupils, or sometimes after it. They helped the pupils become familiar with the university students and the environment. The spatial exercises (20%), the concentration exercises (26%) and the sensory exercises (35%) gave the children the opportunity to observe the paintings and their common or different elements, techniques and themes. The Imagination exercises (33%), the language exercises (45%), the frozen (30%) or living pictures (30%), as well as role playing (30%) promoted partner– and group–work. They also used the museum's interactive technologies in combination with dramatic playing (60%), story–telling (20%) and improvisation techniques (20%). The sessions ended with lively discussions concerning the paintings, the artists, the themes and the concept behind the museum.

At the Museum of Physics

During the joining exercises (80%), museum materials or–objects were used, in order to familiarize the pupils with the museum environment. The comprehension of the concepts and laws of Physics involved the application of brainstorming (90%), movement exercises (65%), sensory exercises (75%), collaboration exercises (88%), simulation exercises (40%), problem–solving (45%) and use of machines (30%). The social and moral aspects of the development of Physics and its impact on human life and society, as well as on the life of the scientists and the inventors themselves, as presented by exhibits of

the museum, were visualized by role–playing (78%), discussions (92%), frozen pictures (30%) and living pictures (40%).

The first evaluation of all programmes with pupils took place through interviews or telephone conversations or group–monologues or thought–tracking. (Many exercises and techniques were carried out only partially or for a very short time, as the students were inexperienced and did not have enough time to complete all of them).

Conclusions

Drama gave the opportunity to the pupils to express their feelings, to refer to their life experiences (Wright, 1991) and construct new ones (Kondoyianni, 2000), exploring the information given in a museum environment. Self esteem was enhanced through the outcomes of their collaborative work and the pupils managed to have a better understanding of themselves and their worlds (Smith 1982, Wright, 1991).

Drama enhanced the prospects of socio–cultural animation (Abbe, 1994), because it encouraged the pupils to interpret their culture, values, objects and environment in a historical perspective (Karppinen, 2002). Drama enriched their thinking interactively with feeling and sensing, creating experiences of affective, conceptual and social dimensions (Heron 1992), combining the imaginary, the symbolic and the real. Drama promoted process – knowledge through the transformation of experience (Kolb, 1984).

The pupils shared their experiences and emotions with their peers; they manipulated and understood objects, sounds, patterns, colours, forms, shapes (Gardner, 1982); they elaborated their symbols and they created new ones (Wright, 1991). The information obtained in museums, especially through technology, was made personal through the collaborative drama work. The evaluation showed that through the engagements with positive drama, the face–to–face interactions, the individual accountability, the social collaborative skills and the group processing of information (Johnson & Smith, 1991), the pupils reached a higher level of achievement and greater productivity, developed more caring interpersonal relationships, social competence and self–esteem (Johnson & Johnson, 1989, Shopov, 1996).

Concerning the exercises and the techniques

Differentiated exercises and techniques were applied in each of the three kinds of museums. However, there were some common techniques: mainly

the joining exercises, and secondarily the frozen pictures and the living pictures. Sensory exercises, concentration exercises, story telling and improvisation were applied the least and only in the Art Museum, while the movement exercises, problem–solving, simulation and the use of machines were applied moderately, exclusively at the museum of Physics. The time machine was used most often in all of the programmes of the archaeological museum, while the hot seating was used in many of the programmes but only in this museum. All the programmes gave opportunities for enacting small stories through the use of dramatic playing or role–playing, but only the programmes at the museum of Physics used discussion and collaboration exercises with any frequency. Brainstorming was used extensively at the Archaeological Museum and at the Museum of Physics, while imagination and spatial exercises were used in many programmes at the Archaeological Museum, as well as at the Art Museum.

Our main conclusion as far as the Museum of Physics is concerned, is that in contrast with the other museums, there was a focus on certain exercises and the application of techniques such as collaboration exercises, sensory exercises, movement exercises, simulation, use of machines, problem–solving and above all discussion, brainstorming and role–playing. At the Art Museum, drama was combined with language exercises, story–telling, improvisation and concentration exercises. At the Archaeological Museum, dramatic play was applied together with the time machine, spatial exercises, brainstorming and imagination exercises.

The favorite exercises of the children at the Archaeological Museum were the time machine, the joining exercises and dramatic playing; at the Art Museum they favoured the joining exercises, role–playing and the frozen pictures, and at the Museum of Physics role–playing, the movement exercises and the use of machines were the most popular.

The most exercises and techniques most appropriate for developing cognitive powers were brainstorming, discussion and role–playing, for the social–affective ones the joining exercises, the collaboration exercises, the use of machines and the dramatic play, and finally for the holistic approach, the frozen pictures and the dramatic play.

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Rosa LANTERI
Università degli Studi del Molise, IT

NUMISMATICS AND THE DATABASE: THE MISURATA (LIBYA) TREASURE EXPERIENCE

Numismatics and the database

Ancient coins represent a sufficiently homogeneous class of materials, for which it is possible to determine a whole series of common attributes, easy to file and deal with by means of telematic and multimedia tools. The relational Database (hereafter referred to as DB) allows us to store not only textual and visual data, but also to interrogate and to manipulate the data, for example, for quantitative analysis (using other software applications). It is also possible to provide various levels of access, from simple consultation to scientific research.

The use of the DB in archaeological research first began in the 1970's. Initially, the debate was concerned principally with the normalization of the data, and the standardization of language and software. An acceleration took place in the eighties and nineties with the advent of relational DBs and with the enhanced performance of the PC, both in speed and storage capacity, and subsequently, with the possibility of including images[1]. In future years the development will focus on the exchange of data. Usually the database can only be used locally and there are few examples of international teamwork based on the exchange of DB. In the future, thanks to the Internet, the database should be accessible to the entire world, and data will be made public.

The creation of a themed DB for numismatics is indispensable nowadays for the management of the enormous amount of data emerging on coins in museums, archaeological findings and private collections. The creation of a Numismatics–oriented DB took a firm point with the first international meeting "La Numismatica e il computer", which was held in Milan

[1] Guermandi, 1999, 89–99.

in 1984[2], and followed by other meetings[3]. The starting point was the definition of twelve basic concepts to be incorporated into the file–card[4]. Naturally, the files can be extended or modified as necessity dictates.

This has now become an international project, whose purpose is to coordinate the different national and regional experiences, so that we can avoid useless duplications and create a resource for universal research[5].

In Europe, various projects are underway to contribute to the development of the numismatics–oriented database. One of the main projects was started in Spain in 1983 under the auspices of the Ministerio de Cultura (Madrid), as one of a number of databases intended to support the Puntos de Informaciòn Culturales (PIC) service, a public access network covering a range of cultural and related activities. Its aim is the creation of a general numismatic database made up of various files (NUMTES for hoards found in the whole Iberian peninsula; NUMCOL, for public collections, NUMYAS for site finds, NUMAIS for single finds and series) which all have a common descriptive nucleus[6].

In Germany, the oldest project, ISERGRIM (Informations System zur Erfassung Griechischer Munzen), was initiated at Düsseldorf University in 1974. It collects data on the coins of Asia Minor, available through publications[7]. Databases are being developed in parallel for site finds (SITES) and hoards (TRESOR) by the Centre de Recherches Numismatique E.Babelon in France[8]. Other similar projects have begun in other countries such as Austria, Bulgaria[9], Italy, Portugal, Romania, Slovenia[10], Sweden, Switzerland, the United Kingdom and in the USA, etc.[11]. At present, the most significant DBs are in use at the British Museum and the American Numismatic Society.[12]

1993 saw the start of a six–monthly publication "Coins and Computer Newsletter" which serves as a forum for numismatists working with computers.

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[2] AA.VV., 1985.

[3] See Volk, 1986, 1043–1044. To this add: *Six monetary history conference: monetary History and Computing,* Brussels 1992 and *Computerisation in Numismatics,* Frederikstad, 1993.

[4] They are: identification; status; total; dating; summary description; standard literature; material, name/denomination; weight; remarks; diameter; die axis; AA.VV. 1985, 141–150; Volk, 1986, 1048–1049.

[5] Volk, 1984b, 225–240.

[6] Volk, 1983, 195–201; id., 1985a, 47–61. Volk, Campo, Tarradell Font, 1983, 9–42.

[7] See Volk, 1986 for bibliography.

[8] Morrison, Barrandon, Brenot, 1985, 114–121; 218–219.

[9] Tomov, Grigorov, Vakarelov, 1994.

[10] Kos, 1994.

[11] See Jonsson, 1997, 815 note 2.

[12] Jonsson, 1997, 813.

It has been difficult to get great projects in the field of computerised cataloguing, such as the activities of ICCD (Istituto Centrale per il Catalogo e la Documentazione), in Italy. The NU file of ICCD, compiled specifically for numismatics only emerged a year ago. Before this, numismatic reports were dealt with in the same way as other archaeological findings and classified following a very similar method. Initiatives which have been linked to the activities of Universities[13], Museums, or Research Institutes have been more successful[14]. The most practicable way for a worldwide exchange of information is possibly the creation of a plurality of correlated Data Banks. Against this background I will share with you my specific experience.

The Misurata experience

This experience is connected to the study of the Misurata Treasure, where the cataloguing of coins is being done under the management of S. Garraffo, director of ITABC–CNR Roma, in collaboration with S. Santangelo, and the development of the DB which is being managed by A. Nicolosi (IBAM–CNR Catania)[15].

The Misurata treasure is the greatest finding relating to the first half of the fourth century A.D. currently known in the world. It consists of 108,000 coins and the handling of the enormous amount of data coming from cataloguing, is unthinkable without the help of a computerised system.

The discovery was made casually, at the beginning of 1981, during agrarian works at Suk el Kadim, a site west of Misurata, 200 kms east to Tripoli (Libya)[16]. We have not reliable excavation data but it seems that the treasure was found inside a building which showed traces of violent destruction and fire.

The coins were buried using thirteen containers: two of them are typical great Tripolitanian amphoras for oil transport[17]. They are ascribable, together with other little amphoras and the two jugs, to local production of the first half of the IV century.

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[13] I.e. project of Tor Vergata University, based on Spanish NUMISmatica Database, for cataloguing coins from Tevere. See Marconi, Serafin Petrillo, Tonsini, Volk, 1993, 195–228; Serafini, Tucci, 1996.

[14] A project where finds are recorded with the help of the computer is that of Civico Museo Bottaccini in Padova. Museum Bottaccini is the operational centre of the project, in co–operation with Regione Veneto. With the help of computerised cataloguing, vol. II, VI and VII *"Ritrovamenti monetali di età romana del Veneto",* Padova 1992–2000, have been published. See too Gorini, 1995, 13–18.

[15] Project is financed by CNR.

[16] Garraffo, 1987, 101; id., 1996, 179–183.

[17] Cfr. Ostia III, 628 fig. 21 and Ostia IV, tav. LXXVIII nn. 580–583, p.263–264.

It is difficult to establish the circumstances that forced to bury coins. Ancient sources have provided us with the names of indigenous peoples, who were a constant threat to the coastal Roman cities, the Garamanti[18], the Leuthae[19] and the Austuriani[20].

Ammianus Marcellinus, a source from that time, tells us about three attacks of Austuriani against the roman cities of Leptis and Oea, from 364 to 367 A.D.[21] It should also not be forgotten that the Austuriani, in the years preceding the attacks, occasionally undertook short raids into coastal territories.

In Roman times, a coastal road that connected Cartagine to Alexandria crossed Misurata territory. It is the leg "Leptis–Tumbactis municipium" represented in segment VI of Tabula Peutingeriana[22], a medieval copy of a map of fourth century A.D. Probably the treasure, in transit near Tumbactis[23], was quickly buried inside a building or a statio along the road, because of the imminence of the raid.

Consisting nearly exclusively of folles to simplify the payment of stipendium, the treasure has all the characteristics of a military chest, probably being sent to a vexillatio stationed in the region.

Sand preserved coins very well. Folles were struck during a period of about 40 years, between Diocletianus and the sons of Constantinus. They are representative of all the mints that were active in the Roman Empire and the study is provides interesting information on types not seen before as well as on the internal organization of officinae in the single mints.

When it comes to cataloguing, investigations are being made to try and demystify certain issues. From Diocletianus' time, in fact, coins had a core of poor metals, and a silvered surface. The procedure by which the surface was formed is not known, but no destructive analysis (pixe alpha and XRF) are conducted, in collaboration with ITABC–CNR Roma and INFN–Catania[24]. In the context of this session, what is interesting about the research is the use of computer methodologies for numismatic data management.

MONETA is the DB specifically created for the cataloguing and handling of the data being collected about the coins from the Misurata treasure[25]. All

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[18] Daniels, 1970; id. 1989, 45–61; Liverani, 2000, 17–28.
[19] Mattingly, 1983, 96–108.
[20] Amm. Marc., XXVI, 4,5; XXVIII 6, 2; Synesios ep. 57.78; Corippus, Johann. II 89.91.209.345.IV 816.
[21] Amm. Marc., XXVI, 4, 5.
[22] Bosio, 1983, 30 and segmentum VI. Stages are: Leptis Magna XX, Sugolin XV, Nivirgi Tab. XV, Simnuana XXII, Tumbactis m.p. XXV. The road starts at Nivirgi Taberna that, after XV m.p., leads to Virga. From Virga, after X m.p. it joins the road to Tumbactis. South of the road, there are Garamantes territories.
[23] For the location of Tumbactis and findings around Misurata see: Brogan, Kenrick, 1972–3, p. 8–9; Brogan., 1974–75, 49–58; Artur, 1983, 122–137; Jones, 1989, 99–100.
[24] Pappalardo et alii, 2003, 333–339; Ferretti, Garraffo, 2003, 553–560.

the data manipulated in MONETA is held in ten tables, of which five are not able to be updated, because they contain codes.

NUMISMATICA is the main table of the DB, where all intrinsic information about the coins is captured: value, metal, weight and diameter, die axis, technique, etc. A special numeric field ID represents the primary key. Some fields can take only pre–defined values, selected by a dialogue–window that automatically opens when the first three letters of the word of the field "Authority" or "Mint" are inserted.

In the case of the fields METALLO (Metal), TECNICA (Technique), CONSERVAZIONE (Preservation), POSIZIONE CONIO (Die axis, expressed in degrees), a click to the right of the insertion string is sufficient to open the dialog–window and select the item.

Another important function of MONETA, is the automatic insertion of numerical codes, both mint and authority–related. In fact, the columns AUTORITÀ and COD.AUTORITÀ, ZECCA and COD.ZECCA, only take a couple of values, respectively drawn from TABELLE AUTORITÀ and ZECCA. This function is important because it facilitates the acceleration of subsequent search operations. Additional observations can be entered in the section NOTE. The field called NOTE is free format, able to contain a lot of text.

The MONETAD and MONETAR tables contain information related to the obverse and reverse of the coin: legend, type description, exergue, field. They also contain the fields ICOND and ICONR, with the reduced file of the image of obverse and reverse. Obverse and reverse legends are split into three dedicated fields for either side (Outer circle–GIRO; Field–CAMPO; Exergue–ESERGO). In these fields, it is possible to insert, besides Latin and Greek characters, also symbols and monograms. The insertion takes place through a dialogue–window that opens with a simple click of the mouse to the border of the box.

The IMMAGINED and IMMAGINER tables memorize image files in the acquired dimension. It is possible, by a click in the panel, to recall the "ESAMINA" class, visualize details of the image and to submit it to some modifications: function of wheel, mirror, zoom and filter. The data–entry procedure starts only after a series of controls in the form of single of information inserted in the boxes.

The RESEARCH procedure allows us to arrange the file–cards in all possible combinations: mint code, authority code, chronology, bibliography code

[25] It has been developed using Oracle Server 7 for Aix replicated on different local DB (Oracle 7 and Oracle8) on MS Windows 95/98 and MS Windows NT Workstation 4.0.

etc. When keywords for research are inserted, it is possible to select a graphic interface for visualising the data found. Possible choices are: Fast, Deepened, Deepened without photo. In the last two, it is possible to make changes in the data.

MONETA is a distributed structure, to which it is possible to be connected online from remote stations. There are different levels of access to the DB: Administrator and Guest. Only the first can update the DB, while the other can insert data and consult the data–bank.

Among possible future objectives, is that of making an analysis and comparison of images, for the first automated classification of coins[26], following a procedure similar to that used by the police for fingerprint identification.

In conclusion, when it becomes available in the web, MONETA will provide the equivalent of an immediate publication of material, an alternative to the traditional catalogue. It will offer a kind of virtual numismatic museum, with various levels of access to information and images, for students, researchers and connoisseurs. It will also serve as starting point for research and as support for educational activities.

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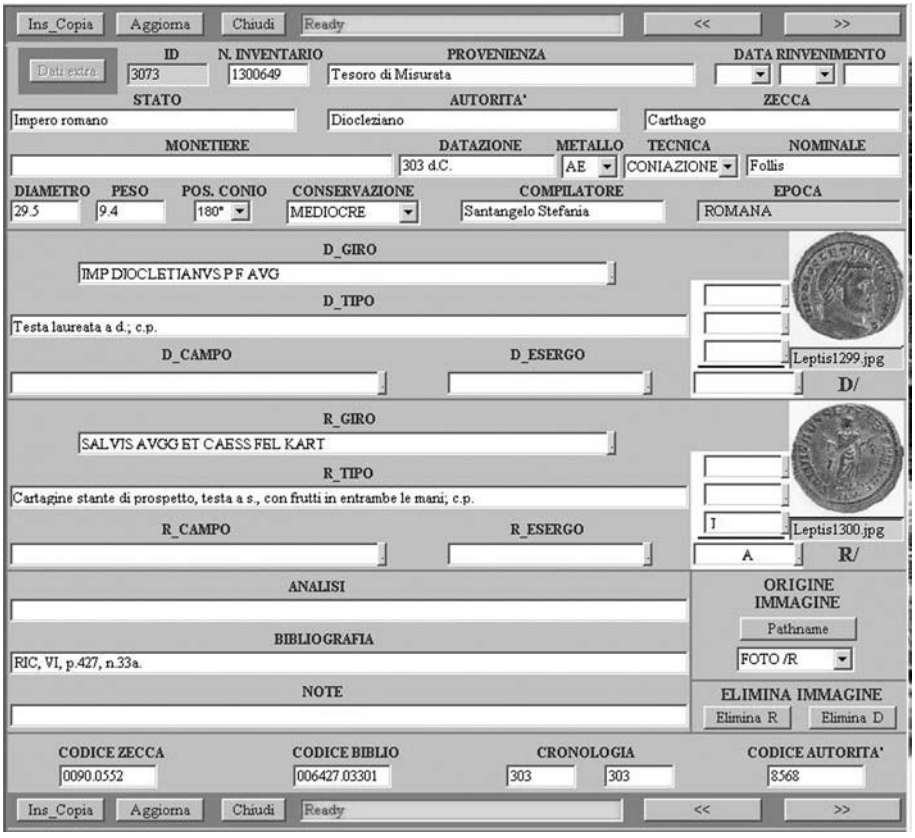

Fig. 1


D_GIRO
IMP LIC LICINIVS P F AVG
Inserisci Carattere su D_GIRO
Chiudi
, p.498, n.3.

Fig. 2

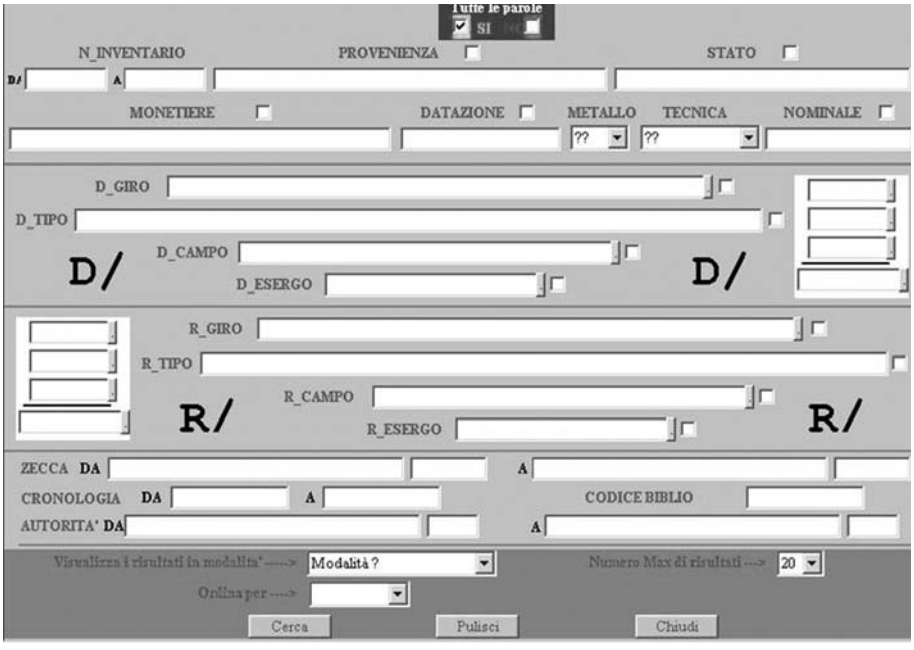
Tutte le parole
SI
N_INVENTARIO
PROVENIENZA
STATO
MONETIERE
DATAZIONE
METALLO
TECNICA
NOMINALE
D_GIRO
D_TIPO
D_CAMPO
D_ESERGO
D/
R_GIRO
R_TIPO
R_CAMPO
R_ESERGO
R/
ZECCA DA
CRONOLOGIA DA
AUTORITA' DA
CODICE BIBLIO
Modalità ?
20
Cerca
Pulisci
Chiudi

Fig. 3

Antonella MINELLI*; Carlo PERETTO**
*Università degli Studi del Molise, IT
**Università degli Studi di Ferrara, IT

THE ARCHAEOLOGICAL SITE OF ISERNIA LA PINETA: VALIDATING AND BRINGING OUR CULTURAL HERITAGE TO FRUITION

The rich Italian cultural heritage ranges over a wide time span, in the context of which the traces left by prehistory are unique, both from a scientific and didactic/popular point of view.

The archaeological site of Isernia La Pineta, with its exceptional wealth of palaeontological and palae–ethnological material, the presence of different and extensive archaeosurfaces and the complex stratigraphic sequence, offers a relatively complete panoramic view of the origins of the human population, not only in the Italian peninsula itself, but also throughout the entire European continent.

The systematic excavations begun in 1979 have recently been intensified, and the area under investigation has been extended; exciting new information has thus emerged, enabling researchers to set up a more detailed interpretative model of the site (Arzarello et al. 2001).

Considerable discoveries have been made in the area, interesting both from the point of view of anthropological interventions and the presence of prehistoric finds. The area is calculated to be about 30,000 square metres in size and has necessitated a formidable mobilisation of forces within the scientific and political world to set up various initiatives involving the research, protection, improvement and realization of the particular cultural heritage represented by Isernia La Pineta (Fig. 1).

Fig. 1 – The area of the paleolithic site of Isernia La Pineta.
1: the excavation pavilion; 2: the Museum building; 3: the European Centre of Prehistoric Research.

The project was planned with the specific intention of creating an archaeological park or complex that opens the way toward a fresh approach to culture and to our archaeological heritage in particular, presenting the results of the multi–disciplinary research work in a form accessible to everyone.

The excavation pavilion and the Palaeolithic Museum are two structures which harmonise perfectly with the particular nature of the site, facilitating the achievement of the interdisciplinary aims of research, conservation, education and development within a present–day context.

The excavation pavilion represents the first completed structure of the extensive archaeological complex; it opens up the area of discovery and has, since 1979, been the focus of systematic research programmes under the scientific coordination of the Dipartimento delle Risorse Naturali e Culturali of Ferrara University and the Soprintendenza Archeologica of the Molise Region. It is being exploited on a wide scale, not only for research purposes, but also by a larger public; in fact there is a specific gallery for visitors and schoolchildren (Fig. 2).

Fig. 2 – The excavation pavilion that covers the archeosurfaces rich in archaeological finds. The adjoining museum building is also nearing completion and will be a further step forward in the reconstruction of our ancestors' environment and way of life; it will be used not merely to display objects, but it will serve as an interactive means of presenting information and history.

The archaeological complex was established three years ago as a European Centre for Prehistoric Research, an association of private and public bodies which collaborate to develop scientific research, not only within the archaeological site, but also in the entire province of Isernia and the Molise region, with the aim of creating a wide circuit of national and international cultural interchange.

The excavation pavilion has been the setting of various activities which have transformed it into a veritable museum–laboratory, always moving forward, holding great promise for future developments.

The first excavations have brought to light the remains of a hunters' camp which has enabled us to understand various problems regarding the continental Quaternary, the paleo–environment, fauna, flora and the human presence in the Mediterranean basin.

In this context a significant contribution to the museum project is provided by the permanent display of a portion of paleosurface 3a, the richest living floor found until now (Fig. 3).

Fig. 3 – Portion of the archeosurface 3a, rich in faunal and lithic remains.

This section, particularly rich in finds, exemplifies all the aspects connected with the interpretation of a prehistoric site: clearly visible to the visitor are most of the animal species found, like bison, rhinoceros, euroasiatic elephant, bears, cervids and hippopotami, as well as the variety of lithic artefacts used for butchering, working wood, and so on, which documents human technological skills.

This site preserves evidence that allows us to reconstruct the social organisation and culture of Homo antecessor or of his direct descendant, H. heidelbergensis dated to about 700,000 years ago (Coltorti, 1983; Coltorti et alii, 1982; Delitala et alii, 1983); the social structure was very complex, as testified by the spatial organization, which shows a through knowledge and control of the territory and its exploitation for hunting and gathering activities; the abundance of lithic tools and remains of hunted animals indicate prolonged occupation of the territory (Peretto, 1994; 1996; 1999).

The architecture of the excavation pavilion, in its extension of about 700 square metres, and its internal layout have made it possible to subdivide the various sectors: this is functional not only for the researchers working here but also for visitors, who can directly follow the work in progress. The

researchers in their professional capacity demonstrate the outcome of their work without playing down its scientific content and, at the same time, stimulate the exchange of enquiry and information.

The exceptional wealth of material to be studied and restored, lends itself to a series of enterprises which in part are already under way: for example the educational camps for excavation and cataloguing of finds, the palaeontological and palaeoethnological restoration centre, the teaching laboratory, meetings on specific topics regarding the Quaternary and human evolution, application of the most up–to–date techniques in archaeological investigation and the development of experimental projects of archaeological research with use of advanced technologies.

The management of the archaeological site, and then the cultural heritage, in terms of development and fruition, involves different sectors in a potential program, following distinct steps, which can be transferred and applied to the sphere of Arts and Culture.

The quality and scale of interventions are only possible with the support of advanced technologies which speed up the sequence of routine activities on an archaeological site, thus proceeding rapidly from excavation work to fruition and providing greater certainty as regards the conservation and skilled treatment of the original data.

The range of activities spans the preliminary investigations, the excavation of archeosurfaces, systematic explorations and the collection of materials; also the stratigraphic and planimetric definition of materials using a Cartesian reference grid and a computerized topographic station which computes automatically the reference coordinates of finds, both storing and transferring the recorded data on the portable as well as the mainframe computer (Fig. 4); in fact, a sort of computerised laboratory is always at work in the excavation pavilion area; it ensures that all the information acquired is updated daily and immediately accessible on screen to both researchers and visitors; in particular, the photographs organized in a specific data bank in Access, the excavation diary, films, section reliefs, right through to the computerized registration of excavation plans and their transfer into a record system like ArcView 3.2, useful for the creation of a Geographical Information System.

Fig. 4 – The computerized laboratory in the excavation pavilion area.

Fig. 5 – The application of advanced technologies, the scanner laser 3D, to the collection data.

The possibility of managing this data with the tridimensional model has enabled the application of an advanced technological instrument like a scanner laser 3D and specific sofware with which it has been possible to reconstruct the extension of the archeosurface in its original complexity (Fig. 5).

In the context of data management it is important to restore the materials on site (Fig. 6) and in making their permanent display possible, to restore them in the laboratory using chemical products, making thin sections and analysing the porosity of material. The washing and sifting of sediments helps to identify the finds, particularly the remains of microvertebrates. The marking, cataloguing and classification of the material is made with the aid of advanced computer programs.

These steps lead directly to a quality of excavation management in which the experimental activities become a means to reconstruct and then interpret the collection of data (Fig. 7).

The present phase of exploration of the site sees the constant presence of national and international researchers, working together to extend the explored area and bring fresh discoveries to light. Every new find, in fact, offers a further stimulus to deepen awareness of the themes underlying our cultural heritage.

The involvement of pupils and students of all ages is also of considerable educational value as it constitutes an all–round experience, through the on–site reconstruction of situations and ways of life of prehistoric humans, as well as by introductory talks. It is a way of offering them the possibility of discovering their own potential, exploring their interests and developing professionally.

The next step in the project is related to the realization of the potential of the cultural heritage represented by the site of Isernia La Pineta, using multimedia support to communicate the information.

In this context there is also a website on which is reconstructed the history of the site and the human origins with images, films and hypertextual connections.

Fig. 6 – The restoration of the faunal remains on site.

Fig. 7 – The experimental activities to reproduce the way of life of the prehistoric human groups.

In addition as an experiment a fixed Web Camera has been placed on the site through which it is possible to follow in real time what is happening on the archaeological site and the development of the research work.

This is one of the possible ways to get to know our cultural heritage, using the multimedia support to create an even greater degree of direct involvement and participation. It also represents an opportunity for young people to understand the significance of certain aspects of human evolution as well as the importance of research in achieving results which do not remain the exclusive domain of specialists in the field, but are accessible to the general public.

The project presently being carried out at the Paleolithic site of Isernia La Pineta has the aim of ensuring that the results of the scientific research are no longer seen as the prerogative of experts in the field, but that they should be made accessible to all those who are interested, or even merely curious, through straightforward language and presentation, without over–simplification of the content.

It also represents the confirmation of an increasingly felt need to render national cultural heritage the patrimony of everybody; highlighting this heritage to make it more accessible is the most appropriate way to ensure that it does not remain on the sidelines in a system where everything is competing for attention.

Hence the importance of bringing archaeology into line with the most advanced technology and of ensuring that it has an increasingly central role in the economic and entrepreneurial world.

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Alessandro NASO
Università degli Studi del Molise, IT

ANCIENT POTTERY

In this paper I will present an overview of the findings which have emerged from the application of modern methodologies to the analysis of ancient pottery and related clay products. To show the value of these analyses, I shall deal with two completely different situations: firstly the Etruscan national pottery, the fine *bucchero,* within its historical environment in 7th century BC, and secondly, the archaic trade *amphoras* from Miletus, the biggest eastern Greek city.

Etruscan *bucchero*

During the Iron Age at the beginning of the 8th century BC, the middle part of the Tyrrhenian coast, corresponding to modern–day southern Tuscany, northern and southern Latium, and northern Campania, was one of the most, if not the most, developed regions in all Italy. Fertile land, as well as natural resources, like metals, salt and timber, played an important role in fostering this growth. In particular, Etruria, the land to the north of the Tiber that marked the natural boundary with Latium Vetus, was experiencing an important moment of transition, from village to city.

Thanks to important finds, such as the 'fayence situla' carrying the name of the Egyptian pharaoh Bocchoris, and the related group of tombs from Tarquinia, we are able to date the orientalizing period in Etruria as beginning during the last quarter of the 8th century BC. This period is characterized by a greater distribution of luxury goods imported from the Eastern Mediterranean to the West via complex sea trading routes, transported by people of various languages and origins, which had a revolutionising effect on the Greek and Etruscan cultures. Etruscan cities like Vulci, Tarquinia, Caere or Veii are still in need of exploration, but small settlements, where excavated, show clearly that in the first half of the 7th century BC, that is, during the early and middle periods of orientalisation, a radical transformation of society took

place, which is discernible for example in the shift from huts with thatched roofs to houses with tile–covered roofs. The oldest tiles, dating to the middle of the 7th century BC, were probably introduced to the Italian peninsula from Sicily and they reproduced Corinthian models.

In the individual graves dating from the second quarter of the 7th century BC, the Etruscan love of luxury, called *triphé,* was satisfied through oriental imports *(keimelia)*. Carved ivories of North Syrian style, glass vases, exotic materials like Tridacna squamosa shells as well as ostrich eggs, gold jewels decorated in a granulation technique and bronze ribbed bowls were firstly imported and then produced in Etruria by oriental craftsmen and their Etruscan apprentices. The jewels encrusted with Etruscan inscriptions, like a fibula from Castelluccio di Pienza near Siena, came about as a result of the mobility of skilled workers of Near Eastern origin, who might have been responsible for the introduction to Italy not only of this new technique, but also of other forms of art. Anthropomorphic sculpture for instance had its origins in this period: the Tomb of the Statues near Caere, dated to the first quarter of the 7th century BC, has been attributed to North Syrian craftsmen.

The growth of some centres, such as Caere, was sudden and explosive: in the Banditaccia necropolis at Caere just few generations divided the Iron age *pozzo* graves from chamber tombs contained in huge tumuli, with diameters of up to 60 metres. It has been supposed that both tumuli and decorations had origins overseas, because the change in the burial arrangements did not have a transitional period and the tumuli are decorated at the top of the base with the earliest stone mouldings in the history of Italian architecture. They were probably introduced to Etruria by an architect from North Syria, the only region offering real similarities. A bronze rhyton of Assyrian style dating from the last quarter of the 8th century BC found at Veii is evidence for the spread of the oriental way of life to the West and at the same time the strong power of attraction the rich Etruscans exercised in the Mediterranean. At the moment it is not possible to reconstruct the itinerary followed to the West by the Assyrian bronze from Veii; the same is true of a similar vase from the sanctuary of Hera at Samos. These are among the few vases of this type found outside Assyria: the double find can probably support the view that they were exports. In another case, one can presume that a unique piece in the western Mediterranean was a piece of war booty. This is the bronze vase with cuneiform writing from Falerii, upon which, according to Pelio Fronzaroli, the owner, probably a Babylonian, is mentioned. Near–eastern, namely Phoenician, influence can also be discerned in the custom of covering clay and metal vases or objects in various materials with a thin gold leaf, as is docu-

mented in Etruria during the 7th century BC. In addition, individual imports probably have Phoenician origins, such as the unique piece in the so–called Egyptian blue found in Etruria, the pyxis with plastic heads from Vulci, the decoration of which blends together North–Syrian and Phoenician art elements. In this context it is interesting to mention the Phoenician bronze torch holders found in Etruria as well as in other Western Mediterranean regions such as Sardinia and southern Spain: they had been transported from Cyprus, an island showing close connections with Sardinian metal technology from the Bronze Age onwards. The Cypriot heritage, present in the cultural links between Sardinia and Etruria from the late Bronze Age, and the spread of Sardinian objects to Etruria from the 9th century onwards make clear the importance of the exchange of techniques, and in particular of metallurgical know–how.

The spreading of oriental customs, luxury goods and techniques to Etruria does not mean that we can forget or underestimate Greek influence, which is often merged with near–eastern influence, as shown for example in the adoption of the banquet. Annette Rathje has suggested that both sitting and reclining banquets, represented on Greek and Etruscan monuments, may have oriental origins. However it is difficult to understand whether or not such customs came to Italy without Greek influence. A similar example might be also the significance of the colour purple, that, according to Hartmut Blum, was originally the colour of the kings in the near east, and as such it was adopted in Greece around 700 BC. We still lack specific studies of Etruria, but the later iconography of some wall paintings, such as of the Tomb of the Auguri in Tarquinia, supports this theory even though the date is later.

Archaeological evidence shows that the Etruscans received objects for a new way of life from the near east and the mythology and the models they needed from Greece. It is possible to recognise figures of the Homeric epics in some vases from Caere dated to the first half of the 7th century BC, such as the vase from Monte Abatone with a male and female couple, painted by an Etruscan, or the krater signed by Aristonothos, that is slightly later. The *bucchero* olpe with the scene of Metaia and Taitale, the Etruscan names for the Greek Médeia and Daidalos, proves that in the late orientalizing period around 630 BC Greek mythological figures had already been accepted into Etruscan culture, in particular at Caere.

It is not by accident that such an important piece as the olpe with Metaia comes from Caere: many finds prove that this city is the birthplace of *bucchero* pottery in the early 7th century BC, probably in the first quarter. *Bucchero* derives from the local Iron age pottery, the so–called impasto nero,

which is less fine. The characteristic black colour of *bucchero* pots (on internal and external surfaces as well as inside) derives from a particular firing process with phases of oxidation alternated with phases of reduced heat: the simplest way to achieve a good result was to open and to close the kiln many times during the firing.

During the 7th century *bucchero* become very popular in all Etruria and the pieces followed the same model: for instance the kantharos, a drinking bowl with two high handles, was produced at Veio, Caere, Tarquinia, Vulci and so on, as many other vases as well. From the end of the 7th to the first half of the 6th century BC *bucchero* kantharoi become almost a national identity symbol for the Etruscans: items are scattered all over the Mediterranean coasts, from Spain to Greece and Turkey, from southern France to Carthago and Naukratis in North Africa. This breadth of distribution is largely due to Greek merchants bringing home the gifts they received in Etruria: some vases from Greek sanctuaries were donated by Greeks (dia). But we have also to include other possibilities of exchange, as for example the Etruscan *bucchero* kantharos found in central Europe, actually in Poland.

The vases produced in different centres are so similar, that to localize the various places of production, we need to examine the geological characteristics of each district and then analyze many samples of pottery from that district. In research carried out in collaboration with Klaus Burkhardt of the University of Munich we analyzed approximately 400 samples of various *bucchero* vessels from many cities (Chiusi, Orvieto, Vulci, Tarquinia, Caere, Veio and Rome) and from rural settlements (Allumiere, Tolfa and Ceri, all three in the territory of Caere). Three kinds of analysis were carried out: thin sections to determine the petrographical aspects, X–Ray Spectrometry and X–Ray Diffraction for the geochemical composition. The samples were chosen because they belonged to very common vases, like kantharoi; also the chronology of the samples was important, in order to determine change over a long period. After this research we are able to say that not only major cities, but also small areas produced fine pottery of their own, at least from the second half of the 7th century BC.

Bucchero pots were made from various different raw materials, which changed depending on the location and the time of their use. The three main groups of materials were volcanic weathered clays, transposed clays in which there were pyroclasites and carbonates, and pure marine clays. It can be said that generally pure marine clays were characteristic of more recent ceramics. At Caere the volcanic weathered clays occurred in the older samples, dated to the second half of the 7th century BC, but in this group it is diffi-

cult to identify the raw materials. On the contrary the raw materials used for the pure marine clay pottery were clearly identifiable; in the marine clays it is common to find layers of see–hedgehogs and sea–microorganisms, like phoraminiphera of many kinds. From an archaeological and geochemical point of view it is highly interesting to examine a group of tombs from Caere found in the so–called tomba dei Denti di Lupo, dating to the end of the 7th century BC. 24 of 32 *bucchero* vases from this group were analyzed. 17 vases belong to the main group of volcanic weathered clay, the commonest clay used at Caere in the second half of the 7th century BC. More interesting are the other 7 vases: 5 samples belong to the group of marine clay, and 2 are special forms without comparators. A two–handled bowl of the second group does not compare closely with vases from Caere, but rather with a vase from Tarquinia, having a similar pattern of decoration. So it is possible that this simple bowl found in a grave at Caere was really made at Tarquinia and was brought to Caere through trading or personal connections. This very hypothesis demonstrates that even where we are talking about a simple common vase we can put together archaeological and geochemical evidence to draw conclusions. This opens up new avenues for further research.

Trade amphoras from Miletus

It is now time to turn to Asia Minor and in particular to Miletus, once the most powerful colonizing city of Greece, founded on ninety settlements in northern Greece and the Black Sea, which played a leading role in the developing the settlement at Naukratis granted to the Greeks by the Egyptian pharaoh. Miletus has a significant Aegean prehistory, figuring in Hittite texts as Millawanda, which provided a home to renegade rulers and formed inconstant alliances with the central Anatolian powers. In terms of archaeology, recent years have enriched its Aegean connections with evidence of a vivid Minoan occupation, and a Mycenaean one. More than any other city in western Asia Minor, many of which retained a strong Anatolian flavour in the second millennium, Miletus was as Aegean in its material culture as many cities in the Cyclades or the Dodecanese.

New field research by archaeologists of the University of Bochum at Miletus has mapped out in full the religious landscape of the area. Its leading city sanctuary of Athena crowned the acropolis, with others to Artemis (on Kalabaktepe) and Apollo Delphinios, an extra–urban shrine to Aphrodite (on Zeytintepe), and international oracular shrine of Apollo at Didyma

(Branchidae), linked to the city by the Sacred Way. The finds from the Athena sanctuary illustrate a set of oriental imports which mirror those of Samos closely. At least eleven griffin–cauldrons (7th–6th c.) have been identified from these excavations, making it the third leading site of these orientalizing objects (after Samos and Olympia).

All these objects were buried in the debris of the destruction of Miletus by the Persians in 494 BC. The Persian destruction also buried Egyptian bronzes and near–eastern objects as old as the 9th century BC.

While these sanctuaries may have seen more urban traffic, it was the oracle of Apollo at Didyma that attracted international fame and wealth. By the time of the Ionian revolt, Hecataeus of Miletus could propose melting down its riches to finance a navy against the Persians (Herodotus V.36).

The archaeological records mirror these activities, as the archaic trade amphoras from the acropolis at Kalabaktepe reveal particularly. I could show a sample of about 370 trade amphoras, coming from many different cities or countries of Eastern Greece, but found in recent excavations and dating from the archaic period, before the Persian destruction. To understand the value of these finds, we can compare ancient amphoras to modern packaging: the outers show where they come from. But there is an important difference from modern labelled packaging: in archaic Greek society only a few people were able to read and write. Also for the Greeks it was necessary to find an alternative to a label to enable someone to identify a sought–after wine on a ship or in a harbour. Then the Greeks thought to develop the shapes of their clay containers: each Greek city adopted a particular amphora form to trade their own agricultural products, generally olive oil and wine. At Miletus the imported amphoras were almost all wine containers, because they came from famous wine areas, like Samos or Lesbos; at the same time Miletus and its territory are mentioned in ancient papyrus documents for their olive oil production.

In the excavations at Miletus were found more than 5000 amphora sherds, that are mostly Milesian. So the locally made amphoras constitute more than 90% of the total number of amphoras (5000 Milesian and 370 imported). Just from this simple evidence we are able to say that in that archaic period Miletus was importing just a few products (probably selected wines) and that the city was living off the products of the land.

According to the stratigraphic sequence, we are able to distinguish the early types of Milesian amphoras, dating to the early 7th century BC, not documented in the Milesian colonies of the Black Sea: these enabled Pierre Dupont to identify the typologies of the Milesian trade amphoras. These early finds from Kalabaktepe consist mostly of rims or in few cases of neck sherds;

they are morphologically quite similar to Dupont's oldest types. Thanks to the stratigraphical sequence of Kalabaktepe we are able to prove that the Milesian potters created the shape of their trade amphoras with their characteristic band–lips in the early 7th century BC. These early types are well–fired and extremely hard; the rim often has a peculiar form, almost oval, due to the quick and careless application of the handles, a characteristic peculiar to the trade amphoras in Miletos. The amphora with band–lips become quite popular in the period corresponding to phases 3–5: from this main type derived other models, with different heights of band and probably of the entire vase. An innovation was introduced to the Milesian trade amphoras in the 6th century BC: an offset fold was placed at the junction of neck and shoulder. I am quite dubious about the significance of this element; Dupont attributed to the new element a functional purpose, i.e. the prevention of trickling of oil (the most probable contents of the Milesian amphoras).

According to Dupont, chemical and petrographical analysis are the best ways to establish the origin of trade amphoras and other vases as well, and in accordance with the views of the director of the Miletus excavation, Prof. Volkmar v. Graeve, in 1999, 2000 and 2002 we selected more than 50 samples of trade amphoras for the analysis carried out at the laboratories of the Bergbau Museum (Bochum), to prove the likely Milesian origin of this type and to distinguish it from similar Samian models. If our hypothesis is right, we will be able to identify some new workshops of Milesian trade amphoras, like that responsible for the introduction of a new type of rim, shaped like an enlarged almond–lip instead the usual band–lip, not documented in Dupont's typology. Unfortunately at the moment we are still waiting for the results of these analyses, that should prove that the origins are Milesian .

Conclusions

In this paper I aimed to underline the value of petrographical and geochemical analysis in the study of ancient pottery, both in the case of fine ones, like the Etruscan *bucchero*, and coarse ones, like Milesian trade amphoras. Only cooperation between specialists in archaeology and archaeometry can overcome the limitations faced by a single researcher and reveal new perspectives.

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Augusto PIERONI
Università di Roma "La Sapienza" / Università della Tuscia, Viterbo, IT

CONTRASTING COMPETENCIES: BRIDGING THE GAP BETWEEN STUDENTS OF CONCEPTUAL AND TECHNIQUE–BASED VISUAL ARTS

1. Introduction

Teaching visual culture is a central and rewarding aspect of teaching art. The idea of visual culture may seem an extremely abstract notion, meaningless outside the context of education. Education itself is about the acquisition of different kinds of knowledge: in this case, visual knowledge. And yet we have to ask ourselves, is there any such thing as visual knowledge? Is there any such thing as an undisputable, constant, unique and all–inclusive notion of visual knowledge? One that is not self–contradictory, and that would not turn out to be radically different once seen and owned by different groups with different cultural, professional and academic orientations?

The implicit negative response stems from my experience as a visual arts teacher in institutions as diverse as universities and professional schools. In my case the view on visual arts has been formed on the one hand within the Art History departments of the University of Rome and Viterbo, and, on the other hand, within a professional school of photography: the Scuola Romana di Fotografia.

Stepping aside from the approach taken in Pieroni (2004), I would like to try and assess the different patterns which one can discern in visual arts teaching and learning, at least within my own professional sphere. In spite of the apparently homogenous field of study, in fact, a closer look at these patterns does show how different and indeed opposite they seem to be, and at the same time indicates possible ways of bringing them together and bridging the deep gap that divides them. The merging of opposite competencies has to be seen as a genuine example of the communication of culture, which is also the theme of this meeting.

2. Visual arts students: present and future

There is a particular range of careers available to university art history students, although they are not usually associated with more business–oriented types of work. Most students tend to pursue this line of study with a view primarily to a career as an art historian, although they do not know whether this will be within the university itself or in some branch of the Culture Ministry. Most of these students will also explore other lines of work at the same time, such as art criticism, curatorship and journalism. All of these require analytical skills, acumen in public relations and a flair for writing.

Students attending a school of photography, on the other hand, immediately have better defined working opportunities. Before making a choice, in fact, they usually have to spend some time working as assistants to experienced professional photographers. Given that working as technical operator is very time–consuming, it is very rare that these students find the time to do any thing else concurrently. A few of them might attend a university course in a dilatory fashion. Eventually these photographers will get into a professional role as reporters or into advertising as creators of images, photo editors or art directors. But some of them – not so few, I might add – try to follow an artistic career; for them professional work is a way of supporting their non–profitmaking artistic activities.

To help us in our discussion I will make the distinction (albeit roughly) between art–historians and photographers so that we can isolate and understand some of the deep internal differences between the two groups.

2.1. General fields of interest

Art historians read a lot and feel committed to visual culture in many ways. Their expertise and fields of interest include, of course, the visual arts – and this might mean sculpture and architecture rather than cinema history and industrial design – but also contemporary history, politics, sociology, philosophy and so on.

Photographers, on the other hand, are very aware of state–of–the–art photographic techniques, including both hardware and software. Most of them are also deeply interested in such fields as advertising and art. Images are, however, much more relevant to them than texts: their primary drive is to absorb styles and visual layouts from contemporary masters, rather than to share their philosophical concerns. There will of course be some who will engage also with more theoretical issues.

Both groups share with other young men and women of the same age (between 20 and 30 years old) a wide range of sometimes quite well developed interests such as, for instance, in contemporary music, cinema, dance and theatre.

2.2. Educational patterns

The biggest differences appear once we examine the educational patterns involving these two groups. Art historians in fact study for between 3 and 5 years, depending on whether they have chosen the short curriculum (3 years) or the full one (3+2 years), without taking account of MAs or further study. Their development is therefore gradual and their curriculum is coherently layered according to the structure provided by the university they attend. They go through many different exams related to specific fields, sometimes passing them in a particular sequence so as to respect the logic of the curriculum. Such exams are mostly based on the typical interview format, often reinforced by written tests. Image recognition is the most frequent method for assessing the concepts students have retained, while context recognition enables us to assess their competencies.

Photographers on the other hand follow a course for a minimum of one year only, and for the advanced Masters courses, up to a maximum of 3 years. In such a short time technical and personal development has to proceed in parallel, structured within a coherent curriculum. The exams are mostly of the technical kind and their number is considerably less. The assignment format prevails and the assessment of the students' abilities is based on practical accomplishments. The carefully monitored development of personal views, language and style, provides a type of continuous assessment of competency.

3. Educational aims

Among the many educational aims given to art historians there is not only that of acquiring knowledge, but also the ability to judge: extremely important in art criticism and art journalism. The ability to network and to organize are also vital to future art curators, enabling them to build up and manage exhibitions and communications.

The main aims of photography trainees are on the other hand concerned with the ability to express themselves –in other words the ability to find their own inner self and give expression to it in their own voice – and the

set of technical abilities required to achieve this. In the interplay with a potential client, also, they need technical control, flexibility and a certain knack for public relations.

2.4. Educational environments

In a utopian attempt to complete a survey on different visual arts students, I would include the environments where the two groups are most likely to spend their time while in education. Art historians are easily found working at home and in libraries, because of their need to read books about the issues on which they are focused. Also, given the urge to acquire first–hand knowledge of actual works of art, they spend a fair amount of time in museums and galleries.

The technical focus of photographic work, however, compels photographers to spend most of their time in studios and dark rooms, where they can see more experienced photographers at work and compare their own work with that of other students. Naturally these students have to appear regularly in class, even if sometimes the class is a street where they need to practice reportage.

2.5. Differences of focus

One way of looking at it would be to say that university art historians – with their bias to trying to understand things (when not just learning them by heart) –are more conceptual students, whereas photographers, who accord undisputed priority to the creation of things (including the processes involved in their manufacture) could be said to be practice–based, or technique–based, as reflected in the title of this paper.

3. A revealing assignment

I have been giving an assignment to all kinds of students for more than three years now. It has proved useful in assessing the differences between the two groups. It is actually the responses of the different groups to this assignment that have made me curious, and started the analytical process of which this paper is but one phase.

The assignment is as follows: "Choose an ordinary subject and visualize it four times, according to a given set of adjectives". The subject has to be chosen at will among places, people, objects, and never changed or altered

throughout the making of the four images. The visualizations have to be made with any kind of camera or photographic means available, provided that the image is straight forward and not technically overworked or, worse, cut and pasted. The four sets of four adjectives are as follows:

1: joyful / expert / sophisticated / typical
2: plain / speculative / necessary / outrageous
3: popular / serious / easy / different
4: official / engaged / alternative / cruel.

The matching of images and words is not just the result of putting an object into a "joyful" or "serious" situation: it is rather the sum of all the variables used in visualizing the subject; namely: angle and distance, lighting and framing, colour coding, the grain and other significant elements.

3.1. Some results

This is where the results become interesting; during the parallel session, the public were asked to guess whether the author was an art historian or a photographer...

1. A paperknife, by Giulio Gaudiano (2nd year History of Photographic Arts)

Official / Engaged / Alternative / Cruel

2. Feet, by Emanuela Bontempi (3rd year Master in Photography).




Joyful / Expert / Sophisticated / Typicala

3. A door, by Raffaella Gentile (3rd year Master in Photography).




Plain / Speculative / Necessary / Outrageous

4. A sort of third party

It seems that a difference between the two groups really does exist, although they appear to be the two halves of the same sky; they seem to see entirely different things even though confronted with the very same objects. How could we reduce the gap between them, what kind of bridge could we provide? And yet some precious food for thought has been given to me by another group of students of mine, a group who are different again but could provide a link between the other two. Halfway between art historians and photographers, there are industrial design students. The course is provided by the faculty of Architecture at the University of Rome "La Sapienza", as is that provided for the art historians.

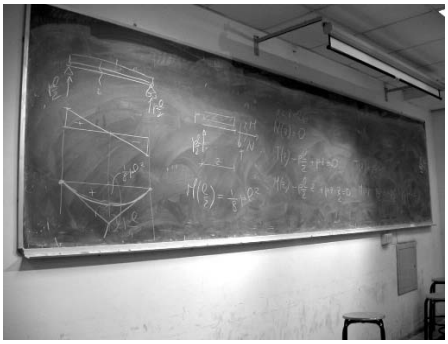
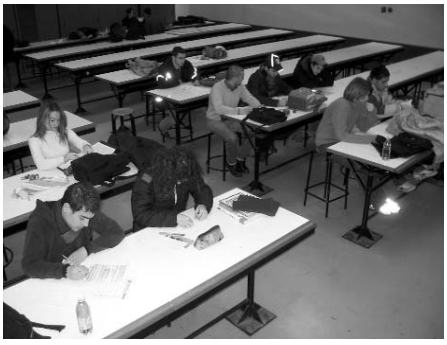
These students usually are the future designers of objects, graphic designers, web designers, display designers: they learn how to conceive and shape tools, objects, communications, displays and so on. They are therefore project– and concept–oriented. They are focused on materials and technologies and, beyond being taught the basics of technical photography, some of them are also amateur photographers. Many of them are also enthusiastic web surfers.

Like art historians they react fairly well to conceptual frameworks and feel at ease with semantics; like them, their work can sometimes be cross–disciplinary. Unlike art historians they can be asked for an effective visual presentation of their work, and sometimes things can be actually done in "real time". Like photographers, though, they do not read much and are particularly allergic to merely theoretical points, or to the cerebral overworking of a concept. Again very much like photographers, they are concerned with format: for them purpose and relevance come first; both designers and photographers might need a brief as a starting point to their activity. Unlike photographers, though, designers do not feel obsessed by technical photographic concerns and paradoxically they are quite accustomed to average (photo)graphic treatments. Of course that is also their final stage of achievement, while in the long run photographers might go further. But there is also another missing link with photographers: designers think it easier to be original; whether they are right or wrong depends on the sophistication of the client.

4.1. Some group work

Here is some group work undertaken by a small number of Industrial design students on a strike day, with two digital cameras that happened to have been brought along by a couple of students.

Our *Classroom,* by Industrial design students under the guidance of their professor.


Plain / Speculative / Necessary / Outrageous

5. My ideal?

What is the best way to resolve this dilemma, given that there is no obvious answer to a question that we ask, simply to encourage students to react creatively within a conceptual framework? Here is an example of best practice to show the results that could be achieved by a student whose stimuli lacked neither ideas nor technical ability.

A girl's picture, by Alberta Aureli (2nd year History of Photographic Arts).

Popular / Serious / Easy / Different (b/w)

Let us briefly examine what is special about this work. This student understands photography as a complex but context–specific operation, and at the same time presents a coherence in her subject–matter. She makes every effort to speak all the different "dialects" available, both in terms of construction of the image, and of material output. The student handles subtly but clearly many variables of visualization: cameras, location, framing, pose, light, colour, grain, size etc. She effectively controls the way technical shortcomings (i.e.: inkjet smearings or a cheap binder) can also become *signifiers*.

6. Building bridges

Let me quote from Mr Bean's clumsy yet perspicacious description of a painting, for a second. "What have I learnt from" all these exercises? I know, more or less exactly, what it takes for the different kinds of visual arts students to acquire their competencies, in a way which should help to fill the gap that divides each group from the others. So I will now try and construct three different agendas, one for each of the groups examined.

For art historians

- Being involved in the making of things. Strategies to involve them in the making and re–working of visual texts, or even a process of re–constructing after de–constructing topics, issues or texts.
- Exchanging experiences among themselves. A stronger attitude toward peer–group teaching, revising and learning might improve their belief in the reality of the concepts they acquire.
- Being concerned more with purposefulness, that is: responding to briefs. This would allow them to feel – once again – that someone/something requires their skills and for specific reasons that cannot be mistaken for some amateurish self–reward.
- Experiencing the disappointment of a disproportionate amount of development time leading to an uninteresting result. That is the downfall of all the conceptual students who, focusing on content and following the path of someone else's ideas, simply dodge the issue of real communication: the sharing of their own ideas (normally this also means that they do not take themselves too seriously as influencing understanding and modifying reality, while those who do often overreact!).

For photographers

- Being involved in the concepts behind the actions. It is a central concern of experienced teachers that young artists and practitioners should move slowly away from mere technical performance: thinking technically, without thinking about technique. Historical knowledge and analytical skills help a lot in this.
- Going through an analytical (and self–analytical) process. The active and willing detachment of oneself from slavishly following traditional paths, in order to come to a closer encounter with one's real self. And although the questions one has to ask oneself as part of this process are mostly uncomfortable, nothing other than that human encounter – whether it is cerebral or entirely visceral – makes the work of one man/woman the heritage of humanity.
- Being involved with the way images fit within the required context. The life of a work does not end once its author has responded to a brief and made some kind of technical effort. That is when life actually starts! And it is a privilege of the author him/herself to shape his/her work so to better fulfil its purpose. Context analysis and sociological approaches might help.
- Experiencing the danger of high–profile outputs which do not reflect a similar high profile level of meaning This is the opposite of what happens to historians: in this case the emphasis is on the perfect, flawless produc-

tion of the image, or a pertinent expression of the true Self , which might produce something superficially very impressive but behind which sits undisciplined or even meaningless emotion. The work might, so to speak, talk in its sleep.

For designers

- Being involved in the multi–layering of implications. The uncomplicated straightforwardness of industrial design is very different from the more suggestive, open–ended meanings of works of art. Photography and its dual function (productive/creative) might be helpful in focusing on the symbolic aspects.
- Exploring multiculturalism. Once again: in spite of any global marketplace, industrial design is still fairly culturally specific. Experiences in handling "foreign briefs" would certainly help.
- Being concerned with accuracy and subtlety. Designers and photographers share the same concern for technical issues, yet the first somehow lack the craftsmanship and the aesthetic training of the latter. Concept–based art history and style–based context analysis might help to develop both the inner and the outer vision.
- Experiencing the contrast that can exist between a project in its ideal form and the debasements that can take place as the ideal becomes a reality which is 'consumed' (for example, translation/corruption). Designers are very likely to combine the historical and practical awareness of the other two groups, but to lack a clear comprehension of the importance of social translation in the actual life of objects and images (both aesthetic and practical). The use of an object does not just involve its functional side: it is the way it is interpreted, translated, even misread by all sorts of users.

7. So, how could this proposal be useful?

This paper could be useful to visual arts teachers who might structure their courses according to this field–map in order to dismantle and move existing boundaries. More simply, some teacher might rework the assignment and impart it to his/her students. Teachers in other fields might find some similarities between their students and one or another of the categories I have described, verifying or correcting my analysis. In this case it would be very interesting to create a formal support and exchange network, currently unavailable within the visual arts. This analysis is an attempt to bridge cultural gaps: which might also mean that similar attitudes – if not similar meth-

ods – could and should be useful transnationally. To many others this might simply be a survey of the challenges facing the visual arts, expressed in terms of the communication of cultures. As for me, I still hope to find some e–learning platform or partner focused on trans–disciplinary teaching of the visual arts. It should not be very difficult, I guess.

References

It is hard to suggest further reading in a little researched field which is attractive just because – as far as I know – it has not been thoroughly developed or systematically examined. Nonetheless, there are several books which have helped me to develop and satisfy some of my curiosity. I here acknowledge their importance and quote just a few of them.

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Finally, many elements – in terms of practice and method – derived from the experience of teaching photographic arts have been gathered in the book:
Pieroni, A. (2003) *Leggere la fotografia,* Roma: EdUP.

See also:
Pieroni,A. (2004) "Shifting landmarks": Italian paradigms in urban landscape photography. In Karpinnen,S. (ed). *Neothemi: Cultural Heritage and ICT; Theory and Practice*. Helsinki: University of Helsinki.

Contacts

www.fototensioni.net
augusto.pieroni@uniroma1.it

Heikki RUISMÄKI, Tarja TERESKA
University of Helsinki, FI

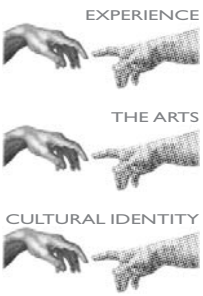
EARLY CHILDHOOD MUSICAL EXPERIENCES

Abstract

This article studies the early childhood musical experiences of Finnish pre–service elementary teachers (N=590) on both a theoretical level (in terms of the analysis of literature) and an empirical level. Research material was gathered by means of a questionnaire. The empirical research results are based on the material gathered in connection with the dissertation of Tarja Tereska (2003). Supporting it all we can see research about the significance of music in the early stages of a child's life, the development of children's singing abilities and the meaning of singing from an ethno–musical point of view.

Sports were the most popular hobby in childhood homes. Art and crafts were the most appreciated art form; music was the second most appreciated art form, a little higher up the list than literature. The results indicated that mothers sang to their children in many more cases than the fathers. Fathers however participated more often in interests which relied on playing rather than on singing with their children. The families of student teachers had however taken a positive view of their children's music listening and/or singing.

The research results proved the importance of musical experiences in early childhood, because even at an adult age there is still a significant correlation between the individual's musical prowess and his or her early experience of music. At the same time all this is closely related to the total personality and feeling of self esteem. On the basis of the research results these are the main principles that help the development of a positive self–projection in music and arouse the love of music in childhood.



Aim of the study

The specific problems are:

1) What has a child's musical development been? (according to research, at a theoretical level).

2) What kind of musical environment do people (especially student teachers in Finland) have in their childhood? The environment is observed in relation to the availability of stimuli in the environment and musical experiences (empirical level)

Research data about musical experiences in early childhood and the availability of musical stimuli in the environment were gathered with the aid of a questionnaire. The questions posed concerned singing, playing and listening to music in early childhood, as well as the interests and appreciation of the arts found within the home.

The research sample (N=660) comprised all second year pre–service elementary teachers enrolled in 10 Finnish teacher education institutes. It was a complete research study providing very robust results. The students were aged 20–25 years. Their aim was to graduate with a Masters Degree in Education, which would qualify them to be class teachers. 590 questionnaires were returned representing 88.6% of the sample, an extremely high figure. There were 222 men and 368 women in the student group.

The data collected via the questionnaire included both quantitative and qualitative information. The qualitative information was gathered through semi–structured questions. The evaluation of the quantitative questions was made using the 5–step Likert scale.

The significance of music in the early stages of a child's life

A child's musical experiences begin at a rather early age. According to many research studies the human hearing mechanism is functional even three to four months before birth. At the age of approximately six to seven months the foetus reacts to external sounds, which we know because clear changes in the frequency of the heart beat can be registered. Regular exposure of the foetus to certain sound stimuli develops sensitivity to and preference for these sounds. This becomes evident after birth. Typical sound stimuli include, for instance, the mother's speech, and repeated songs and tunes (Lecanuet 2000, 24–25).

It has been shown (Hodges 2004) that early musical experiences leave their imprint on the adult brain. There are growing indications that those who study music, particularly those who start at an early age, show neurological differences of the brain compared to those who have not had much training. Adult musicians have stronger and faster brain responses to musical tasks

(Faita and Besson,1994) and certain parts of their brains, related to the processing of music, are larger or more responsive.

Many research studies strongly suggest that early musical experiences imprint themselves on the brain as do all learning experiences that have the potential for changing brain organization. Whether or not these changes have implications for other domains of learning continues to be investigated. But it is certain that early musical experiences involving active participation allow for enhanced musical experiences later in life. (Hodges 2004.)

During the first year of life the child expands his/her perspectives on life and the surrounding world, where movement, rhythm and the musical intonation of speech are very significant. The young baby's ability to learn language is extremely refined (Björkvold 1991, 28). According to the Suzuki Voice Program method, teaching can be started in the fifth month of pregnancy (Kukkamäki, 2003). According to Näätänen's brain research (2003) only two hours sleep learning develops a baby's ability to differentiate between, for example, Finnish and Estonian vowels.

The development of children's singing abilities

The development of young children's singing ability happens as a part of enculturation without a conscious struggle to improve musical skills or to memorize songs. To a certain extent the development of skills is happening all the time throughout childhood (Sloboda 1994, 200, 215). Generally, the developmental process proceeds from the babbling songs of children under the age of two years, to simple songs. This period lasts for about three years (Hargreaves 2000, 156). It is precisely during this phase that most creativity in singing is found. It appears in children's spontaneous songs of different types, such as imitations of learned songs, variations, fragments and improvised parts. At their longest they form potpourris or especially imaginative songs of four–year–old children. (Moog 1976, 114–117; Fredrikson 1994, 50, 53–60; Sundin 1979, 116–117; Sloboda 1994, 209)

Usually children sing their first draft songs between the ages of 5 and 8. The abilities to produce accurate intervals, to analyse and keep in tune develop up to the age of 15 (Hargreaves 2000, 156; Sloboda 1994, 209–215). A small child's development in language is supported by music and especially songs. Songs increase vocabulary and also positively influence the early stages of learning to read (Nurmilaakso 2004; Edward & Willis 2000). The level of singing skill varies significantly among children of the same age, as shown by

Kelley and Sutton–Smith (1987) who have analysed the effect of environment. They compared the development of the musical skills of three girls, each the first born–daughters in their families, in musically very different home environments. The researchers observed the effect of home environment stimuli on the speed of musical development. Some children may begin to sing at about 9 months where others will not begin until the age of 2. They also conclude that the most important factor in providing musical stimuli is parents singing with their children. The researchers also noted the possible effect of heredity together with various other environmental factors. (Kelley & Sutton–Smith 1987, 35–53, Papousek 2000, 196–107).

The earliest manifestation of a special musical talent is when a child sings his/her first songs at a younger age than might be expected. In their research Howe et al. (1995, 162–172) observed that the most advanced students in a special musical school sang approximately 6 months earlier than the control groups. The age at which singing starts and the amount of musical stimulus given by parents had a statistically positive correlation. But possibly the most important factor is parents singing with their children.

From the therapeutic point of view a song can work as a transitional object for a young child whose ability to use symbols has already developed. When the mother is away, the child feels secure when singing for example the same lullaby as his/her mother did (Kurkela 1994, 459–460). Lehtonen has pointed out that the theory of transitional phenomena, developed in the 1960s by Winnicott, has in many cases been used to explain the emotional impact of music, particularly because of ability to provide entertainment or to diminish feelings of loneliness and anxiety. Lehtonen (1996, 28, 75–76, 83) also sees music as a kind of "meta language" which can be used to process psychological or physical aspects of emotion. There can, for example, be stages of deprivation in childhood or suffering in adulthood which can be better withstood with the help of music.

Early negative criticism about musical achievement as a child may have led many people to abandon their singing or playing (Sundin 1989, 160; Ruismäki 1996, 404–405). Obviously self–esteem in the field of music can be easily damaged through unconscious tensions in early childhood and the fear of authority. This makes the individual interpret the criticism of a teacher or parent as highly negative, even as a punishment. Lehtonen (1996, 20) remarks it is also possible to deeply hurt a person who performs or talks about music. In such cases the person may entirely deny music and its emotional meaning for him/herself. Music educators in particular should be aware that considerable sensitivity is required in dealing with human relationships, in their daily work.

The meaning of singing from an ethno–musical point of view

In communities where culture is based on oral traditions, music plays a much more significant role than in most Western cultures. Among the Saami people in the Northern part of Scandinavia and among Australian Aborigines, for example, occult powers can be linked to music. In such communities music has usually been a part of everyday life from birth until death.

According to Catherine J. Ellis (1989) Australian Aborigines have their own song for a difficult birth, which requires both male and female singers. The children's singing repertoire includes both songs produced spontaneously by themselves and easier adult songs. The children participate in the performances of open songs with their families. The psychological aspects of mythic texts, as well as their secret and spiritual content are revealed to the singers at a later age (Ellis 1989, 52–56).

In her dissertation about the Northern Saami joik tradition , Järvinen (1999) discusses the strong communal meaning of singing or joik chants. A joik can be connected to almost every life situation, from cradle songs to daily household chores. Every member of the Saami community has his/her joik, which bears his/her identity and whose performance is allowed only to the other members of the community (Järvinen 1999, 72–80, 139–141).

The child receives his/her first own joik from his/her parents or relatives and begins joik chanting at 3–4 years old. The child is told the background to the chant and advice is given on performance. The children's instruction in joik chanting takes place as a process of musical education within a domestic circle (Järvinen 1999, 82–83, 126–129).

Finnish folk poetry singing has been an essential element of the Kalevala tradition as the poems were orally transmitted from one generation to the next. If we literally interpret the first poem of Kalevala, it becomes evident that the fathers sang when at work, but the mothers also taught their children to sing, when they were busy in the house.

Results

Interests and art appreciation in the home

Table 1 shows that sports were the most popular hobby in childhood homes. Gardening and tourism were more common than the arts. Interest in the sciences occurred least of all.

Interests	M	s
Sports	3,43	1,26
Gardening	3,14	1,28
Tourism	2,89	1,11
Arts	2,62	1,24
Raising the standard of living	2,37	1,02
Sciences	1,77	0,96

Table 1. The most common interests found within student teachers' childhood homes (N= 590)

The results concerning interest in different art forms are shown separately in Table 2.

Art form	M	s
Art and crafts	3,68	1,06
Music	3,53	1,14
Literature	3,40	1,18
Physical education	3,24	1,22
Visual arts	2,92	1,18

Table 2. The appreciation of art forms in childhood homes (N=590)

Art and crafts was the most appreciated art form in childhood homes. In statistics covering the whole of Finland handicraft is the most common creative cultural hobby (Arjen kulttuuria 1993, 7). Music was the second most appreciated art form, a little above literature.

Experiences of singing

To help us collect data on music stimuli experienced in childhood, student teachers were asked how often they were sung to in childhood, and who these singers were been. Of the homes which participated in the research 17 percent had given very much and 20 percent much vocal stimuli to their children. On the other hand, 3 percent of homes had never sung and in 20 percent of homes singing had been rather rare. According to earlier studies (e.g. Kelley & Sutton– Smith 1987) scarcity of singing can lead to insecurity in the child's later music achievements. Precisely these pupils should receive tactful instruction from their teachers.

Singer	**f**	%
Both of the parents	179	30
Mother	279	47
Father	58	10
Neither of them	72	12
Total	588	100

Table 3. Parents singing with student teachers in their childhood homes (N = 590)

The results indicated (Table 3) that the mothers sang to their children in clearly more cases than the fathers. Both of the parents had sung in a third of the cases to the students in childhood. Most of the respondents had usually enjoyed singing (4.00, s=1.03).

Of the respondents 66 percent (N=590) remembered their childhood songs by name. A half of the mentioned songs were well known children's songs. The rest of the songs consisted of light music, songs and pop/rock music as well as classical music. Usually these songs were hits of past decades, which the parents and grandparents had learned in their time.

Investigations of songs invented by themselves were designed to assess the amount of possible creative activity among student teachers. The ages during which songs might be invented were not directly investigated. We know that 3–5–year–old children generally composed potpourri or imaginative songs. They often cannot remember these themselves but it is reasonably sure that they were later told about them by their parents. More than a half the student teachers said that they had invented songs.

Playing stimuli

The findings about parents' playing interests proved that it was fairly rare for both of the parents to play at home with their children. (Table 4). Fathers participated distinctly more often in playing compared to singing with their children (see Table 4). This research conforms to earlier Finnish research (Jokinen 1998, 473–478).

Player	**f**	**%**
Both of the parents	29	5
Father	114	19
Mother	72	12
Neither of them	375	64
Total	590	100

Table 4. The number of parents that played with their children in childhood homes (N=590)

The research showed also that fathers played a greater variety of musical instruments than mothers, who mostly concentrated only on the piano or harmonium. Fathers often played guitars, mandolins, mouth–organs and accordions, as well as violins and the piano. Children think that their fathers can play "almost anything" or "every instrument".

Music listening stimuli

The results proved (Table 5) that in student teachers' childhood homes music was often listened to on the radio (M=3.9). Although music listening has been considered one of our most widespread pastimes, Seppänen (1993, 88) remarks, however, that some caution needs to be exercised, as music is primarily used as background rather than attentively listened to (Arjen kulttuuria 1993, 88).

The families of student teachers had taken a positive view of their children's music listening and/or singing. Over a half of them (57%) were allowed to practise their sound–producing musical activities without any restrictions. There were, however, exceptions to this tolerant environment. Of the respondents 5 percent reported that their family members often only allowed limited music practice. According to Jokinen's research (1998, 492) the reason for restricting listening to music on the radio was the different musical tastes within the family.

Responses also revealed that 92 percent of students were able to play records or cassettes at home. 66 percent of the respondents remembered by name the records or types of music that they had listened to. The titles remembered can broadly be divided into five groups (Table).

The type of music	**f**	**s**
Entertaining, popular, and traditional dance music	189	30
Rock music	108	17
Pop music	98	16
Classical music	61	10
Children's music	165	27
Total mentions	621	100

Table 5. The type of records or cassettes listened to in childhood homes (N=390)

Entertaining and rock/pop music was listened to more than children's music or classical compositions.

Discussion

This study emphasises the importance of early childhood in musical development, and raises the question as to whether musically speaking it is actually the most important period in an individual's life. It takes many years to develop into a professional (music) teacher, and our study suggests that the foundation is created in the childhood home. On the basis of our research results the main principles that help the development of a positive involvement of the self in music and arouse the love of music in childhood are:

Positive encouragement of the child's musical interests from an early age

- Sing to your child
- Discover the song's atmosphere and let the song create a sense of security
- Let the child find surrounding sounds, review them and find the meaning of silence
- Let the child invent his/her own songs and express music through movement
- Play to your child
- Give the child the opportunity to study the instrument that he/she wants
- Allow the child to find his own music

- Let the child listen to different kinds of music and learn to understand it
- Let the singing, playing and making of music create experiences and bring memories
- Let the child experience the joy and delight of making music
- Let the music connect children to their parents and to each other
- Let the music connect nations and cultures with each other

These principles can be considered a charter that helps protect and develop a child's musical education.

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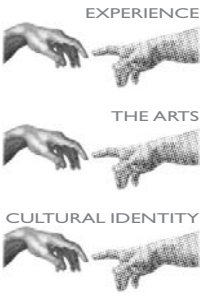
Roberto SACCHETTI
Liceo Principessa Elena, Campobasso, IT

THEATRE AND EDUCATION: TECHNIQUE AS TECHNOLOGY FOR REAL COMMUNICATING CULTURES



Technology is a way to convey culture. If no strong contents are to be conveyed or if those contents are not shared, technology is but 'cool communication of nothing', no matter how impressive and showy its product is. That being stated, and according to the experiences we will tell you about briefly, we suggest a technique, theatre, and a method, communication, both effective to spread and share cultural contents throughout Europe.

In this paper the Language School "Principessa Elena" of Campobasso reports on two Comenius experiences of cultural exchange with schools in Andalusia, based on theatrical activities: The theatre in the classroom (2002) and Women in the European Tradition (2004). In both cases, Italian and Spanish students worked together on an original text in Italian, Spanish, English and French and they performed it during the two visits, in Spain and in Italy.

The 2002 performance Molise Gitano portrays a historical and social comparison between the two countries based on the Journey in Contado of Molise of the illuminist Giuseppe Maria Galanti. The performers added to the scene literature, art, songs, and dances from Molise and Andalusia. The collage was kept together by a simulation of a multimedia lesson by a teacher.

The 2004 text was articulated in two versions: the first Arianna and the Maze, performed during the visit to Andalusia, the second Domina (Stories from "Le mille e una notte") in Molise. From different traditions, both literary and historical, and from documents of real life, including also among minorities, we drew a comparison among the images of women in Europe, in the frame of a dialogue between the mythical Arianna and Fedra (in the first case) and between the misogynous Shahriyar and the gentle Shahrazad (in the second case). We offered short pieces, played by students of our theatrical laboratory, of both the experiences, that are related in two little books with respective texts.

In Molise gitano, Michele, protagonist of a tale by the "molisano" writer Francesco Jovine, a poor county man, goes to the Spanish War to get money but he comes back without an arm and detects that his wife is unfaithful. In the same war Federico Garcia Lorca, the poet of the poor, was killed and in our work, among many tales about the poor life, we presented Dona Rosita, a lonely and unloved woman. This performance was made alive in conference by Barbara Ripabella (in Spanish).

In Domina, Shahriyar and Shahrazad cite examples for and against women. Shahriyar presents an example of a woman who advises others to commit crimes, Lady Macbeth, who 'lived' in Laura Luciani, with Mauro Genovese as Macbeth (in English). Shahrazad, among many examples which show the hard condition of woman, presents the molisana legend of Delicata Civerra, a woman who cannot marry her beloved one because of the rivalry between their families. Her tragedy lived again in conference in the Ballade of Delicata Civerra, in molisano dialect, sung by Martina Capocefalo, accompanied by Simone Messere on the guitar.

Dream was another theatrical work of students in 2003, between Molise gitano and Domina, explained in another book which illustrates the

Fig. 1 – *Domina,* cover

eight–year–long theatrical activity of our school. It is a European piece on Utopia, based on an imaginary dialogue between Cervantes and his main character Don Chisciotte; Don Chisciotte against Cervantes. Don Chisciotte dreams, Cervantes calls him to reality and, among many examples of evil which oppress our life, presents Hamlet. Hamlet lived for us performed by Francesca Careccia (a woman, not by chance, in English). Don Chisciotte replies presenting, among many utopias, Evita's dream, that lived again for our conference in the song Don't cry for me Argentina (original singer Madonna), from the musical of Alan Parker, sung by Martina Capocefalo. At the end Don Chisciotte wins: Cervantes changes the end of the novel and the Hidalgo doesn't die disenchanted but lives for new adventures. With him we all live too.

Just in this work, in front of a scenography composed exclusively of books, was exalted the value of content, either in search for a better society or in the purpose of effective European cultural unity. Writers quoted in Dream were, along with Cervantes, Hesse, Shakespeare, Giordano Bruno, Erasmo, Calderon, Rostand, Bob Dylan, Sarpi, Tommaso Moro, Galileo, Edoardo Bennato, John Lennon, Rabelais, Voltaire, Svevo, Pink Floyd, Melville, Neruda, Alan Parker, Kennedy, Martin Luther King, Chaplin, Renato Zero, Baudelaire, Hikmet, Hiller.

Fig. 2 – *Una scuola sul palco*, cover

Fig. 3 – *Evita,* performance through scenery, songs and dancing

Fig. 4 – *Evita,* performance through scenery, songs and dancing

In Molise gitano we drew from Moliére, Francesco Jovine, Lorca, Lazarillo, Guzman, Buscon, Galanti and from paintings by Scarano, Ricasso, Romero, Velasquez, Murillo, Le Nain, Bruegel, Trivisonno, Ruggiero, de Lisio and from the photography of Tony Vaccaro.

In Domina we utilized texts by Hawthorne, Shakespeare, Lorca, Verga, Tolstoij, Flaubert, Albino, Armagno, Boccaccio, Rostand, Cervantes, Brecht, Eduardo, Racine, Semso, Jacopone, Jovine, Besson, Ibsen, with other witnesses of real life, that is Albanian, Islamic, expressed in the scene.[1]

It is clear that in the three works the sharing of different cultures, often expressed in original language, is integrated: between states and regions, majorities and minorities, different arts (literature, painting, music, dance, cinema, theatre): a message of a real will to unite European cultures with respect for difference.

Students in the scene are like living 'clicks' in a great, animated hypertext: that is to say that, instead of dissipating (or drowning) the knowledge in technology, we utilized the productive system of technology as an interior support to culture.

A poet's vision has totality and profundity that guarantees truth in the description of an age. It is almost a virtual reconstruction or a continuous and involving film of our ways of life which can live again completely only in this totality obtained in the great poets' works.

To perform these pages on the stage multiplies resources to understand, assimilate and recover the roots of who we are and to build upon them a better future.

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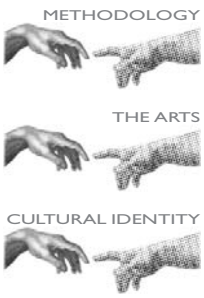
PART II

Virtuality and Learning

Kay FITZGERALD
Institute of Technology Tralee, IE

INTERACTIVE MULTIMEDIA IN TRADITIONAL IRISH DANCE EDUCATION

This paper addresses the impact of Interactive Multimedia in an educational environment, specifically focusing on Irish traditional dance education. It is based on a study undertaken on the application of interactive multimedia in a learning environment. The focus of the study was to assess the possibility of merging technology with dance in education and was undertaken with the co–operation of Siamsa Tire, the National Folk Theatre of Ireland.



1. Background: Irish Traditional Dance

In an account of his travels in Ireland 1776 to 1779, Arthur Young remarked that dancing was so universal among the poor people that Dance Masters travelled throughout the country and were paid by the natives for teaching their children dancing. This national recreation, Young declared to be an absolute system of education. In today's society the transfer of the traditional process has changed somewhat to a dependency on a literate tradition rather than an oral one.

There are two main types of Irish Dance: the solo dance – jigs, reels and hornpipes and the figure dance – set dances. Principally, the teacher demonstrates the dance and the learner copies, i.e. – the teacher demonstrates the steps both visually and orally. Few texts exist about teaching methodologies in Irish Traditional Dance; analogue videotapes demonstrate as in a typical classroom setting. The research aimed to prove that multimedia technology would give learners a visual and dynamic environment in which to learn Irish traditional dancing. Research focused on the pedagogical strategy, the achievement of learners and teachers and the quality of the learning experiences and outcomes. This included the design and development of an interactive multimedia CD and the research included issues relating to the design thereof.

2. Research Questions:

Is multimedia effective in the learning process?

Areas addressed here and incorporated into the design and development of the interactive multimedia title included:

- Understanding the audience's need–to–know;
- The need to be self–directing;
- Practice by the learner and;
- Assessing student learning.

By integrating text, graphics, sound, animation and video, interactive multimedia addresses different learning styles and can provide a truly interactive learning environment that enables learners to become actively engaged in the learning process.

How do we integrate multimedia applications into pedagogy?

Research illustrated that motivation is crucial to the learning process; hence the necessity to engage the learners in a stimulating and successful learning experience by enabling them to feel that they have mastered the tasks presented whilst allowing them to learn at their own individual pace. The pedagogical implications for the design of the multimedia title, for example, included assessing the modular approach and how learners' learning rate differs. The interactive multimedia CD enables the learner to proceed at his/her own pace and control the sequence of learning. Active learning, not passive learning is the key. The interactive CD also endeavoured to create frequent and relevant interactions to increase user learning. The medium is capable of engaging the learner not only intellectually but aesthetically, dramatically and sensuously.

Which computer–based educational methods are best suited to the applications under study?

The basic methodologies applied in developing the application are based upon the expository model of instruction (Alessi & Trollop 1991). The purpose of a tutorial type system is to focus learner attention, to help the learner encode the information and practice through question and answer type activity. In the interactive multimedia CD the process of instruction begins with the presentation of information to the learners (Pic1). The learners' first interaction with the material is guided through menu options, the learner practices the material to enhance fluency and retention, and finally, learners are assessed to determine if they have learned the material.

Fig. 1 – Irish Dance CD, Opening Screen

3. Interactive Multimedia CD

What Control to give to the learner and the method of control is a complex issue in designing lessons: the level of control given to the learner needs to be balanced through menus, commands, rollover buttons with feedback to learner. Methods of control used will determine ease of use and consequently the extent to which learners use them. Lepper and Malone (1987) suggest, for example, the use of visual techniques to increase learner concentration and attention and to encourage deeper cognitive processing an interactive teaching multimedia application must also give the learners personal control, challenge them and arouse their curiosity and give encouragement particularly when errors are made.

In the presentation of information many elements work together: text, audio, graphics, video, animation to make up the style of the interface. All are determined by the content itself.

The design of the interactive CD was informed by:

- Information to be retrieved easily through the use of menus and rollover icons;
- Learners enabled to orient themselves in this hypermedia through the use of maps with hot spots and labels of familiar objects;
- Information presented in a framework giving clear indications on screen for moving forwards, backwards through the program;
- Screens designed so that there is activity on the screen through menu options, user control over audio and video and through question and answer and feedback;
- Sequencing of lessons in the tutorial were carefully structured for learner benefit.

Questions and Responses

Educators differ in their views on the value or otherwise of questions and answers as part of the tutorial. The research indicated that questions or other interactions should occur frequently – true assessment is the ability of the learner to perform the dance.

Judging and Feedback

Judging is the process of evaluating a response in order to give feedback, to make lesson sequence and to store performance data. The response should always be positive and encouraging to the student. Feedback is given graphically or by using sound effects with qualitative feedback indicating that immediate feedback is more suited to today's learner.

Procedures/Methodology

In order to test the effectiveness of the interactive multimedia CD in the learning process, it was decided to solicit qualitative feedback from a select group of dance teachers and learners. They informed the design at different stages. Iterative prototyping supported this process allowing one to visualise and evaluate the development at vital stages of the project.

The process applied to develop the interactive multimedia CD responded to three questions:

What is the product? > Information Design

How should it work? > Interaction Design

How should it look? > Presentation Design

"Thinking aloud" method was used to study the cognitive problems people may have in learning a computer system. Based on feedback from the potential users at prototype stages of development, modifications were made to the CD for example:

- Longer delay for the help screen to assist the novice user;
- Size of the video screen a problem for some users accustomed to viewing the full–screen video;
- Very positive responses to the "easy navigation", "visually stimulating" and "power of music and sound effects".

4. Analysis and Evaluation

For the purpose of the evaluation the user–group consisted of 25 potential users:

11 teachers and 14 student dancers:

The results in general confirmed the findings generated from the "Thinking Aloud" observations and co–operative methods of evaluation.

The overall reaction to the interactive CD was tested at three levels:

1) Educational,
2) Ease of Use and
3) Entertainment Value.

The response to all three questions was very positive and encouraging in the development of this innovative way of teaching dance. The positive reaction is reflected in the response range for all three falling at the top end of the scale for both groups of users. (See Table 1)

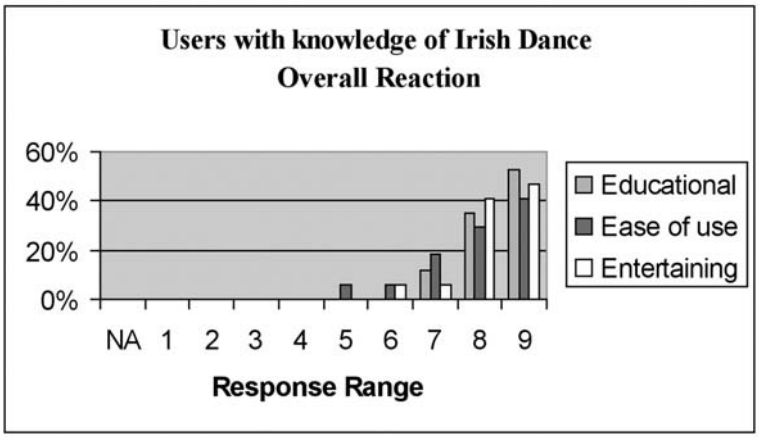
Irish Dance CD

Users with Knowledge of Irish Dance:

Overall Reaction

	Useless									Beneficial
	NA	1	2	3	4	5	6	7	8	9
Educational								12%	35%	53%
Ease of Use						6%	6%	18%	29%	41%
Entertaining							6%	6%	41%	47%

Table 1



5. Conclusion

Research has shown that interactive multimedia is effective in dance education.

Future studies need to determine with more precision the preference and suitability of each learning style to the new technologies

Research also established that the effectiveness of interactive multimedia is very much dependant on correct design

"Change is at the heart of both art and education and technology provides a new tool which to address and effect change"

Dr Luke C Kahlich,

Dance Technology Seminar, Edinburgh 2000.

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Linda GIANNINI*, Carlo NATI**
*Istituto Comprensivo 'Don Milani', Latina, IT
**MIUR (Ministero Istruzione, Università e Ricerca), Roma, IT

FROM PATCHWORK TO MACHINE
REAL CHILDREN LEARN IN VIRTUAL WORLD

When a network becomes an organism

The complex dynamics of relations initiated both inside and outside an educational institution are best demonstrated by means of a model that enables us to undertake macroscopic level analysis and at the same time allows us also to appreciate those peculiarities we might call 'emerging properties' or trends. We will base the model on one borrowed from the economics environment, and we will try to customize it in order to adapt it to the more social requirements of an educational system.

The first challenge is to find a definition of knowledge expressed in terms of economic value.

A possible definition of a Network:	*"Knowledge":*
'Network' means a joining together of various knots or nodules	▪ Satisfying needs ▪ Widespread ▪ Acquirable? ▪ Does not wear out with time

Having said that, a generic educational system is made up of the following subsystems:

1. System of educational activities;
2. System of relations between school and environment;
3. System of management;
4. System of information.

Each of the 4 subsystems will be divided into further subsets:

System 1:

- Subsystem of pupils
- Subsystem of structures
- Subsystem of work: *Administrative/educational*
- Subsystem of money: *Paying–managing money process*

System 2:

- Relations between school–Learning macrosystem
- Relations between school–pupils
- Relations between school–parents
- Relations between school–workers
- Relations between school–schools
- Relations between school–administration

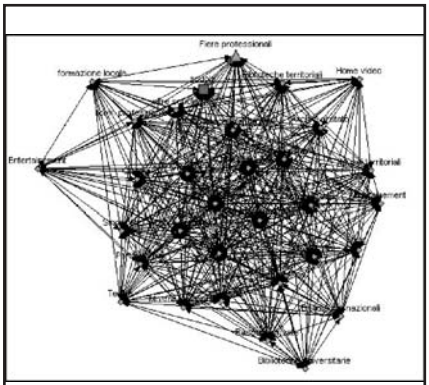
System 3:
from a public service perspective

- Planning system
- Organization system
- Control system

At the moment the area of most specific interest related to our study is how we represent external relations in order to enlarge the borders of educational relations beyond the accepted area of the school system. To help us visualise this we have prepared a map showing the interactions of a school system with different institutions, operating in what we will call a *learning macrosystem.*

Learning macrosystem:
Sharing of knowledge by means of above systems

- School system
- Library system;
- Museum system
- Information system: radio, tv, newspapers;
- Show system: cinema, theatre
- Exposition/Professional fair system
- Family/community system



A graphic diagram of the system shows the complexity of the organism that will manifest itself in different ways inside each learning institution, in relation to the amount of interaction and above all the quality of those interactions, strictly correlated to the strategy which has been adopted in order to share knowledge.

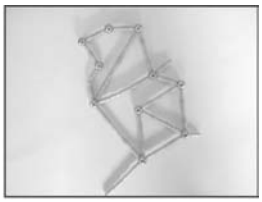
The introduction of ICT in an educational–learning environment means that we have to enlarge the model to include the virtual spaces introduced by IT and the enormous potential offered by the Web. A virtual library will be added to a real one, a digital museum to a real museum and so on.

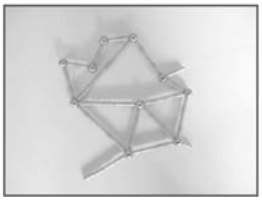
However the resulting map will be a spatial one, and it cannot give us the kind of information we need on the quality of those relations. Although there will be many configurations of the map, only a few will be able to give us specific information on educational matters.

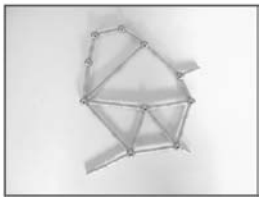
Knots of the Network

A possible definition of a Network:

'Network' means a joining together of various knots or nodules



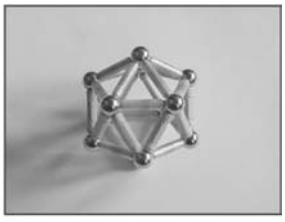




Some of the possible organisms highlight more solid structures:

(static vs dynamic)

It is possible to distinguish particular qualitative relations between the knots



Some nodes try to establish a relation with other nodes. When the quality of the interaction produces a positive attraction, a solid structure emerges in which there is no hierarchical subordination of one node to another. All the elements participate to build a structure with overall properties that differ from the sum of the single element properties. We have a new organism:

- It dynamically interacts with the environment building upon information received.
- It demonstrates qualitative properties according to human context (relevance for society or single person).
- It provides stability in the structure and in its relations, or instability, creating new configurations that can be more solid or create catalysts within the system.

It is easy to see that an organism does not only depend on the spatial relationship between the nodes; it is an active element, whose interactions between the internal structure and external context are influenced by their synchronization in time. In other words we are speaking of a space–time map where the oscillations can lead to stability or not. According to the theory of Turing, the homogeneous diffusion of a system can evolve through further instabilities caused by casual events which can produce "breaks of symmetry" which in turn can produce new stable structures, even though these may be far from being in a balanced state (thermodynamic). In other words, the considerable impact of ICT could stimulate new structures with a stability founded on a completely different basis with regard to the original structure.

The mixture of on–site and remote learning could produce a new organism, either in terms of didactic efficiency or in merely cognitive terms. Several studies on this show the advantages arising from an enlargement of the educational space combined with a customization of interactive routes to learning, supported by digitalised information. Can we be sure that the value added by ICT is represented only in the breaking of space–time barriers and the existence of several hypotheses expressed only in words? This is hard to answer; surely we need to deal with this issue in all its complexity, without dividing technological and cognitive analysis, and considering the operational context.

The following case study shows how web technologies can be used, together with traditional tools, in an educational programme for nursery school pupils.

Learning with virtual worlds
From patchwork to machine

From little everyday objects and games to the mystery of the big object and the computer game. This project provides a 'soft' approach, designed for children, taking account of their need to touch and handle in order to understand. A simple movement towards the concepts of "symbol" and "virtual reality" so that what appears on the screen can be treated as something tangible – to be copied, cut out, stuck on and moved around... just what children enjoy doing with objects.

How the idea originated

In the summer of 1998 we started exploring virtual worlds, which we can describe as a kind of 3D chatroom which was really, and we mean really, intriguing. Obviously, before undertaking these journeys, we downloaded the program from the active worlds of the website.

At first we had not really understood that you could join in the chat without necessarily becoming an Active Worlds (AW)–citizen. Once we had got over this problem, we began to wander around the worlds as a tourist would, with the greatest of ease, discovering straight away:

- how to access the worlds only through the green ball;
- how to use different perspectives (the eye or the movie camera);
- how to give the computer time in order to see the chosen world better;
- to wander through the worlds both alone and with the guidance of other tourists/citizens;
- how to choose a world with no visitors (marked with a temporary 0) or one with visitors (marked with the number 1 or > 1).

Our first impression was definitely positive. One day we had a twelve year old American girl as our guide in a world. She led us to a place full of paintings and poetry. This world had been totally created by a woman painter.

The "property"

Although we were not citizens in 1998, we were presented with a plot of land in AW on which to build. It was our wish to have a house built on pillars above the sea but, one day, when we went to visit "my empty property"...

Surprise! Somebody had built a house on pillars for us, adding, as time went by, trees, flowers, water jets and paintings.

We have always enjoyed being invited to visit the different homes created in AW. We have been into a maze as well as houses in the snow, set in splendid gardens or even near the sea. Not to mention the ones built on Mars! One evening we were even invited to a party in honour of an AW regular: Albert1. But we didn't stay very long because we found it very difficult to interact with about thirty people... speaking in English!

Artists is a world which is not often visited even though it is very beautiful. It's fascinating to find paintings and photographs and people talking, in one way or another, about art.

In the 1998/99 school year we suggested to Albert1 a virtual meeting in Artists with the children from my school (a nursery school). The idea was to set up a telecamera in his studio (he does paintings) and another one in our school.

This first idea hasn't come to anything because of the difficulty of finding a webcam, but we haven't abandoned all hope.

School of wishes

Albert1 (from Reggio Calabria) and Renee (from Michigan) created "play" spaces for children in the AW and Winter virtual worlds.

Children from three sections of nursery school have:

- chosen the name to give to the virtual school: "The school of wishes";
- formed an idea about what their distant playmates Albert 1 and Renee look like;
- played with the arrow keys on the keyboard;
- drawn games for the virtual school playground.

We sent Albert1 and Renee regular e–mail messages about what the children had decided at school (in the form of dialogues) and what they had drawn for the virtual playground.

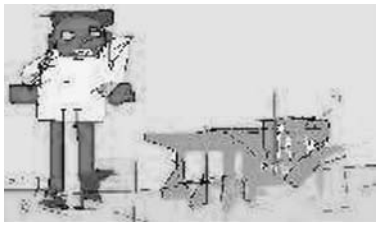
Our friends then built the school of wishes for us...
...and the children's virtual homes.

The children in the worlds

It must be stressed that interaction on the Internet was backed up in class through a whole range of experiences, going beyond the technology. In conversation the children were invited to think, and come up with ideas, about the differences between what is imaginary, real and virtual.

This was all accompanied by drawings and projects using fairy story books and children's magazines, encyclopaedias and other publications... In the multimedia room, on the other hand, they played on the Internet. Using the arrow keys on the keyboard, the children followed their friends Albert and Renee who guided them through the virtual worlds.

The children who could read and write, read and wrote chat messages. From time to time they played a kind of treasure hunt in which they had to discover where in the worlds their friends Albert1 and Renee had hidden music or a gift package... You could also go skiing... and fly a jet in the world of Winter.



A useful experience

We believe that this experience is extremely important for such young children. It lays the groundwork for a constructive opening to the external world through the Internet and it enables adults to check what level of comprehension has been achieved in relation to the differences between reality, imagination and "virtual reality". The main aim of this experience is to seek a method of learning which takes account of certain elements of experience in

which children are already immersed. Children are often conditioned by messages made up of complex codes (images, films, three–dimensional models, sounds...) which are difficult to follow and interpret.

The whole programme according to the various school years:

1998–1999

http://www.descrittiva.it/calip/nir99.html

1999–2000

http://www.descrittiva.it/calip/99_00_virtual.htm

2000–2001

http://www.descrittiva.it/calip/00_01_virmultimedia.htm

2001–2002

http://www.descrittiva.it/calip/virtual_en/aw.htm

2002–2003

http://www.descrittiva.it/calip/0203/narnia_aw.htm

2003–2004

http://www.descrittiva.it/calip/0304/percorso_mondi.htm

2004–2005

http://www.descrittiva.it/calip/0405/percorso_mondi.htm

The future

After years of "life" in the active worlds, we start out on the route once again from the beginning, as happens often at school. The children change and we begin all over again with the younger ones: getting familiar with the mouse... and slowly discovering that the computer can also be a plaything.

We haven't yet met Albert1 and Renee this year because the experience cannot simply be picked up from where it was left by the children from the previous years. Everything has to be looked at anew through the eyes, the minds and the different personalities of the "new" children.

Some experiences

http://www.descrittiva.it/calip/0203/narnia.htm

http://www.descrittiva.it/calip/0203/narnia_aw.htm

http://www.descrittiva.it/calip/0203/percorso_folletti.htm

http://www.descrittiva.it/calip/0203/

http://www.descrittiva.it/calip/0102/
http://www.descrittiva.it/calip/tutto00_01.htm
http://www.descrittiva.it/calip/tutto99_00.htm
http://www.descrittiva.it/calip/0304/index.htm

Classroom and project

We felt the need to continue the network of exchanges between our two schools, and with other educational institutions and families, based on common projects, in order to achieve:

- comparisons of methodology;
- conscious and active interaction between children and children–adults;
- creativity and the development of an interactive community.

A primary and fundamental objective of the project we have devised is the evaluation of learning resulting from the use of one or more collaborative environments made up of subjects who are physically distant.

We have hypothesized teaching strategies which take account of:

- the needs of children to express themselves and communicate through various techniques;
- what has already been carried out in previous years;
- the content of the teaching programmes and training plans of the two different schools;
- the training and educational opportunities provided by the development of multimedia.

Educational objectives

- to understand, master and compare communication media at the personal and social level.

Didactic objectives

- to gather, elaborate and interpret data;
- to describe situations and problems and propose solutions;
- to develop specific and creative communication skills;
- to present the results of a process to outsiders.

Relational and behavioural objectives

- to understand the idea of belonging to a virtual community;
- to develop the ability to work in a group, with particular reference to cooperation at the local and virtual level;
- to encourage the introduction of teaching methods which make versatile use of a range of technological opportunities, languages and codes;
- to encourage, through the use of media, cognitive and social skills and the development and reinforcement of effective logical abilities;
- to tear down geographical barriers through telematic communication.

Activities

- Use of MicroMondi;
- Use of application packages;
- Use of telematic communication (on–line surfing, e–mail and AW chat).

Organization

The project relies on flexible organization to make the children's communication and learning more effective. Classes involved in the project have been subdivided as follows:

- within each class, groups have been formed of between five and seven children;
- these groups have been introduced to other groups of children of the same number (in the specific case of my school to those of the school where Linda teaches);
- relationships and interactions between groups have then taken place on–line and through e–mail (and it is planned to continue, using the virtual worlds).

Times have been arranged for each of the two schools together with specific spaces: classrooms, areas below stairs and multimedia rooms. One aim of the project is to use Internet resources to meet other children around the world and discover other ways of life; another is to maintain and reinforce teaching links between the two of us and initiate new relationships with other colleagues through the Internet.

The project is also intended to bring children into close contact with the computer and, in particular, the Internet in order to understand its communicative potential, to discover its characteristics and to compare it with other forms of communication.

Since, in my new school, the children had never used a computer while in the other school there were many new children, we began the project by making them familiar with the Paint program.

Given the practical realities of the two school situations, we find ourselves devising new features in the most unusual ways and at the strangest of times: during the journey to the university or in the coffee breaks. We provide constant encouragement to one another and comfort in the face of difficulties. One of the features that we are introducing is "Message in a bottle". The children are drawing messages which will be placed in bottles tied to balloons and launched into the sky. On the same day the children in Linda's school will be outside in the garden in the hope that, weather permitting, some of the balloons may land among them.

Micromondi is another feature of the project: using Micromondi, the children in the school which I have just left had carried out an activity based on one story "Ali sull'Oceano" http://www.descrittiva.it/calip/0304/percorsi_ali.htm

From virtual worlds in chat 3D we bounced across into microrobotics experiences with Lego bricks; all documents related to these experiments in which we used microscopes Intel® Play™ QX3™ are available online http://www.descrittiva.it/calip/0304/percorsi_lego.htm – http://www.descrittiva.it/calip/0405/percorsi_lego.htm http://www.descrittiva.it/calip/0304/percorsi_microscopi.htm – http://www.descrittiva.it/calip/0405/percorsi_microscopi.htm

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Ulla OKSANEN
University of Helsinki, FI

PICTURING THE INFORMATION SOCIETY A SEMIOTIC POINT OF VIEW ON THE METAPHORS OF KNOWLEDGE AND TECHNOLOGY

On narrativity

As we may be aware, in past decades there has been much talk about narrativity and narrative modes of thinking, not only in popular culture and entertainment, but also in the domain of science. Even in the field of behavioural sciences the study of metaphors seems have attracted extensive attention. Accordingly, the underlying idea of my study comes from Jerome Bruner (1996, 121), who views narratives as the earliest and the most natural way of organising new information and comprehending the world. His interpretation of the narrative mode of thought makes it also part of the foundation of the constructivist concept of learning in the sense that meanings are not detected but produced by creating stories about the world. Also the results obtained in other fields of study show that with the aid of narrative and metaphoric interpretations it is possible to tackle the lingual and visual structures of culture, through which the world is ultimately determined and maintained. In these kinds of processes, narrativity, as well as metaphors – which Bruner views as "mini–narratives" – are seen as cognitive tools, as schemes on which the new things to be learned can be constructed (Bruner 1990, 56).

The narrativization and mystification of the concepts of knowledge and information have sometimes assumed divine proportions. There is an example of trademarks used by Nokia when advertising mobile phones in the 1990's (figure 1). In addition to the idea of the famous slogan of the company: "connecting people", the picture also seems to refer to Michelangelo's fresco "The Creation of Adam", where it is compared to the touch of the godly finger and the handing over of the Spirit of Life. I quote Kumar (1995, 160), who wrote: "The Information society puts the power of knowledge (my italics) at our fingertips, at the touch of a computer keyboard".

Figure 1 – Narrativization and mystification of the concept of 'knowledge'

The theoretical essence of my work consists of the study of metaphors in our current 'information and communication' society. As we have all perhaps noticed, a whole cluster of new labels has been created relating to this field, mostly indicating different kinds of concepts. Since the emphasis in my study will be on conceptual metaphors, I will focus on the concepts, such as information, knowledge and technology portrayed visually in the student's art education products at schools. In my empirical analysis of the pictures I will also apply the theory and methodology of structural semiotics, which is an effort to understand sign systems as the structure through which the cultural meanings of pictorial narratives and metaphors are produced, which I will return to at a later stage. I will also adopt an interdisciplinary approach so as to gain full benefit from concepts and views originating in education, visual art education and semiotics.

On metaphors

The majority of traditional metaphor research is about lingual metaphors, the earliest well–known ideas dating back to Aristotle. In my study, however, I will concentrate on visual metaphors and constructivist theory, even though the basic ideas relate to the tradition of linguistic metaphors. That is to say: the most promising aspects from the visual point of view are opened up by the study of conceptual metaphors by Lakoff & Johnson (1980). According to

them, metaphors are natural models that provide structures for abstract concepts by referring to concrete and familiar objects and experiences. The crucial idea behind these metaphors is that they combine two different types of concept by enabling us to comprehend one concept in terms of another. According to Lakoff & Johnson the way people perceive the world is ultimately metaphorical, in language as well as in action and thought. (Lakoff & Johnson 1980, 3–6) Johnson (1993) also radically emphasizes that metaphors are as well manifested in physical experience as abstract patterns and image sequences (as for example the concept of balance). Obviously, these ideas of metaphors are fundamental to my study of visual metaphors.

Each metaphor, however, highlights only some qualities of an object and hides the others. The Internet, for example, has been described as being like a wall in a men's public toilet. The "Net" is clearly much more! It is also necessary to look beyond the metaphors, at the root metaphors, which are the fundamental dominant metaphors or the unexpressed basic assumptions on which they rest. Theories for example have root metaphors. In my study I will seek to shape the concept of the 'information society' by approaching it through the metaphors and, if possible, the root metaphors of 'information', 'knowledge', and 'technology'.

Towards the metaphors of knowledge, technology and the information society (a few examples)

- *Theories and arguments are buildings:* People often talk about the *"foundation"* or *"framework of a theory",* or they *"construct an argument"*.
- *Information (or knowledge)* is often also e*nergy (capacity), fuel or power:* Lakoff & Johnson's (1980) *container metaphors* are often used rhetorically – especially in information society literature – to stress the meaning of information and knowledge as the sources of effectiveness and economic competitiveness (like Bacon's idea: *"knowledge is power"*).
- *Science is industry:* This resembles the metallurgic metaphor of Bruno Latour, who suggests that *scientific knowledge* could be seen e.g. as the processing of crude oil into petrol. Though this metaphor may be effective in illustrating technical sciences, it is not, however, suitable for the description of processes e.g. in the field of education. (Latour 1999, 137–138) It is not always clear, either, that data or information could in that way be *"processed"* or *"refined"* to be knowledge, or science.
- *Knowing is seeing:* This is one of the oldest metaphors. In medieval graphics,

pictures of eyes often referred to the all–seeing eyes of God. In many languages people have e.g. *"world views"* meaning that they have ideas about the world, or they have *"biases""distorting their visions"* etc. Visions may also contain *"filters",* like coloured eyeglasses, which may, according to Latour (1999), refer to the *mediating factors of science*. In visual terms the optical metaphors are often *mirrors or windows (cf. "Microsoft Windows"),* which present the idea of having a direct view on the world, as in documentary films.

- I*nformation (or knowledge) is a path,* way or track: This is also one of the most common metaphors. New information "paves the way" for scientific discoveries etc. Life is often metaphorically *travelling* and knowledge is the path or way to the destination. In the 'information society' we of course use the *"information highways"*.
- *Communication is transporting signals:* This is an example of the so – called *"conduit"* – metaphors of Lakoff & Johnson (1980), where ideas are objects and words are containers. Communication is a *"tube",* where containers are put and sent to the receiver. According to Bell the early basis of the present information and communication society was not any particular technology, but the tube–like communication model of Shannon & Weaver (Bell 1982, 507; referred in Karvonen 2004a and 2004b).
- *Information (or knowledge) is a tree:* The most crucial feature of information, as well as of science in the 'information society', seems to be *exponential growth,* which is one–directional and irreversible. The oldest and the most common metaphor for this phenomenon is probably the tree, known also as the myth of "The Tree of Knowledge of Good and Evil". A more developed version of this organic metaphor is the network–metaphor:
- *Information (or knowledge) is a network.* In the 1990's it was transformed into a "globe"–shaped *"Net",* which was the visual idea of the global social structures of the network. One of the latest forms of this root metaphor of organic growth is the creation of Deleuze (1992) and Guattari: the rhizome:
- *information (or knowledge) is a rhizome*. This metaphor, like its analogue in the world of plants, is composed in part of fine or coarse structures, which do not have any centres or places whatsoever. There is no *time,* either. It is constantly in motion, open to change and ready for new *articulations*.
- *Science and technology are progress.* Metaphors may also, as stated previously, fundamentally be seen as *myths*. The dominant metaphor and myth of science and technology dates back to the Age of Enlightenment and is related to the ideas of growth and progress. In this sense it is also derivative of

the metaphors of organic trees and plants. This means that science and technology autonomously develop towards more and more advanced forms of life. In this way the metaphor is closely related to *technological determinism* (of e.g. Heidegger and MacLuhan), where a mere technical artefact is seen as a sufficient reason for development (like computers for the advancement of the 'information society').

The root metaphors of the information society

Among to the studies concerning the metaphors of the information society, Alvarez and Kilbourn (2002) have reviewed a selection of 'information society' literature[1] considering it particularly from the point of view of teaching, learning and the use of ICT. For educational purposes they regarded the texts as rather complex and fragmentary. Besides, the views in the texts varied considerably depending on the way the writers conceptualized the 'information society' and its central principles. To solve the problem, the researchers constructed a three–dimentional framework (see figure 2) to illustrate the basic concepts of an 'information society'. The axes of the model were: 1. topics, 2. perspectives and 3. root metaphors themselves (of which the four first ones are the most important). The researchers emphasize the notion that each root metaphor[2] serves as a unique "lens" on reality, and that all phenomena could be "seen" more clearly if viewed through these lenses. Referring to the dual characteristic in metaphors of "highlighting and hiding", the researchers promote the idea of so–called "informed eclecticism", by which they mean that all students should be educated to have a framework of many different perspectives on the 'information society' In that it introduces concepts as "mediating factors", this model can be viewed as supporting the optical metaphor of "seeing" and "lenses" as the mediating factor. (Latour 1999, 136–137). The point of their study is that we should shift away from reductionist, meaning mechanistic (like emphasizing time, place, cause/effect, amount, effectiveness) and formist (related to categorizing, sort-

[1] Among other things Machlup (1962), MacLuhan & Fiore (1997), Bell (1976), Masuda (1981), Naisbitt (1983), Toffler (1990), Negroponte (1995), Castells (1996), Majó (1997), and Fukuyama (1999).

[2] The concept of root metaphor has been defined e.g. by Pepper (1942) and Ricoeur (2000). Pepper suggests in his World Hypothesis (1942) four fundamental "world hypotheses": formism, mechanism, contextualism and organism. For Ricoeur root metaphors are fundamental presumptions or dominant metaphors (myths), which are capable of both giving rise to and organizing the network of metaphors, which forms the unit between a developing symbolic phase and a passing metaphoric phase. (Ricoeur 2000, 108).

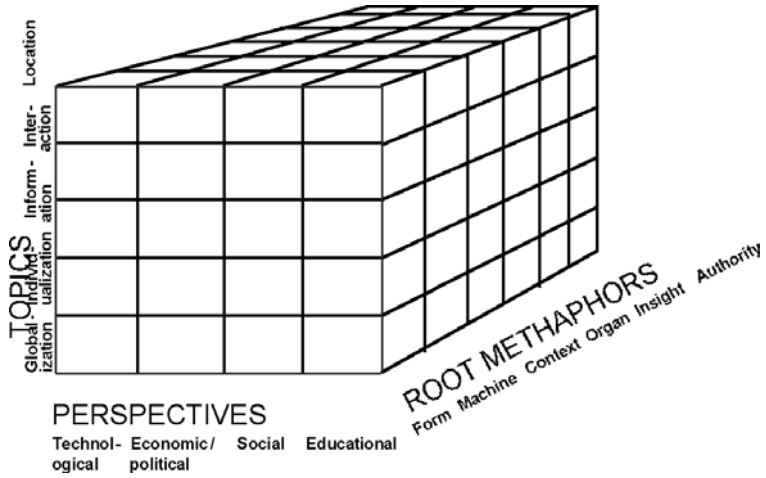

Fig. 2 – Alvarez & Kilbourn (2002): Mapping the Information Society

ing, customs, rituals) root metaphors and views of shaping the world, towards more holistic, in the sense of organic (emphasizing connections) and contextualist ("here and now" experience) root metaphors or ways of thinking. In practice this means moving from parts into wholes, from linear time to fluid time, from places into simultaneity and connections. (Alvarez & Kilbourn 2002).

Semiotic interpretation

As expressed in my title, in the analysis of visual metaphorical narratives I have adopted the structural semiotic approach of A.J. Greimas. The fundamental ideas of this so–called Paris School suggest that meanings are based on conceptual structures and on the mutual relations of their basic elements. These elements, the semes, tend to organize themselves as binary oppositions. Metaphorical structures may be approached on three hierarchical levels, the "lowest" of which represents the concrete discursive meanings, and the "highest" the deep meanings and myths. The latter also ultimately generates the meanings. On the middle narrative level metaphors may be analysed e.g. with the aid of actants and modalities. Interpretation is a process, which starts from the "lower" obvious meanings and proceeds towards the more concealed ones on "higher" levels. (Greimas, A. 1982, 1987).

Fig. 3 – Illustration of a textbook cover

An example

To exemplify this methodology I will now analyse an illustration of a textbook[3] (see figure 3). We could start from such things as the place, time and action (the discursive level): There are no pictorial signs to specify the exact time or place of the action. However, what it seems to portray is men and women from a western culture (e.g. Finland) "flying" in transverse fashion across one another, holding laptops in their hands. – The impetus for the flying movement comes from the mobile computers, the idea of which could be seen as an initial sign of *technological determinism,* and the metaphor: *technology is progress* (portraying artefacts as motors of the progressive movement). – One of the flying figures looks to be excluded from this technology and tries to reach for help by grasping another person's leg. In turn some people seem to co–operate and share the same laptop. On the basis of this and the rest of the visual information, we could perceive other visual metaphors such as: *information is a road* or vice versa, that *highways are an information and communication network.*

In approaching the narrative structures of the picture in the "greimasian" way, we could first employ the *actantial model* (see figure 4), where the actants (such as sender, object, receiver, subject, helpers, opponents) as could be seen as shown in figure 5. At least in Finland we could view the laptops and the new technology as a governmental mission to safeguard the welfare of our citizens. One of the positives could for example. be technical progress, and a detractor could be the inadequate knowledge of technology etc.

[3] In: Tella, S. & Vahtivuori, S. & Wager, P. & Vuorento, A. & Oksanen, U. (2001).

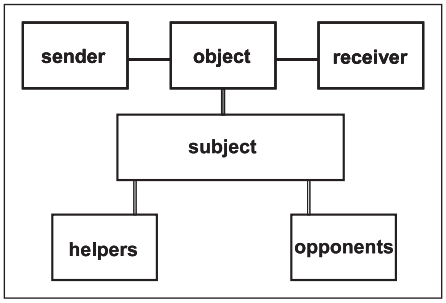

Fig. 4 – The Actantial Model

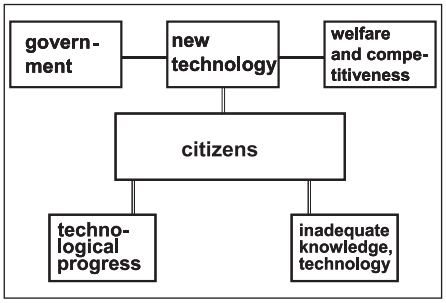

Fig. 5 – The Actantial Model

The *semiotic* square is another heuristic "tool", through which narrative relations can be described. This model (figure 6), as well as the former one, can be used in analysing any strained narrative structure. The square is based on the relations of contrary[4] elements and their negations, where narrative dynamics are articulated as relations of the elements.

If we return to the metaphor mentioned previously, i.e. the crisscrossing *"highways are an information and communication network",* and continue the narrative analysis with the aid of the semiotic square, employing the concepts of 'technology' and 'interaction', we could arrive at the following interpretation (figure 7), where meanings are indicated through the different directions of the arrows. For example: when highways (meaning purely the channels) are united with dialogism, the result is the information and communication network. The "rescuing power[5]" is the scientific and technological progress (including modern ICT, media proficiency etc.).

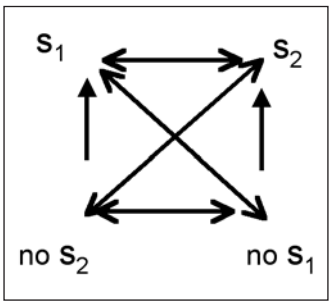

Fig. 6 – The Semiotic Square

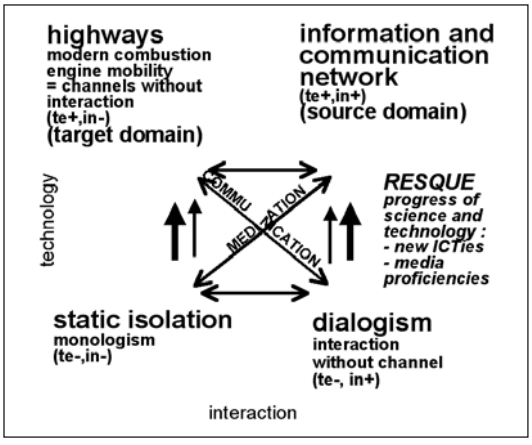

Fig. 7 – The example case

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[4] *Horizontal relations: the contraries:* e.g. the two sides of the same thing, *diagonal relations:* the *contradictories,* which deny each other and cannot exist at the same time, *vertical:* the relations of implication: *euphoric* and *dysphoric,* of which either one is strengthened or weakened at the other's expense. (Greimas 1982, 1987).

[5] Koivunen (1996) has analysed aspects of the Finnish 'information society'. According to her, the narrative structures of its functions often resemble those of universal salvation stories.

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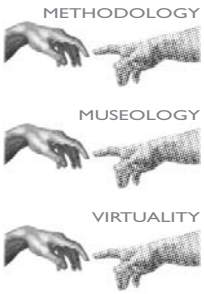
Mario PETRONE
Università degli Studi del Molise, IT

THE VIRTUAL MUSEUM: A POSSIBLE MEANS OF INTEGRATING KNOWLEDGE



The adjective 'virtual', more or less linked to informatics and the web, derives from the Latin word "virtualis", (the opposite to "formalis"), and suggests a powerful possibility rather than an actual state, but that that potential can be realized. What is virtual, therefore, can become real; it has the ability and the strength (virtus) to become actual.

The use of the term in the field of the modern sciences has evolved over time to mean "opposite to real" (and not therefore with the potential to become real): "virtual fire" in optics points out the point from which the divergent rays seem to touch themselves, without this really happening, because this point is the intersection of the ideal prolongations of the real rays. So also when we are referring to the mechanics of quantities: within a physical system, for example, we define "virtual states" as being states which we can realize conceptually but because they are permanent and do not change it is not possible to observe them.

In informatics the term 'virtual' was first used to describe the operating environment. The "virtual machine" was developed in the second half of the sixties by IBM to demonstrate a system where overall management of complex resources could be made to appear to be uniquely dedicated or customized to the usage of every single consumer.

The use of 'virtual' in informatics has been extended since then: the technical lexicons attribute different meanings to the adjective, but fundamentally the word is used to refer to something that is not real nor can become real, but which is the product of complex layering of information.

Therefore the original sense of 'virtual' has been lost (used to refer to potential which can become reality). In "virtual informatics" the word is never taken through from 'potential' to 'reality'; instead, 'virtual' is used to mean a replacement for reality, simulating what is real and going on to imagine what could lie beyond a straightforward simulation.

In this way the word 'virtual' has no limits, just like the potentialities of the web: 'extreme landing' seems to be the "virtual reality" (an expression coined by Jaron Lanier, 1989) where through sophisticated techniques that connect the consumer with an elaborate system (of images, sounds, texts, etc.), the consumer himself finds himself in a context that appears to him real and with which he can interact. So the internet becomes, in 'virtual reality', a trip in 'cyberspace' (a term coined by William Gibson in the novel Neuromancer, 1984) where you enter a "virtual space" with continuous and increasing oscillation between the real and the imaginary which exists in the same way as an electronic representation.

So, thanks to a complex game involving electronic information and the activity of the consumer, a reality is created that is virtual, but experienced as reality. At this point there is a clear difference from a simulation where the consumer is external, and the virtual reality where the consumer is absorbed as an integral part, and where the senses (seeing, touch, hearing, smell), are busy, perceiving as reality what is presented to them.

We must be clear here that, as we are currently using the term, 'virtual' applied to computer elaborations does not refer to the complex instrumentation required for entering that virtual reality. It starts with what is simulated by the programs, which is of course situations and objects which are physically absent, and goes on to enable us to take in a different kind of experience and knowledge than would be possible in the 'real world', simply because the computer and its programming allowing combinations and "virtual" runs which would otherwise be impossible.

Therefore the virtual museum is different from the real museum not only because it is not a place, with walls, ceilings, floors, but because it can group together objects and information (pictures, documents, photos, historical situations, etc.) which exist in reality but which either cannot be seen directly or which in the real world are lost or somewhere else.

Inside a virtual museum the analysis of an object can be considered in relationship to the life of the author, to historical reality, to politics, to the contemporary economy, to the figure of the buyer, etc. From this point of view, the virtual museum represents an important and perhaps the only way to integrate knowledge.

For instance the analysis of a picture can allow cognitive examinations that cannot be acquired by direct vision; we can isolate the single figures, analyze the colours, discover behind the surface earlier sketches, retouches, restorations; we can compare it, completely or partly, to other pictures of the same author, or of other artists, and make comparisons to copies or even to falsifications.

Against this multitude of information given in this context, it may be that the viewer will lack what a direct viewing would give, which is the experience of the dimensions of the picture, its material reality which constitutes a fundamental part of the experiencing or viewing of an object.

In a virtual museum the information, manipulated by electronic systems (even if these are in specific relationship to objects in the museum) can expand therefore without apparent limits (except those set by the system itself, and of course if the consumer doesn't stop to look). The consumer can interact with the system and travel along the road he chooses. The course of visit therefore is not set, because those who travel on the highways of cyberspace become cyber 'sailors' free to seek what the web can offer. Even though the travel does not lead to physical danger nor does it necessarily fulfil the desire for adventure in that it is not a 'real' place, i.e. it is a "not place", it nevertheless has its risks, because in this "not place" travel information is not critically analyzed, but introduced according to random criteria.

While this is not the case in the virtual museums produced under accredited scientific supervision, it is not possible to miss the mass of information available on the computer (think just about the Internet) where not only the excess of data makes control impossible and assures a rapid obsolescence, but where the release of data can fulfil a purely individual view or reflect the agendas of various business groups, with different criteria for the selection of their information whether to do with the market, profit, personal bias or even the intention to abuse. So we have to consider this most important and difficult problem: the control, the selection and verification of the mass of information present in the virtual world in relationship to the development of the web.

This highlights the importance of having a clear framework, with precise reference points for the creation of valid and reliable systems which promote respect for the moral and ownership rights that accompany all material used.

The Neothemi project represents, in this sense, an attempt to set up a working methodology able to provide a framework of reference open to all organizations, as well as to the corporate body that intends to promote the use of information technologies and telecommunications for accessing and exploiting the European cultural patrimony.

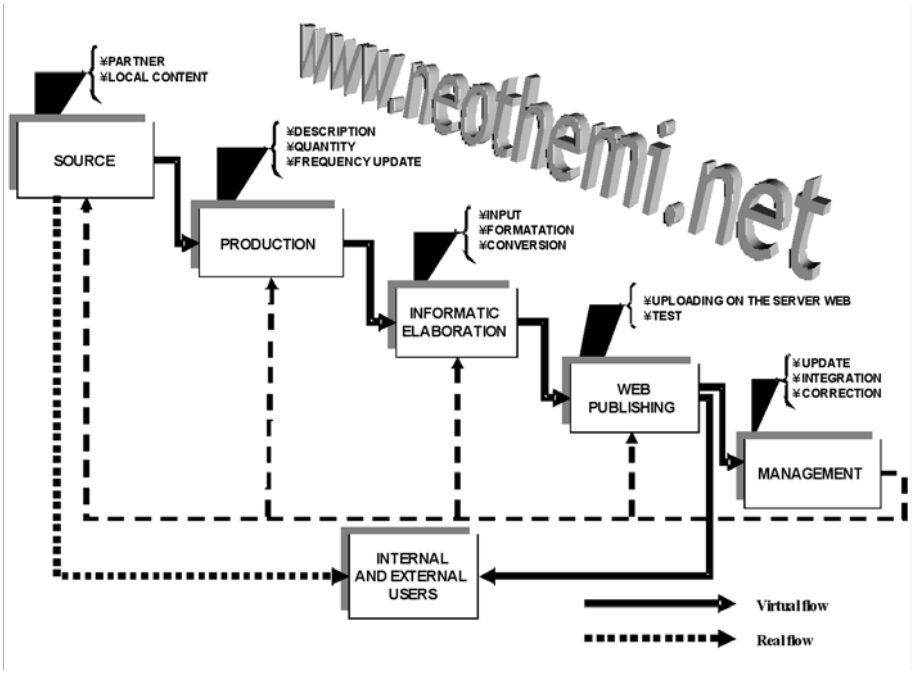


Fig. 1 – Implementation model for integration of knowledge

In particular, this initiative has allowed us to experiment with the idea of the museum–shop. Thanks to the possibilities offered by new technologies, we have been able to create in one place for remote consumers right across the world, a centre producing detailed information on cultural matters and experiences, a live "net of institutions", actively inserted into the pictures of the structures they represent, which have been assigned the task of communicating and projecting culture.

The project, in fact, has facilitated the integration of working practices, experiences and learning between all the participants, with positive cooperation and sharing of findings. This in turn has led to the creation of common standards of a high quality and the sharing of services with one another.

The project has allowed the creation of a network across Europe whose principal objective is the exploitation of the skills developed inside the groups with a common interest as well as those working in similar fields.

The principal functions that will be developed by all the partners are:

- to represent a point of reference for thematic development;
- to furnish added value services based on their own expertise;

- to represent the basic elements for the constitution of a European partnership able to develop cultural projects;
- to act as "incubators" of ideas for the realization of new projects and initiatives.

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Martti RAEVAARA
University of Art and Design in Helsinki, FI

WEB–BASED ART TEACHER TRAINING REFORM OF PRACTICES IN ART AND DESIGN EDUCATION

There is a shortage of educated art teachers in Finland. This problem is experienced particularly in outlying regions but also in small and middle – size towns. The Virt@ is a web – based master's degree teacher training programme to provide qualifications for art teachers. In addition the Virt@ programme, based on e–learning and e–pedagogy, has the aim of exploring, generating and promoting new and inspiring practices and methods to teach art and more generally to reform art and design education.

The first programme was arranged by the School of Art Education at the University of Art and Design in Helsinki during the period 2001 – 2004. The new Virt@ (II) programme was launched immediately after the first one, and will be carried out between 2004 – 2007. The Virt@ project is funded by the Ministry of Education in Finland.[1]

The focus of my paper is to share the results and experiences of the first Virt@ programme, and discuss the challenges of web–based art teacher training and art education.

The varied roles of an art teacher

The circumstances in which art is taught differ a lot between schools. An increase in the authority to make decisions at a local and school level emphasizes the competence and the personal role of an art teacher.[2] The development of diversification as well as specialization in teaching, and the regenerated roles of teachers at the municipal level as representatives of their own

[1] see more about Virt@ I (2001–2004) http://virta.uiah.fi and Virt@ II (2004–2007) http://virta2.uiah.fi

fields – for example in the preparation of school and local curricula, making the subject visible and understandable, securing resources, and overall in planning art education at a local level – will have a knock–on effect on the overall reform of art teacher training. In most cases there is only one art teacher in a school, and this points out the need to strengthen the role of the art teacher. In fact, networking by art teachers has been very active in recent years and the website and the mailing list of the Art Teacher Association have proved to be an effective tool for discussions, exchanging ideas and responding to topical issues.

The connection between a school and a local community has become more and more important. There are several projects in which art teachers have had an active role. They have had the sensitivity to respond to different situations and to create innovative ways of working. Frequently projects have been connected to local environment and cultural heritage and aimed at increasing students' self–understanding and community spirit within the school and town or village. The website of a school has become a very important tool for communication and publicity. The web has also offered the way to expand the educational resources and to improve networking between small schools, and has improved their operational and living conditions[3].

Art teacher training as a part of art and design education

There is a long–standing tradition of educating art teachers at the University of Art and Design, as a part of professional art and design education[4]. For over a century, art teachers have received their education within this institution, and at the beginning of the 1990s a second art teacher training unit was launched at the University of Lapland, but also under the faculty of art and design.

This combination has proved to be both functional and successful. The degree programme is based on the idea that in order to teach art a teacher must have an active personal relationship with the areas of art and design and

[2] In Finland there are the national curriculum for both the comprehensive and secondary school. However, by reason of the liberation of school registrations and statutes the national curricula are now more the frames for local curricula at the community and school levels. The reform of the national curricula goes on about ten year periods and the new curricula are just initialized. About the Finnish education system see http://www.oph.fi/english/frontpage.asp?path=447.

[3] See e.g. the website of "Meidän asema" (Our station) project at the comprehensive and secondary schools of Lievestuore, a small commune near Jyväskylä in the middle of Finland http://verkkolehti.peda.net/laukaa/viewer.php3?DB=lievestuoreen&mode=10

[4] See more about the University of Art and Design in Helsinki http://uiah.fi.

the artist's ways of working. To study at a university of art and design together with other future professionals gives a student a wider and deeper perspective on visual culture, design, architecture and art, and also important contacts with professionals working in different fields of the arts.

During the last decades the School of Art Education has tried to find new ways of organizing interesting and challenging programmes, which take into consideration the diverse backgrounds and expertise of the students and offer them different models by which to study, alongside teaching or working as an artist. In practice, this has meant the introduction of varied teacher training models, which have in turn tempted different kinds of art and design professionals into the sphere of teaching. This brings more diversity to the structure of the teaching profession and builds the basis for "the common language", and the dialogue between artists and educators. It also highlights the prospect of combining teaching and artistic work in more inspiring and mutually supportive ways.

The reform of the art teacher–training scheme is also related to the expansion of visual media culture in everyday life, an increased awareness of ecological, ethical and aesthetical issues, and the growth of international contacts and cooperation. Contact between genres of the arts is on the increase and new technologies to produce and process images will be more commonly used within art education. In teacher training, this will lead to strong emphasis on media pedagogy and criticism and environmental education, with a corresponding stress on the teaching of visual skills using different media.

At the moment one of the most challenging aspects of art education is e–learning and networking. With the help of the Virt@ projects, the School of Art Education has an opportunity to develop methods applicable to e–learning in art and design and to support the network of art teachers and other professionals in the field. This is not only a question of developing alternative teaching and study methods or e–learning environments, but also a comprehensive reform of models of operation.

The Virt@ studies and students

There were 260 applicants for the Virt@ II programme, of whom 60 were selected as students. They will complete the degree of Master of Arts in 3 years. The studies are based on the students' former artist or teacher education and art teaching experience in the field. Most of the Virt@ students are painters, but there are also graphic artists, designers, art and craft artists,

photographers, media artists and so on, as well as primary, secondary and high school teachers, art historians and museum lecturers.

A personal study plan is drawn up for each student. Because the training is organized mostly in the form of web–based studies, it can be carried out alongside the student's own teaching and artistic work. In fact, many of the study modules are based on applying and testing the subject matter in the teaching work and on sharing experiences on the net.

Part of the Virt@ programme is organized in collaboration with the teacher training units at five Finnish universities. In addition to the pedagogical goals, the purpose of this collaboration entails the networking of art education experts engaged in training teachers and working in the field. This cooperation seeks to support teaching the visual arts in the teacher–training units. The initial experiences of collaboration have been highly encouraging[5].

Art teacher training and ICT

The status of ICT in art teacher education can be seen though a general look at teacher training. (Figure 1.). The training is based on dialogue and potential (positive) conflict between the discipline and pedagogy; the role of subject studies in art teacher training; the role of art and design studies where they exist, and how they are inserted into the programme schedule, what their connection to education studies and teacher practice might be etc.

Studying to become an art teacher and a professional of art and design is always closely entwined with the process of building an identity. The aim of the art teacher training programme is to build and strengthen the professional identity of a student as an 'imminent member' of the art teacher community. This process of building identity includes in most cases the dialogue and the tension between identities as an artist and as an art teacher.

The curricula of art and design degree programmes are based on the traditions, the know–how, the research knowledge and the future vision, of the profession. With the assistance of an education programme the student will learn the (presumed) competencies needed in the future. If the student is orientated towards being an art teacher, this will be reflected in the competencies the student emphasizes in her/his studies. But if the student is more

[5] The partners are the HSmeenlinna Teacher Training College at the University of Tampere, the Teacher Training College at the University of Jyväskylä, the Teacher Training College at the University of Joensuu, the Kajaani Teacher Training College at the University of Oulu and the Vaasa Teacher Training College at the *bo Akademi University and the other art teacher training unit in Finland, the Department of Art Education at the University of Lapland in Rovaniemi.

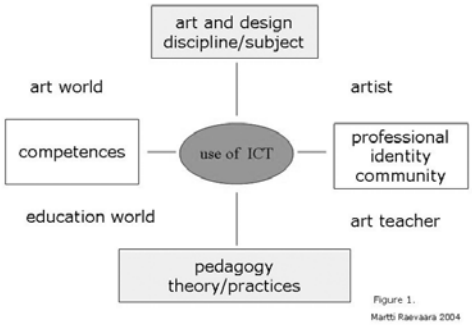

Fig. 1

focused on the art world and working as an artist, this will also change the focus of the competencies to be acquired.

Having looked at the above points from the viewpoint of ICT, and in the context of the relationship between education, identity and professional competence, it is clear that where (art) teacher training programmes are concerned, this is a question that needs to be resolved. The use of ICT has an increasing significance in people's everyday life and in society and the outlook for education is strongly linked to ICT. Its importance is difficult to overestimate. The critical study and use of ICT play a central role in the content and methods of the discipline and pedagogy, and are important elements in the process of developing professional competence and identity.

Experiences and results of the first Virt@ programme

The experiences of the first Virt@ project are mainly very positive and encouraging. The students' feedback makes evident that combining work and study brings problems, but the students are very committed and work hard to get their degrees. They see the personal value of studying as very high, and rewarding. The atmosphere of studying has supported their learning well and the practical education in practice has corresponded well to their stated goals. It is obvious that this kind of studying and learning method is appropriate to this target group.

The support provided by a student's own workplace varied a lot, with some schools and headmasters taking excellent care of the preconditions for studying, while some students met with resistance and had to fight to gain any flexibility and the opportunity for extra time for courses. Although the Virt@ programme is organized to be carried out alongside one's own teaching work and family life, the students are responsible for achieving the balance, and not over–emphasising teaching work at the expense of their studies.

In practice this is a very demanding challenge. During the first autumn term six students gave up the programme, mainly because they did not realize how much time and work distance learning involves. It is not just a 'tube you connect to your head' in order to let the knowledge and wisdom flow in. The freedom of time and space turns out to be an illusion in the end, when a student has to organize and keep up the learning; to map out a timetabl; to acquire appropriate tools and space for studying; to get help for ICT problems; to gain a support of their own school etc.

Web–based teaching and study are new for most students and faculty members. The courses of the Virt@ rely on the teacher's expertise and ownership of teaching. Competence within a discipline and strong teaching experience, along with the enthusiasm for reforming one's lessons, are the most important starting points. There are several ways to do an excellent e–learning course. The production of a course is a process of experiments and it is important to provide the foundation of encouragement, support and open–minded teamwork for that. Inspiring examples are valuable. We believe in progress by doing, by gathering experiences, analysing them and sharing best practice. Even small steps can lead to an innovative solution of great value.

Obviously in the beginning the teachers had difficulties in estimating the time and work involved in web–based teaching and studying, with the simultaneous learning of ICT skills and new teaching strategies for e–learning. Frequently courses were overloaded with teaching materials, tasks and exams and the teachers were also amazed at how much work tutoring and giving feedback entailed.

In the first Virt@ programme the number of master degrees completed within the planned studying period were very pleasing. So far forty of the students have already passed the programme and another 4–5 degrees will be achieved during this year; the remainder are well ahead with their final work. The quality of the final theses is comparable to the theses of "normal" students.

The success of the process for the final thesis has an important effect on how well students pass their degree. That is why we have paid very much attention to it. All the Virt@ students collected their final thesis materials from the FLE e–learning environment[6] and this also made the process visible to others. (Figure 2.)

[6] FLE, Future Learning Environment, is the e–learning platform evolved by the Media Lab at the University of Art and Design in Helsinki, see more http://fle3.uiah.fi/.

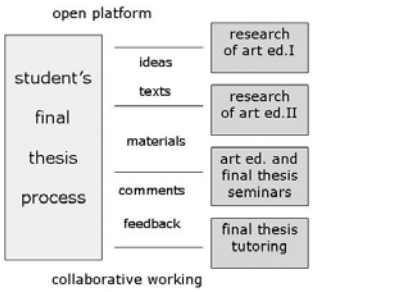

Fig. 2

In several courses all the exercises were focused on the preparation of the personal final thesis of a student from different viewpoints and with the use of peer group working methods. Collaboratively generated ideas, comments and feedback were shared on the open platform. The lecturers for different courses and the final thesis supervisors did not need to work together (if they did not want to), but with the help of the open platform they were able to follow the progress of each student, and if necessary participate in an active and timely way, using the method appropriate to the occasion.

The Virt@ generated a considerable amount of "extra" final theses to be tutored and assessed at the same time. This meant the School of Art and Design had to find new examiners and supervisors. The increased use of "outsider" experts for the final thesis extended the network of professionals in the field and made the activities and know–how of the School of Art Education known more widely. This enlarged network is a potential resource to develop and reform art teacher–training programmes in the future.

Summary and conclusions for the future

As described above, the working methods of the Virt@ emphasize project–oriented teamwork and participants' many–sided and wide expertise. The starting point is that meaningful learning takes place primarily in a shared environment and that knowledge is not static but dynamic within teams and networks. This connects the learning concept of the Virt@ to collaborative learning.

From a teacher and student's point of view, the pedagogical principles and ideas of the Virt@ can be summarized as follows. The pedagogical basis of the

curriculum is an active, self–motivated and independent student, who creates a personal curriculum based on his or her former education and studies, work experience and ambitions, and is able to carry out the plan alongside work and family life. The course is based on teachers' competence and ownership of their teaching. The use of ICT encourages teachers to re–think their lessons. We emphasize project and team working, enthusiasm for pedagogical improvement, inspiring examples and sharing best practice. This includes the fact that the students are also learning and developing appropriate methods for e–learning together with the teachers.

The dilemma of the Vir@ is, how to combine personal freedom and the ambitions of the students and the teachers with collaborative and peer group learning and working. (Figure 3.) According to the experiments of the first Virt@ programme the following elements are important keys to the dilemma:

- clear and explicit course structure and timetable;
- methods for following and tutoring the student in the process of studying and learning;
- ways of providing visibility of process and content;
- the combination of contact teaching, tutoring and peer group meetings with working on the net;
- continuing and well–timed feedback and assessment of tasks and exams;
- emphasis on interlinking students' personal ways of working and learning (habits, needs,...) to the idea of collaborative learning and knowledge building;
- emphasis on visual knowledge building and artistic working, exploring the use of images in e–learning and interaction;

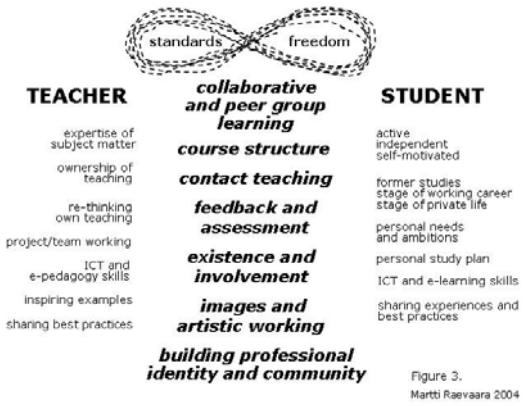

Fig. 3

- ways of making the existence of university and professional communities visible and inviting on the net.

Many of the elements mentioned above affect how well a student can carry out a personal curriculum. These also make the progress and learning visible, and help the student to reflect and assess his or her learning and understand the process of collaborative knowledge building.

As mentioned before studying is the process of building one's professional identity/identities and of becoming a member of a profession. When using e–learning environments this process is laced with new and unknown phenomena. That is why it is important to emphasize the understanding of the process of acquiring an identity in e–learning and e–pedagogy.

Compared to traditional art teaching, it is evident that e–learning increases the status of text at the expense of images. This may be caused by the narrow tradition of e–learning in art and design. Therefore it is important to develop the use of images in knowledge–building and interaction. The current revision of the Virt@ programme includes a digital artist–teacher's portfolio working alongside all the studies and brings the artistic dimension more into focus. The aim is to support students in reflecting and building their art teacher identity more strongly from the artistic point of view (see students' background). There will be more support to focus on an artistic approach in the final thesis through the special seminar, the research methods course, and the art and design Master's course. Also the teaching practice of the Virt@ programme will be interlinked with web–based studies e.g. by using visual documentation on the database.

The above issues are more generally involved with the identity and characteristics of art and design education. The use of ICT is allowing the expansion of materials and didactic methods to reshape educational settings. What we should not lose is the praxis and audiovisually–oriented knowledge of art and design education and research. This long–term tradition has to be the basis when using and developing the possibilities of ICT within the realms of art education.

Antonello VENDITTI, Michela GRANATIERO
Università degli Studi del Molise, IT

VIRTUAL REALITY IN THE NEOTHEMI PROJECT

Abstract

In this paper we analyse the technology used to achieve the main goal of the Neothemi Project: to create a Virtual Museum accessible via the Internet to promote cultural heritage. In particular, we describe the Virtual Reality technology and its relationship with the World Wide Web, through Virtual Reality Modelling Language.

Then we show the project choices for the realization of the Virtual Museum, according to the taxonomy proposed by Zeltzer to classify the Virtual Reality Systems, Zeltzer's Cube, which defines their behaviour in respect of the user in terms of Autonomy, Interaction and Presence.

1. Virtual reality

Virtual Reality (VR) is a technology which was created in military and university laboratories more than 20 years ago. VR uses the computer in order to simulate the real world and its goal is to allow the user to experience a sensory experience similar to the real one. VR reproduces real life situations using computer images and sounds.

The most popular VR system was designed by field pioneer, Jaron Lanier (1989). The tools used in the system are a pair of glasses, called "EyePhone", and a glove, called "DataGlove", which facilitate interaction with the virtual environment. When the user moves his head, this system makes the images shift in such a way as to create the illusion of the movement.

Later on, a group from NASA developed a new system again based on a helmet and a glove which allows the user to manipulate objects that exist only in the virtual environment, using position tracking sensors and fibre optics.

Actually most VR systems provide visual experiences created by Computer Assisted Design (CAD), or other graphic animation systems. They are also based on position tracking and auditory feedback, together with 3D

computer graphics. Moreover, the research works through interface devices which add also the experience of the senses of touch, smell and taste.

2. Virtual reality systems and Zeltzer's Cube

VR has been applied in several fields, such as Robotics, Simulation, Telecommunications, Medicine (surgery), Learning, Games, etc., with the common objective of creating a virtual environment similar to the real world.

VR systems can be classified according to the kind of "experience" offered to the user:

1. Transmitted Reality;
2. Synthetic, but based on a real world model;
3. Pure–synthetic imaginary world.

For example, the Virtual Museum of the Neothemi project is a pure–synthetic imaginary world.

The most important model for a virtual environment is "Zeltzer's unit cube", which identifies three essential components that all systems must have, and three dimensions (or properties) that can be used in order to compare virtual environments.

The three components are:

1. a set of models, objects or processes;
2. a means of modifying the state of these models;
3. a range of sensory modalities to allow the participants to experience the virtual environment.

Zeltzer proposed a taxonomy for classifying VR systems, based on their behaviour in respect to the user. The taxonomy consists of three independent scalar dimensions that define a space of possibility, the cube:

1. Autonomy: describes the sophistication and dynamics of the model defining the world;
2. Interaction: measures the degree to which user actions can affect the virtual world;
3. Presence: measures the fidelity of the sensations produced by the sensors with respect to the direct experience.

The advantage of this approach can be found both in the conventional virtual environment and in those based on physical apparatus.

3. Virtual reality on the world wide web

VR is also used to describe systems that do not use helmets and gloves like the World Wide Web. For this reason we have the Virtual Reality

Modelling Language (VRML), a standard format representing the three–dimensional (3D) interactive vectorial graphics, designed specifically for the Web. The VRML files are usually called "worlds" and they have the ".wrl" extension.

The first version of VRML was specified in November 1994 from the Application Programming Interface and format of the Open Inventor software component, developed by Silicon Graphics Inc. The functionally complete version is VRML97 (ISO/IEC DIS 14772–1). The current VRML standard is called X3D. The Web3D Consortium has been formed as a result of further developments of the format.

In this language it is possible to associate colours, images, brightness, transparency, etc. with vertices and edges of a 3D polygon. Moreover, it is possible to associate a URL with the graphical components, so that, when the user clicks on, the browser captures a Web page or a new VRML file. It is possible to add a program code (e.g. Java or Javascript) to a VRML file.

4. The application of virtual reality in the Neothemi project

One of the most important goals of the Neothemi Project has been to build a Virtual Museum to promote cultural heritage. To access the museum it is necessary to connect via Internet to the Neothemi web site: www.neothemi.net and to click on the Neothemi logo.

We went on to analyse the complexity of the Virtual Museum , according to the dimensions of Zeltzer's Cube. As for the first dimension of the Virtual Museum, the Authonomy, the real world is modelled by the following 3D elements:

- environments: the external view of the museum, the Virtual Hall, the pavilions, etc.
- objects: paintings, texts, sounds, etc.

As it is a very sophisticated, the environments and the objects are built in detail. In fact, to represent the external view of the museum a boundary wall, a drive, a garden with benches, the entrance, etc have been provided. The Virtual Hall is enriched by an information point, a meeting table, some benches, the doors to enter into the different pavilions, etc. The sophistication of the pavilions is further demonstrated in that they show the whole range of items chosen to represent the National Culture of every partner belonging to the Neothemi Project, such as paintings, historical monuments, natural landscape, etc. Because of the dynamics of the model the visitor is free to

move inside all of the museum environments. The mouse and the keyboard make it possible to move a virtual camera in every direction and to enter each environment.

The visitor starts his tour entering an open space and, through the entrance, he goes into a delimited environment, the Virtual Hall. From here, the visitor has a choice of several possible actions: he can refer to the information point or choose to enter the pavilions he prefers, and have access to another space.

When it comes to the second dimension, that of Interaction, the visitor can interact with different objects in each pavilion: structures, texts, open spaces, etc. For each of these elements, there is further dimension, the fourth dimension: the information link from each object to the selected theme.

Finally, in the third dimension, the Presence, the visitor can move freely in the 3D environment, and this together with the high quality images used to create the objects and the contextual sounds provided in each place, provide him with a complete and natural experience of the phenomena.

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PART III

Neothemi: Thematic Outcomes

Ulla SØRENSEN
Amtscentret for Undervisning, Århus Arnt, DK

FOLKLORE AND TRADITIONS

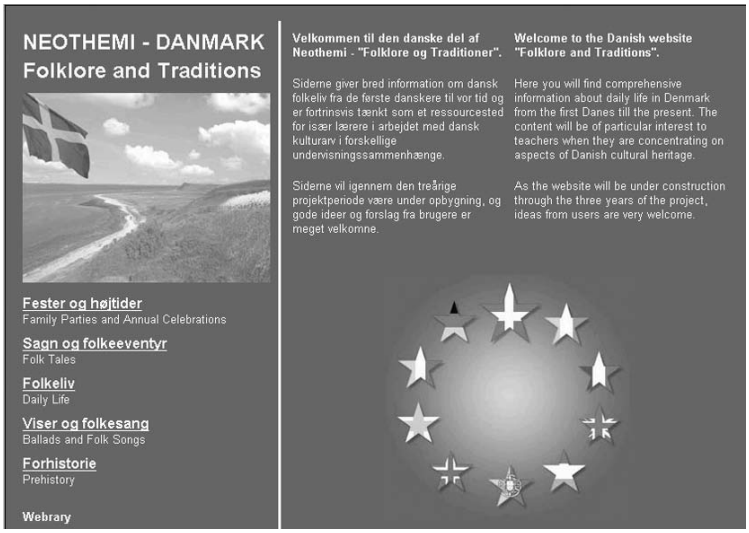
The following is an overview of the work of the Danish partner in the past three years in the Neothemi network, particularly the development of our website "Folklore and Traditions" as well as an associated project.

The background for participation in the Comenius 3 network "Neothemi" and the creation of the Danish pavilion is as follows: for several years there has been a tradition of working at international level on various projects at the Amtscentret for Undervisning, Århus Amt, Denmark. This is a regional centre for educational services with an international profile and through co–operation with the national Danish agency, Cirius, in Copenhagen, we have undertaken the task of informing institutions in our county about the European programmes in education, thereby encouraging schools to take part in e.g. Comenius school projects.

Consequently we found it natural to expand our activities and experience of European co–operation by becoming one out of thirteen partners in the Neothemi network, contributing to the promotion of Danish cultural heritage in an innovative way in conjunction with museums, educational institutions and universities.

The background of the Danish pavilion

The previous and the current Comenius school projects within the common theme of European cultural heritage were a starting point for selecting the theme for the Danish pavilion. A broad and comprehensive title, "Folklore and Traditions" was chosen as it covered most of the content of these projects, and at the same time it would reflect our common cultural heritage in a different way.



Structure and design

The Danish pavilion "Folklore and Traditions" has five sub–themes:

- Family parties and celebrations
- Folk tales
- Daily life
- Folk songs, ballads and ditties
- Prehistory

In the Danish pavilion of the Neothemi virtual museum each of these five themes is represented by an icon. By activating these the user will be directed to an individual homepage for every sub–theme. These are recognizable by a clear and simple layout, which will help the user to find his or her itinerary to relevant links etc.

In addition all partners in the Neothemi network have contributed with selected references to the common 'webrary', which can be accessed from the main Neothemi page. The webrary is a database on the Internet for users to search in freely from anywhere in the world. It can also be enriched continously with relevant material from different contributors. From Denmark we have included links to some of our typical institutions, providing resources and material for education within the Danish cultural heritage.

Target group

The website has been created with a specific focus on Danish and European teachers from both primary and secondary schools. The aim has been to facilitate access to various resources within the selected themes of Danish cultural heritage by presenting a collection of relevant links arranged in categories. Some of these are only available in Danish, but we have chosen to include them accompanied by an abstract in English, so as to inform potential users from abroad about the existence of these resources in Denmark.

Itineraries within the virtual museum in Neothemi

One of the overall aims of the Neothemi network is to present a virtual museum where users can find their own itinerary within the different themes of European cultural heritage.

To fire your imagination, you will find on the Danish website several examples of links to subthemes in the other national websites that correspond with ours. Similarly, the other pavilions have references to our sub–themes.

Workshops at the Neothemi conferences

At each of the three conferences in Budapest , Helsinki and Campobasso there were workshops where we presented selected topics from our Danish theme "Folklore and Traditions".

At the Neothemi Launch Conference in June 2002 in Budapest we concentrated on our prehistory. We focussed on the famous Danish bog finds, which for the very first time revealed what our prehistoric ancestors looked like and simultaneously gave us information about their life and traditions. We had invited Dr. Christian Fischer, the museum director at the Silkeborg Museum in Denmark as a speaker from the Danish pavilion to enlighten the audience on the life of the first Danes with special focus on the famous Tollund man and the Elling girl.

At the second Neothemi conference in Helsinki in September 2003 we presented our national website. We focused on different topics of "Daily Life", in this case food traditions. The purpose of this was to inspire the audience of teachers to use it as a common topic in a new Comenius school

partnership. It could challenge young people's ideas of healthy and tasty food, so different from what they are used to nowadays, like different types of foreign fast food. This could be compared to traditional Danish food of a more substantial and rural origin like rye bread for open sandwiches, porridge and cabbage as well as the study of their historical background.

Other examples of themes were mentioned such as song traditions or Christmas celebrations for Danish school children to compare with those of other nationalities.

At the final Neothemi conference in Campobasso in October 2004 we concluded our work by focussing on our famous national storyteller Hans Christian Andersen.

The reasons for this were the approaching bicentenary in 2005 that will be celebrated all over the world; he is acknowledged as having a strong sense of the cosmopolitan, and being a mediator of cultures and finally of course there are many virtual resources available to educators demonstrating his many talents. One of these – the most well–known of them all to foreigners – was his genius in writing new fairytales based upon the old folk tales he was told by his grandmother as a little boy.

In order to provide a deeper insight please see the official website of the "HCA 2005 Foundation" from which we quote:

The idealised Hans Christian Andersen should give way to a full human portrait of the writer. He was a storyteller for children of all ages, but he was more than that. He was a critical journalist with great enthusiasm for science,

an existential thinker, an observant travel book writer, a passionate novelist, a deft paper cut–out artist, a neurotic hypochondriac and a sex–fixated eccentric. He was a man with demons, dreams, yearnings and visions. He was a man of flesh and blood.

In 2005, Hans Christian Andersen will be reborn as a writer in full flower. 2005 will be a year for deeper insight, education, enlightenment and opportunities for development. The qualities contained in the universe of Hans Christian Andersen are of inestimable value and should be celebrated throughout the world. His genius lies in the fact that he has something vital to convey to children and adults alike. His writings contain universal truths about human nature and psychology, crucial to the development of every individual.

Hans Christian Andersen has something to give us all.

A further project

Through our participation in the Neothemi network and our cooperation with the local Silkeborg Museum, and the Silkeborg Library, we have been able to create an innovative educational website about The Tollund Man, a famous bog body of The Iron Age. The official opening will take place in the near future. This initiative has been sponsored financially by the County of Århus.

The basic idea behind this initiative is to show new possibilities for the sharing of information contained in museums, and subsequently to test and establish innovative models of cooperation between institutions providing educational resources to a broad variety of target groups.

At the moment the website only exists in a Danish version, but an English version is planned shortly.

Outcomes

Our own efforts and the fruitful cooperation among the Neothemi partners have opened new horizons for us within Danish and European cultural heritage and established useful platforms for future networking.

The design and content of the Neothemi website should serve as a model and inspiration for others to adapt in future international educational cooperative projects. The Danish NA has often referred to the website in con-

nection with national meetings for Comenius schools, so as to encourage educators to make use of it in current and future European school projects as well as in teaching in general. The creation of a Danish pavilion on "Folklore and Tradition" is an inspiration and a resource website for teachers in their planning.

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Hans Christian Andersen 2005 Foundation http://www.hca2005.dk/

The County of Aarhus http://www.aaa.dk/

Amtscentret for Undervisning, Århus Amt http://www.acu–aarhus.dk/

Neothemi DK www.acu–aarhus.dk/neothemi

Seija KARPPINEN, Raili KÄRKKÄINEN
University of Helsinki, FI

BUILT HERITAGE

In this paper we will cover how we approached the theme of 'Built heritage' during the NEOTHEMI project (2001 – 2004) and how we examined the built environment (architecture, other built construction and artefacts) and nature, as sources of cultural heritage. In the first part Seija Karppinen will concentrate on creating a framework for the theme and on the second part of the paper Raili Kärkkäinen will discuss creating culture through arts.

Framing the built heritage

Seija Karppinen

Introduction

Our emphasis in the Neothemi project as the Finnish partner is on methods of recognising cultural heritage, redeveloping the content of cultural heritage, and creating dialogue between that cultural heritage and people, in the virtual world in a similar way to the real world. We focus on exploring cultural heritage and values as seen and understood by children and students. The method which we have used to examine cultural issues can be described here as a socio–cultural animation (see, for example, Abbé, 1994; Ander–Egg, 1986; Kihlström, 1998; Kurki, 2000; Karppinen, 2002). Animation means to give life, in other words to motivate into action. Socio–cultural animation gives a perspective within which an individual can find his own identity, as it reflects cultural values from society and environment. The aim here is to encourage social communication and cultural interaction for children and students to learn from the past and to understand culture through their own interpretations (Karppinen, 2002).

The built heritage around us tells not only about our culture but about ourselves as well. Our built heritage (buildings, sculptures and other constructions, artefacts, parks, and all hand–made items) create our identity and

an image of what we want to be as a nation. We perceive built items and the built environment not only rationally but particularly through sensory impression. The way they present themselves creates a 'language' by which meaningfulness takes on a form. What is this cultural language? How can children incorporate these culturally meaningful elements into their own growth?

Communication in arts and culture

All forms of making art and culture have communicative and interactive aspects, whether they occur in the real or virtual world. Buildings and artefacts around us tell about history, style, time and people. They express the continuation of humanity in a form of cultural heritage. Cultural heritage creates a basis for theoretical and practical knowledge, self–understanding, and identity (see Melanko & Elo, 2000). Correspondingly, consciousness of the built environment provides us with a framework for understanding cultural values, which can be explored by aesthetic values such as beauty, goodness, and truth. These elements form a dialogue between different generations and history. Every one of us should be able to benefit from culture and feel responsibility for it. That is one of our aims in the Neothemi project.

Another aim is to increase people's awareness of their manifold cultural heritage and to teach children that they are part of a cultural continuum. The aim is consistent with the aims of the civic art education system in Finland (see Korpelainen & Yanar, 2001; Humalajärvi & Seilo, 1999; Finnish National Board of Education: www.oph.fi). The civic art education system is a relatively new art education system in Finland consisting of nine different types of art. Civic art education is peculiar to Finland, and broadens the all–round arts education provided at schools. The system gives individuals opportunities to deepen their knowledge in their chosen art field and concentrate on art they feel familiar with. 'Deepening' in arts does not mean only to acquire more knowledge of different techniques or materials, but to find a personal way to transform implicit thoughts to explicit. That means also understanding the meaning of arts and culture and valuing them. In other words, to find a language of arts and culture which is formed by signs, tools, and concepts.

As an example of exploring cultural signs, during Neothemi we created a project with students and pre–school children in a day care centre, whose aim was to reveal how children see culture around them. The children had the opportunity to examine some culturally and historically valued buildings in the centre of Helsinki. First, students photographed ten different buildings or places in order to create an exhibition for the children in the day care cen-

tre. Photographing was one of the assignments in the art course, including reprocessing photos for digital presentation. The children chose five different buildings or places, which they wanted to visit. The main aim was to let the children create their own questions about the buildings and other built artefacts, to get a picture of how they see culture, buildings and their specific features and how the children communicate about these cultural issues. (see http://www.edu.helsinki.fi/tt/neothemi). As an outcome of the project, a web site was set up for the project and a building game was created, where users had to identify a building from a detail they were given. Other projects were also presented on the web site through work with students or children.

Social interaction in learning

According to the socio–cultural view, learning occurs in a social and cultural context through social interaction. According to this approach, development and action can be expressed as a transformation of socially shared action related to individual mental processes (John–Steiner & Mahn, 1996; Wertsch, 1990; Kumpulainen & Mutanen, 1999; Kaptelinin & Cole, 2002). These kinds of socially shared actions are widely used in arts education, where artistic and cultural language plays an active role. The new information and communication technology (ICT) provides multiple challenges for the arts and for different ways of communicating through the arts: but even these new tools do not reduce the need for social and mutual interaction, and face–to–face contact.

Culturally meaningful 'tools' and 'signs' are mediators in a learning process, which connect individuals to their own surroundings and increase their socially shared cognition (see e.g. John–Steiner & Mahn, 1996; Brown & Cole, 2000). That means that even though they may be using ICT, the need for social interaction, preferably face–to–face contact, still exists. This means that ICT is not only used in order to gain prompt information, but also to deepen interaction in the learning process and an understanding of the individuals participating in it. Brown and Cole (2000) stress that cognition is distributed among such important elements as the participants, the artefacts they use, technology tools (this author's addition), and the social institutions within which they are housed.

The new IC technology has seemed a radical change from conventional learning situations. In virtual learning today a notable emphasis is on the constructivist approach, on student–centred learning, and on self–regulation. Constructivists have however been criticized for allegedly propagating approaches that are unproven, atheoretical, and even impractical (see e.g.

Land & Hannafin, 2000). That makes the need for social interaction and mentoring increasingly acute. In the articles in the earlier Neothemi publication (Karppinen 2004) a noteworthy feature is the stress on the social processes of learning. The influence of social context on learning and development is on mutual transformations between individual and collective activities, as Kaptelinin and Cole (2002) underline.

In the Neothemi project and in the educational continuum we have a challenging issue – how to transfer art items to the virtual world without losing their expressive character. A parallel, also challenging, issue is how to benefit from virtuality in the art learning process, when the art process requires social interaction. Thus in art education virtuality can be utilized only to a certain degree as a part of the learning process.

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Communication and Interaction

Raili Kärkkäinen

Things past, present and future

"Concrete habits do all the perceiving, imagining, recalling, judging, conceiving and reasoning….Yet habit does not, of itself, know, for it does not of itself stop to think, observe or remember. Neither does impulse of itself engage in reflection or contemplation. It just lets go….Without habit there is only irritation and confused hesitation. With habit alone there is a machine–like repetition, a duplicating recurrence of old acts. With conflict of habits and release of impulse there is conscious search." (John Dewey in R.S. Peters 1977, 67.)

To an individual an environment becomes a meaningful through the experience of living in it. The present environment can be understood in the light of the past experiences of life. Naukkarinen (2003, 37) perceives the present as a mirror for past experiences. Images in the present remind us of those in the past. Instead of a mirror, Dewey (1958, 272) talks about a gap between present and past: "There is always a gap between the here and now of direct interaction and the past interactions whose funded result constitutes the meanings with which we grasp and understand what is now occurring". Whether in a mirror or through a gap, the past influences the present, giving the environment a meaning and enlarging one's view of the future.

Buildings, nature and environment

The birth of a psychological environment stems from the recognition of objects and the construction of meanings. Students in the department of education in the University of Helsinki explored the relationship between substance and meaning in various historic eras of construction, the environment and the community, during a course on environmental education and aesthetics. Students were introduced to searching for information and knowledge about environmental objects and environmental education, which was then considered in the light of the students' own experiences, writings and works of art. In the portfolios, students reflect on environment as the foundation of a person's development, the significance of the senses in experiencing the environment, the dullness of monotony, the effect of culture over environment, enriching schemes of observation, and the creation of culture through art. The students' visual and verbal reflections have been saved on the website of Neothemi Finland under the title 'Buildings, nature and environment'. The pages will be translated into English.

Sensing the environment

"The senses are the organs through which the live creature participates directly in the ongoings of the world about him" (Dewey, 1958, 22).

In the environment the human mind copes with the complexity and mysteriousness of the world, tries to recognize and resolve problems in it and derive a pertinent order from the chaos of experience (Arnheim, 1997, 12). In the task of ordering the chaos, the visual sense constantly processes an abundance of material. Observations and experiences are perceived, then compared and their significance in terms of survival and living are constantly assessed. Images and objects are compared to earlier similar ones, while the observer is trying to identify their significance at any given moment. This means deciding if the perceived situation is familiar and safe, or unfamiliar and perhaps even dangerous. This often has to happen fast. Schematics are a valuable help in the swift assessment of the significance of seen objects; they function as simplified models to which the current observation can be compared so as to swiftly decide what kind of an effort the immediate situation requires.

Unusual and moving is obvious

In the constant process of making sense of the visual, monotonous and unchanging sights are swiftly set aside and easily ignored, despite complex visual details. The unusual gets attention, and moving objects are eagerly observed. For the sake of survival, it is necessary for a being to observe and assess the unfamiliar, which is why it provokes curiosity (see Arnheim, 1974).

Thus a 'good' environment should be surprising, as well as arousing feelings of security, familiarity and safety: as Dewey (1958, 167) comments: "The live creature demands order in his living but he also demands novelty. Confusion is displeasing but so is ennui". Aaltio (2002) talks about the same meaning, which is found in the Neothemi sites: "Seeing the different as richness other than a flaw or just an oddity is clearly an element benefiting the quality of life".

Jenni Kiri (2002) ponders Haapala's (1995) notions of monotony in the environment and links it to mundane 'dailiness'. In the repetition of daily life the uniqueness of singular aspects tends to vanish and it becomes difficult to clarify controversial meanings. The aesthetic experience hides in the surprising, the unusual and the attention–provoking, while it clarifies the daily, the mundane and the overlooked. In order to understand daily life one needs to seek out the different and make distance. It is possible to become accustomed to the surprising, which then becomes mundane and its significance transparent. Thus the environment should reveal itself only gradually; not everything should be perceived at once in order to avoid predictability.

Teaching observation and enriching the available schematics

In the daily environment one's vision has to be activated to observe elements critically, as it wanders around the familiar even where there is no obvious threat. Collanus (2002) stresses Varto's (1995) notion that by teaching observation and enriching learners' available schematics, it is possible to affect the development of thinking and make it possible to accept change

Maaret Nieminen (2002), supported by Berleant (1995), emphasizes that we do not just see our environment but move in it, change it and respond to it. We do not experience locations based on just shapes, colours and constructions, but also through breathing, smelling, touch, muscle functions and positions, the sounds of the wind, water and traffic. According to Nieminen this should be noted in art education and when working with children it is particularly important to learn to value the child's own way of exploring experimentally. Also crucial is the ability to be prepared even for surprises when planning towards a goal. When working with children, it is better to become acquainted with different environmental objects and phenomena without prejudgement. (Mäkivaara & Sarviaho, 1999).

Creating culture through art

According to Arnheim (1997, 12) art is an essential instrument to create meaningful order in the struggle of understanding the chaos in the environment. Arnheim talks about "visual thinking" (1997, 1969), and stresses that art

and art education is an indispensable instrument for training the mind in the skills required for successful work in any area of learning whatever (1997, 12).

The arts stimulate curiosity, questioning and the search for new perspectives. Art is a way to explore the environment. In the openness of art, the states of things are flashed up for a while or simply hinted at, and the observer has to think actively and come to conclusions by himself. In its openness, art makes things concrete and saves them from a generality that could be too monotonous. In art a little detail may have an enormous meaning. Art makes things visible in details and wholeness. (Naukkarinen, 2003, 41–53.) Art denotes a process of doing or making (Dewey, 1958, 47). In the operations of art the whole body is involved with the environment; as Dewey puts it: "…man uses the materials and energies of nature with intent to expand his own life, and that he does so in accord with the structure of his organism – brains, sense–organs, and muscular system" (Dewey, 1958, 25).

According to Nieminen, art and art education are the creators of culture; they are also profoundly significant in the understanding of environment and distribution of cultural heritage. Through knowing art it is possible to get acquainted with culture from many different angles and build oneself a tool through which to participate in the creation of culture (Nieminen, 2002). Talking about art as a way of 'knowing' suggests that what we are dealing with is a form of intelligence; through art it is possible for us to see ourselves as we are (Barnes, 1994, 13) and what kind of relationships we have with others.

Nykänen (2002) draws attention to the importance of environmental art together with environmental experience and bases his notions on those of Jokelas (1995). Making observations is paramount in assessing and valuing the environment. Observing and portraying the environment is a learned habit and therefore practising observational skills is important. The study and understanding of art opens doors which make it possible to take notice of even the more mundane phenomena and structures. Through the new ways of observing, even a mundane environment is seen in a different way. Architecture relates to environmental, visual thinking, with values also being condensed into works of art and other artefacts in the 'made' environment. Dewey states that perception which occurs for its own sake is a full realization of all the elements of our psychological being and: "…what is perceived is charged with value" (Dewey, 1958, 256).

Aaltio (2002) ponders values and their significance in the environment: "… A value is generated through experience… getting through values is significant …Once the understanding of value is generated, comes forth the desire to protect, to care and to nurture."

The constructed cultural environment

The visual sense works quickly with objects in the environment. Liljeqvist recognises Pallasmaa's (1995) notion of the supremacy of the visual sense in our society. According to Pallasmaa, the founding flaw of today's architecture is in its visual monotony, which while disregarding other senses than the visual, leaves architecture beyond the grasp of the emotions. Constructions are not just aesthetic and technical objects, but material environments that should be lived through the senses (see Nikula, 1998, 185).

A good environment communicates the past, the present, and the future. Mäkitalo (2002) supposes that understanding this time line helps in placing the self within history and present society. A profound architectural experience combines space, time and matter. It generates a sense of locality, which stems from the joint effect of the landscape, soil, weather, building materials and culture. The organized, meaningful environment that is in harmony with the scale of a sensuous human body, as well as with the memories of the mind, defines the image of self and forges one's relationship to the world.

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Jacqueline DELCLOS
Universite Blaise Pascal, Clermont-Ferrand, FR

COMMUNICATIVE TEACHING: ON–LINE PUBLICATION OF UNIVERSITY WORK IN THE HISTORY OF ART

When the Blaise Pascal University department of History of Art and Archaeology in Clermont–Ferrand heard about the Neothemi project, the notion of a virtual museum captured the attention of some of its members. It encouraged them to take part in the experiment in order to explore its potential both in its epistemological and pedagogical aspects.

Everyone can immediately perceive the same meaning of the term "museum": a collection of real documents, preserved for public exhibition, resulting from an approach which may be thematic, technical or chronological, in order to both delight and educate its visitors. But what is a virtual museum? A first answer would suggest that it is a collection of photographic reproductions of real documents, published on the web with the same aim of delighting and educating its website visitors. But isn't this answer somewhat limiting?

This museum "on the web", which is doubly virtual by the virtual nature of its collections and by that of its visitors, leads to a widening of the very notion of museum. The virtual nature of these collections enables one to go beyond the exhibition of real documents in favour of all kinds of documentation, images, texts, sounds or associations of one with another. The virtual museum thus seems infinitely extendable. The visitors feed their curiosity with every click of the mouse. It would be, in the absolute, an ever–changing museum where one would organize whatever temporary exhibition one wanted. And in this sense, the virtual museum would be continuously generating the imaginary museum of its visitors. We have here, within arm's reach, a degree of flexibility, hitherto unknown in the presentation of civilization phenomena. [1]

If such are the ultimate goals which make the virtual museum desirable, our participation in its making had to be defined within a circumscribed, and obviously less ambitious, framework. When we chose the theme of the French pavilion, "Arts and Cultures", we did it first of all with a pedagogical

aim. This theme enabled us to gradually involve the History of Art and Archaeology students whilst beginning the adventure with those enrolled in a new vocational degree course in textile and tapestry arts (Licence professionnelle Arts du Textile et du Tapis) which had just been approved by the Ministry of Education. The students on this course have to take an ICT module and Neothemi enabled them to learn how to build a website and put their work on textile arts online.

A first entry was therefore devoted to a description of the course, and the Learn more section started producing a presentation of the different techniques of the textile arts, a textile bibliography, an international events calendar concerning the textile arts, and a list of links to the main professional partners of the textile arts world.

Our international seminar on Textiles on the web took place in December 2003. The aim of this one day event was the meeting of people involved in the textile arts and the exchange of their experiences, all of whom were interested in ICT for different reasons. Claudia Saccone presented the issues of Neothemi at this event. The students took part in the exchange. This event gave us the idea of presenting in the French pavilion the results of the work in which the students were involved during conferences or seminars organised by their teachers. From these exchanges, which can be consulted online in full, I will take three significant examples, from the papers given by Audrey Mathieu Girard, Jean–Paul Leclercq and Jeqan–Marc Sauvier, confirming the advantages of bringing together ICT and research in Art History, just as in artistic production or in heritage protection.

Audrey Mathieu Girard presented (quoted loosely in italics) one of the oldest textile databases in France belonging to the Textile and Decorative Arts museum of Lyon: *the project of an image database was started as early on as 1989 by the museum with the name S.O.I.E.R.I.E. (Organization and Inventory System for Research. For its inspiration and study: from the development of the idea to the actual implementation of this database, Lyon's Chamber of Commerce and Industry benefited from the support of numerous partners, in particular from the textile manufacturers, but also from the Ministry of Culture and from the Rhône–Alpes regional authorities. The database became accessible to the public in 1994. It was entrusted with two important tasks: on the one hand the commercial task of proposing an extensive choice of images from the Textile and Decorative Arts museum for creative purposes and on the other hand the task of conserving heritage by allowing original works to be preserved thus ensuring conservation preventatively whilst at the same time being a tool for collection management. An image management software program called "Ajaris Pro" by the company Orkis was*

chosen. Audrey Mathieu Girard then listed the projects of the Textile and Decorative Arts museum of Lyon.

- *Continuing the work on the thesaurus as previously mentioned, at present on the theme of decor.*
- *The desire to allow other departments of the museum to modify certain sections of the inventory forms (inventory department, restoration department, library, conservation unit), with a single person in charge of approving the changes to the image bank itself.*
- *The desire to change the software to a collection or inventory management package rather than an image bank package. "Micromusée" or "Musenet" is the likely choice.*
- *In the long term we would like to create a thesaurus for the decorative arts and include works in this same database. [2]*

The Micromusée software that the Textile and Decorative Arts museum of Lyon is thinking of getting, is already in use at the Musum of Fashion and Textile (UCAD, Paris). Jean–Paul Leclercq, curator of this museum, discussed its merits and its limitations: its advantage is that is used at many museums in France and in other countries. It is probably well suited to simple standalone or locally networked applications, and wherever the organization of the software, with its predetermined fields is not a disadvantage but rather an advantage. Simple but necessary guidelines for use, after creating the thesauruses, can replace the preliminary study, which is always difficult and requires a double expertise in information technology and library science, which is necessary in order to structure a freely configurable database. It is to be seen as inventory software with simple indexed search possibilities. It can display digital images but access to the collection from photographs is not its strong point. For that it would need a primary search key other than the numerical order of the inventory plus the possibility of a methodical layout selected by the user, institution and/or the person consulting the database which, by on–screen permutation, masking or free indexation, could show the works in an order suitable to the required search. [3]).

Jean–Marc Sauvier presented us the computerized colour chart of the Mobilier National in Paris, used for the production of tapestries and carpets in the Gobelins, Savonnerie and Beauvais manufactories. *In the weaving and restoration of carpets or tapestries, the work of colour sampling is the first essential step. Using threads of wool or coloured silks, the weavers interpret the artist's palette. This selection process enables the dye works to dye the quantity of wool or sink needed for the weaving process. This selection is made possible by consulting a physical and computerized database of all the wools that exist in the different*

wool reserves of the French national carpet and tapestry manufactories. In 1982, the results of inventory work done in the reserves showed that stocks were partially depleted. It was then considered indispensable to resort to research, using new technologies, to save this heritage. This involved reorganizing the reserves according to a unique colour classification system for all the manufactories. NIMES I was set up in 1986 by the colourist Jacques Fillacier and Jean–Paul Longavesne, professor at the ENSAD and at Orsay University. Now in its second version, NIMES II "Couleur" was developed under the responsibility of Monsieur Tabary and Monsieur Sauvier, restoration managers and with the financial help of the Ministry of Culture… NIMES managed to achieve an homogenous reorganization of the colours according to colorimetric and psychometric criteria. The analysis of each wool sample is done using a tri–stimulus optic fibre colorimeter: the MINOLTA CR 100 connected to an Apple II computer. The development is done with a CR 300 which is compatible with an IBM computer configuration and specific software providing perceptible and psychometric sampling references: tonality and saturation clarity. According to Jean–Marc Sauvier, NIMES has many advantages: a new classification has been designed allowing all the colours used (physical storage of the colours by the wool samples) to be listed and memorized in the form of a database (stored on computer) which helps the weavers do their sampling work by manipulation and comparison. A special colour chart was designed containing the 72 pages of colour tones which we can consult, each one having a potential of several hundred shades. For the first time we can establish a range of samples with a visual representation of several coloured areas of different tones. This is a definite improvement in working conditions. The removable nature of the samples is an advantage for the manipulations and the comparisons in order to perfectly define the colour sets. This memorization of the colours also gives us the possibility of tracing the ageing of the pigments, of reweaving a work in its original colours or of making it easier to find an older colour for restoration work. Any new dye has its place in this colour chart allowing for its renovation and enrichment... NIMES, this new colour chart, has the main aim of giving weavers and restoration specialists a new tool to improve their working conditions. A centre for research in colours and techniques could enhance tapestry art, and at the same time provide a reference service to art schools, artists, plastic artists, architects and colourists as well as to restorers of textiles in museums. It helps to resolve the problems of colour communication within the European community where the languages of colour are different. A system like NIMES offers the perspective of setting up a European colour communication network and of creating access to classification spaces, provided we can develop the classification utilities adapted to the needs of the user, and which facilitate dialogue with colour technicians. To conclude, we can say that the originality of NIMES is to offer not a nor-

malization of names or colour coordinates but, on the contrary, a connection between colour organization systems such as those developed in different countries (LST, NCS, Munsell, DIN or others…). In this way, any user can acquire a colour or chromatic range that he can translate into familiar terms that he can understand. At present NIMES has a list of 30,000 classified colours that can be consulted in one place. [4]

In the French pavilion, the third entry relating to archaeology, has been provided by the account of the excavation work done by the Clermont university team on the Greek site of Kouphovouno. Beyond the description of the site and the questions it raises, the Neothemi readers can also find a detailed and illustrated account of the methodology of the excavation itself. The fourth entry is not yet ready. Our plan is to select some lectures and themes from those of an academic year and entrust the writing up to the students themselves.

We have not planned to publish online any kind of database of the themes we have studied. Our virtual museum will be incomplete but personalized and enlivened by the year's academic work. But even if the French pavilion is at university level, it has been designed to allow a dialogue with all the other academic levels. The presentation of students' work only aims to introduce elements to exchange with other students or school pupils interested in these themes. The module that will make these exchanges efficient must be the forum which, although planned since the beginning of this website, will only be operational during this academic year which is now starting and when the students have looked into the technological possibilities.

In this way, by putting our cultural experiences online, in the interaction between our choices and our queries, we hope to see the birth and development of a virtual museum of European culture which not only aims at the transmission of heritage but which will also lead to the construction of a shared imaginary museum.

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[1] See Claude Cadoz, *Les réalités virtuelles,* Paris, 1994.

[2] See also Odile BLANC "L'étoffe numérique. La banque d'images du Musée des Tissus de Lyon" in the Acts of the conference Vers une nouvelle érudition: *numérisation et recherche en histoire du livre,* 12e Entretiens du Centre Jacques Cartier, ENSSIB, Decembre 1999, Villeurbanne 1999.

[3] This paper can be completed by the recent work of the same author: Jean–Paul LECLERCQ, Jouer la lumiére, exhibition catalogue of the Musée de la Mode et du Textile de Paris, UCAD/Adam Biro, Paris 2001, and *Jouer la lumiére: le textile, la lumiére et l'Ïil,* Acts of the conference, Paris, UCAD, 12–13 Novembre 2001.

[4] This can be completed by: Jean–Pierre LONGAVESNE, "Machines – peindre et informatique picturale", in La science et la métamorphose des arts, a collective work under the direction of Nicole DÕAGAGGIO and Raymond DAUDEL, Paris, 1994. See also Patrick CALLET, *Couleur – lumiére, couleur – matiére,* Paris, 1998.

Rainer BLASIUS
Medienzentrum Kaiserslautern, DE

THE POTENTIAL OF NEW MEDIA FOR ACTS OF REMEMBRANCE

Introduction

The first part of this paper for the NEOTHEMI publication is based on the project "Synagogues in Germany – A Virtual Reconstruction".

In the second part the reader will find an excursus to the other side of the coin of new media. Will they stand the test of time as the old media did and still do?

Part 1

The Potential of New Media for Acts of Remembrance: Synagogues in Germany – A Virtual Reconstruction

Our daily life is unthinkable without new media, especially the internet. They changed our habits and offer opportunities we could not imagine just a few years ago. Also in research work with memorials and in the acts of remembrance we can find this rapid development.

During the last ten years the technology of 3D CAD (three–dimensional computer–aided–design) made possible the electronic representation of things which had disappeared or been destroyed a long time ago. Drawings or models, the traditional architectural methods, cannot reach the advantages of 3D CAD:

- Visualization through every angle of view.
- Gaining spatial impressions from the perspective of the observer.
- Virtual tours inside and outside of the building increase this effect.

In 1994 the synagogue of Lübeck was the target of an arson attack. This was the starting point, together with the interest in new technology and in architecture, for Marc Grellert and seven other students from the Darmstadt University of Technology to reconstruct, within the computer, the synagogues which had been destroyed during the Nazi years.

The idea was to reconstruct by means of CAD the evidence of Jewish culture and architecture in Germany, which had been destroyed systematically and erased from the Germany cityscape by the National Socialists since the night of the pogroms on November, 9, 1938.

Architecture is a petrifaction of the social order – and the same is true for architecture destroyed by human hands. The systematic destruction of more than 1400 synagogues and tabernacles was the sinister announcement of what was to follow: the murder of approximately six million European Jews. Not only had the buildings been destroyed but also construction files and documents, either by the Nazis or in the wake of the war. Very often also

the original locations of the synagogues had been treated with ignorance and insensitivity.

"Visualizing what has been destroyed" (Koob, p. 30) became possible by the technological developments since the early 1980s which made it possible to create three–dimensional geometries on the computer, and to create the illusion of two or three dimensions. It was obvious that this technology would be used in the service of architecture. The reconstruction of historical buildings and urban landscapes uses the same method. Information technologies, in particular CAD, offer the opportunity to look at the buildings in three dimensions and of simulating their condition on the computer. This technology allows us to visualise those elements of the architectural past that have not been rebuilt – like the synagogues.

The reconstruction of buildings from the past is based on knowledge from various sources: blueprints, contemporary photographs and representations, as well as written documents and the evidence of contemporary witness. These numerous sources are added to a unity, accounting as well for sometimes contradictory elements. When there are too many contradictions two possibilities arise: to accept this deficiency or to use additional reconstruction methods. These methods might be "…the zeitgeist which influenced the architecture, the thought processes of the architect, the contemporary buildings and architectural rules that made their mark on the building." (Koob, p. 32). This procedure may be controversial or even unscientific, because it might lead to a false account of the past. For the reconstruction of the synagogues the incorporation of such methods is unavoidable. Without such

projection it would be impossible to create an image of the lost architecture of these German synagogues.

Ten years later, the memories of what had been destroyed are available worldwide through the internet under http://www.synagogen.info. The internet as a relatively new communication technology has opened the cultivation of remembrance to the world regardless of space, time, age, gender, or religion. Marc Grellert explains: "In my opinion the internet is the most important medium of remembrance within all the new media. It is a non–material world in the public realm. This non–material world offers opportunities for remembrance which go above and beyond the material world." (Grellert, p. 28).

Due to the one–way transmission of information in the material world, acts of remembrance have a receptive character, whereas in the non–material space we find action and interaction. In the future it may be possible for visitors and historical witnesses to meet in non–material space – in a virtual synagogue. So encounter and communication are creating an interactive form of remembrance. While the material location can show only one aspect of the past (for example a synagogue) the non–material space offers a complete approach. Another advantage is the immediate updating of contents, and connections to other internet addresses.

One result of the research was the development of a non–material monument to the destroyed synagogues – an interactive archive in the internet. The Synagogue Internet Archive allows an active participation in the creation of the archive. Visitors can find information on 2,100 synagogues which existed in 1933. The information comes from documentation and include the loca-

tion of the synagogue (street, city, federal state, the period when it was used, the date of destruction etc). The user can add "witness reports, comments, links or pictures relevant to the synagogue of his or her choice in the archive, thus enriching the basic information" (Grellert, p. 29). The archive started with an overview of German synagogues, including those in the newly–formed German states. In the meantime Austrian synagogues had also been included.

Although the use of the internet will be taken for granted by the generation of the 21st century the authentic locations of memory will not be superfluous. For Grellert relevant remembrance can happen in parallel spaces: the historical authenticity in the material space and the non–material remembrance in the digital net. Remembering the synagogues at their authentic location should therefore address the immense loss for the urban landscape: something which is no longer perceptible in the townscape of today: The synagogues were integral part of a shared culture of Jews and Gentiles in Germany with a formative influence. They once defined the urban landscape of many German cities in the 19th and early 20th century.

Nowadays often only a commemorative plaque or stone reminds us of the synagogues, their history and destruction. We must agree with Grellert that remembrance should, wherever possible, go above and beyond a mere mention of historical fact by adding an architectural and spatial dimension and to give an impression of the significance these synagogues once had on the urban landscape.

Three examples

- In Vienna in Austria the original space of the synagogue in the Tempelgasse is marked by four mighty columns to show the contours of the entrance front.
- The contours of the foundation of the former synagogue of the Börnerplatz in Frankfurt in Germany are visible as undeveloped spaces.
- Another example is the Synagogenplatz in Kaiserslautern in Germany. On November 3, 2003 the memorial of the synagogue was consecrated as a "…symbol for that what was created at this place but also for that what was destroyed at this place" (Lord Mayor Bernhard Deubig during the consecration). The memorial consists of two parts: The two pillars (6,95 and 7,20 m) and the space, in which hedges symbolise the ground plan of the synagogue (blown up during September 1938). The fragments of the pillars belong to the former side entrance where are chiselled in the names of the 196 Kaiserslautern victims of the National Socialists.

The synagogue some days before the blasting, the memorial today, the sandstone slabs with the chiselled names

We all agree that the memory of the Holocaust should be present for future generations to learn the lessons for their present and their future. Therefore the methods of remembrance must be attractive to young people and the new media will play a significant role. Computer reconstruction, the memory in the internet in combination with reports from witnesses and background information on the Nazi time, Jewish culture and architecture "…will offer an new incentive to deal with the crime of National Socialism, making us ever more alert to new anti–Semitism" (Grellert, p.29).

Part 2 / Excursus

The other side of the coin: Help, we disappear! A digital dark age and the loss of all memories?

If you try today to copy data from an only 10–year–old computer and to work with them with current programs you will immediately get problems in copying: the storage devices are not compatible with old disk drives and interfaces.

Photos, emails, word–documents etc. are nothing other than data to be interpreted by certain programs. If these programs get obsolete and fall into oblivion, all data which represent our era are disappearing with them.

The loss is already considerable. Any files carefully recorded on 5_" floppy disks a few years ago are now unreadable. Not only have those disk drives disappeared, but so have the programs, operating systems and machines that

wrote the files. Files may be intact, but they are as unrecoverable as if they never existed. The same will happen next to the data on 3_" disks: new computers are more and more delivered without disk drives. It is not enough to save your files to the latest storage medium (currently CDs and DVDs) but the computer also needs to understand the document's file structure because even the newest software reads only a few versions back.

So the computer files may survive but the equipment to make sense of them might not. The following generations will be without photos to remember their parents or their own childhood; the world of academia without their research results.

At the University of Southern California the neurobiologist Joe Miller could not read magnetic tapes from the 1976 Viking landings on Mars. He had to track down printouts and hire students to retype everything. It may happen that businesses will not be able to read electronic records they need for lawsuits.

Protecting for the future

Former University of California – Berkeley librarian Peter Layman points out: "When we know a book is important, we...tell a publisher: print it on acid–free paper. And with decent library air–conditioning it will last 500 years. If you want to preserve something else, like a newspaper, microfilm it. We know there is a 500–year life to microfilm properly cared for. But what do we do with digital documents? What we do today is we refresh them every time there's a change in technology – or every 18 months, whichever comes first. This is an expensive approach! We need a digital equivalent to microfilm, a 500–year solution." (in: Steward Brand).

Meanwhile there are many approaches and ideas to protect data for the future:

- Collecting old computers in museums; but it is very expensive to keep them workable.
- Emulation: Imitating old platforms to run old software, properly formatted etc.
- In the USA a group of internet specialists and engineers founded the organisation "The Long Now foundation". (More information in: http://www.longnow.org.)
- In Norway a computer clinic specialises in resuscitation of old computers.
- At the university of Köln in Germany a holographic mass storage has been developed. The data are burned immortally in a crystal and can be read by laser.

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Photos: by Rainer Blasius and Medienzentrum Kaiserslautern
Photos of the virtual reconstruction:
Marc Grellert; Manfred Koob
Darmstadt University of Technology
http://www.synagogen.info

Csaba BÁNFALVY
Eötvös Loránd Tudományegyetem, HU

THE CULTURE OF WORK

Work is as much an organic part of culture as other territories of "high culture" (literature, arts, fashion etc.). It is directly related to the everyday life of all of us so it is an issue of interest on its own right, by its own social nature (Bánfalvy 2003, Hayek 1967, Jahoda 1982).

In the following pages we describe what we mean by the culture of work.

I.

Culture is the sum of knowledge, values, skills and behavioural patterns in society. When we mention the word "culture" most people often think about "high culture", science and art exclusively. However, all the components of culture occur in work too. More than that, the culture of work is closely related to everyday life and to the life of all the people. Work – in the broadest sense – is a type of social activity meeting human needs. While work is an effort from the producer's perspective it is a source of pleasure from the consumer's point of view. The production and the consumption functions are the two main aspects of the same work.

All the elements of work are socially determined, *so work is culturally shaped.*

Also, while culture appears through work, work is also *reproducing culture*.

People get to know themselves and their environment through their work and they form an opinion about each other on the basis of what their work is like.

People leave their signs on everything when they work with it. They create *tools* from natural objects and also from artificial materials. *Natural objects also gain social functions* through work.

That is how a cave becomes a human shelter, the river becomes the source of drinking water and wild animals and plants become food or raw materials. At the same time, work can also create things that never exist in nature: alloys, plastic bags and genetically manipulated food are examples.

While performing work people also change themselves – physically and mentally:

- The hands of a pianist, for example, are different from those of a carpenter; those who work in clerical jobs more often need eyeglasses than people in other occupations.
- The way a hunter perceives the sight of a forest is different from how a wood merchant or an environmentalist would.

II.

The central characteristic of European culture is that great importance is attributed to work. In this respect, the culture of Europe is different from other cultures (Boltho 1982).

Even in the early period of European cultural history, work appeared in art. The most ancient carvings and paintings found in caves and the earliest form of music, the work song – are connected with hunting as work. The earliest pieces of literature also set up their content in a work context, sufficient to mention the epics of Homer, the Bible, the Kalevala or many folk tales.

At the same time, ideas about the meaning and the importance of work vary substantially throughout different periods of European history, regions and countries and social groups.

Culture exists in the form of *subcultures*. Let us look at some historical examples:

The dominant form of work varies at different stages of history. Hunting societies, nomads, settled agricultural communities or modern industrial societies attached the greatest importance to diverse *forms of work,* which matched their development. The form of work which was the most common and which best served their interests was considered to be the most important.

In pre–capitalist and non capitalist societies work was more than just the means of meeting economic needs. It was also perceived as a complex social ritual which was full of emotional and intellectual connotations. Work was not simply an economically useful activity but it was also morally right. When the traditional medicine man tried to cure somebody he not only applied the herbs, he found in the natural world to achieve his goal: he also prayed to a helpful spirit for assistance. The peasants of the Middle Ages started their work by praying to God.

Ancient Greeks differentiated between the purely economic and the socially useful types of work; only the latter was viewed with high respect by them

and only this type of work was performed by free citizens, the rest being left to slaves.

During the Middle Ages work in agriculture and industry was considered to be more useful than trade, commerce or finance because these latter did not produce material goods. This was mainly because agriculture and industry served the needs of the noblemen.

Some forms of work were so highly esteemed that they had their own Saints to protect them in Medieval Europe.

The different versions and branches of Christianity also varied in what social functions they attributed to work. Genesis tells us that work is a punishment for original sin and it is the fate of humankind. It also suggests that idleness was the original condition of the blameless soul (it was the Lord, not Adam, who planted the Garden of Eden!). Though the Old Testament in the Bible presents us with work as a punishment people have to suffer, the Roman Catholic Church in the Middle Ages ordered their followers to pray and work *(orare et laborare)* and it attributed a positive role to work in human life, similar to prayer.

In the Protestant version of Christianity work was presented as an even more important human obligation because through work people take care of the good things God has given to them. The Protestant ethic was the glorification of the virtue of diligence at work.

The Medieval farms in the villages and the guilds in towns served, in addition to their economic functions, as political, educational, recreational and religious institutions. They promoted both social harmony and economic stability. The owners and the servants or workers had a mutual social and economic responsibility – they made up a group with the assumption that their main interests were more or less the same.

The rise of *capitalism* created a completely new relationship between owners and workers and a new concept of work too (Friedman 1980). In the early period of capitalist development (XVII – XX centuries) work was understood basically as an economic phenomenon: as a source of income and profit that was sharply separated from pleasure. The relation between employers and employees was turned into a purely economic one. Under capitalism the sins most condemned, during Medieval Christianity pride or greed, were replaced by idleness.

During that era work went through the *process of specialisation* and professionalisation; the working process was fragmented into rational parts, and specialists' vocational training was established. Work was performed in the form of paid work when workers were employed by capitalist owners. The

common workplace was the *factory* where work was rationally organised. One of the main proponents of modern rational capitalist mass production and organisation theory, F. W. Taylor, characterised the system as one where "the work of every workman is fully planned out by the management at least one day in advance, and each man receives in most cases complete written instructions, describing in detail the task which he is to accomplish, as well as the means to be used in doing the work. This task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it" (Taylor, 1964, 39).

In today's still dominantly capitalist system most people are involved in paid work and their lives are strongly influenced by the rules of work in formal organisations.

Many of the *unemployed* suffer serious losses when they – unintentionally – get out of the organised world of work. As observed, they have problems:–

- in organising their own lives by themselves, in time and space,
- in maintaining their social relations with other people,
- in participating in collective activities,
- in maintaining their positive view about themselves.

During the XXI century a new practice and concept (culture) of work emerged in the most developed countries in Europe. The current concept emphasises that work is a means and way of human *self–development and self–expression* and it is not just a hardship but it is also a potential source of joy. Work is not only creating economic wealth in society but it can also be a source of individual and social cultural enrichment. In some cases it is difficult even to differentiate between work and pleasure. The *quality of life concept* emphasises that physical and mental well–being are as important as economic wealth. The new concept points out that when performing work social needs must be harmonised with the need of the environment.

III.

Even if we formulate a consistent and consensual definition of work we have to be conscious that *work* appears in a *variety of forms in the same society* (Ashton 1986).

First of all, work is performed in three *different spheres of the economy* of the modern society. Households, the public sector and the market represent three qualitatively diverse ways in which work is performed in a modern mixed economy. The division of work, the goals and the criteria of success

and failure are all different in the three sectors. Many of us participate in all the three sectors when performing work and we are unconsciously and flexibly able to change the three diverse sets or roles necessary in the different work situations. Just think for example about a teacher when

- supervising the homework of his/her own children,
- working in a public school and
- doing extra hours private teaching for extra money.

The teacher's whole behavioural pattern changes substantially according to the diverse requirements of the three spheres of work activity. Furthermore, work appears in diverse forms *in different regions and countries*.

For *geographical reasons* some regions of Europe are more developed in fishing, some others in forestry, agriculture or mining. The various forms of work appear in the form of different branches of economic activity. The rich variation of sectors of the economy involve a variety of *occupations:* that of the fisherman, the broker, the miner, the bookkeeper etc. Different occupations appear with different frequency in different countries and regions.

Each of the occupations have their

- typical tools and equipment
- typical routine of actions
- characteristic set of knowledge and skills
- typical visual appearance
- own set of work–related words
- own work environment
- typical work organisation.

Each type of work can be performed on a regular or non–regular basis, in legal or illegal ways. Some of the work requires a settled way of life, some others are performed by "wanderers".

The *size* of enterprise also changes the form of work. The bigger the work site is and the bigger the number of people participating in work, the less informal the atmosphere is getting and the less spontaneous the interpersonal relations. The household, the small family business, the big industrial plant or the hospital represents very diverse forms and styles of work due to the differences in the size of the work site.

All the factors influencing the form of work appear in national representations of work. That is how the *stereotypes* of the French winegrower, the Italian waiter, the English sailor, the German factory worker, the Dutch tulip grower or the Gypsy wanderer have developed. New stereotypes replace old ones but the current major tendency in Europe is that the dominant forms

of work are becoming very similar or even identical in the different countries and regions.

We Hungarians reject the stereotype of the Hungarian as a horseman, which has nothing to do with current reality, but at the same time we have to admit that this stereotype (as well as all the others) is rooted in history and is the remnant of what was once real fact: the form of work which once typically existed in our country and in a social group.

The similarity in work across Europe is more striking today than 50 years ago. Europe is becoming more and more integrated through social and political collaboration which in turn is reflected in a trend towards a uniformity of work too. As *cultural unification* is developing in Europe the culture of work is one sphere where this general tendency is vigorous – so much so, that sometimes it is not easy to tell which country we are in (Gershuny 1978).

IV.

The products of work are either material *goods or services:* from shoes to theatre performances. These products appear in a variety of forms but they have a lot of common features too. Some of these products are quite visible; some others are more hidden from the public (like security systems) or invisible by nature (e.g. vocational guidance).

When we think about the products of work we have to take into consideration that production involves with it consumption and vice versa.

When a house is being built (production) the raw materials needed in the construction process are being used up (consumption). A given type of production involves with it a corresponding type of consumption: *mass production* for example goes together with mass consumption. So work produces not only goods but the forms of the consumption of goods too.

At the same time, work also produces and reproduces *social relations* (throughout production and also during consumption), which often intrude into the sphere of non–working life.

The way work is divided into functional parts relates to the specific knowledge and skills of workers in diverse occupations (Pahl 1985). The technically functional hierarchical structure of the work organisation for example is *replicated* in the power structure in the factory and in society in general.

Networks of communication and transport in Europe are related to the geographical division of work. These networks are the preconditions of effective work and the networks are also produced by work.

The *spatial distribution* of people's homes is to some degree determined by the workplace. The geographical distribution of public services in education, government and health–care replicates the geographical stratification of the population. Shops and entertainment networks also follow the population structure and indirectly the complicated and complex division of work.

V.

Work is divided among social groups (Bergier 1976).

There are some highly *respected* and some little respected jobs and the individuals and the social groups that are performing the diverse types of work are more or less respected too. Cleaning and cleaners for example are less respected than banking and bankers. Cleaners frequently belong to the lower social strata; often they are immigrants or belong to poorly educated minorities. Cleaning work is low paid and insecure, sometimes unsafe, and requires little or no training or education. At the same time, the well paid, secure, safe jobs as those of medical doctors, lawyers or engineers are mostly performed by persons or groups of higher social strata origin (Lonsdale 1985).

Diverse social groups have their own *prestige scales of work* too usually favouring their own group (Heatherton et al 2000). Physical workers aspire to so–called blue–collar work; highly educated intellectuals have the highest esteem towards white–collar work. In villages where more traditional values dominate, the people are less respectful towards trade (and tradesmen) or any other activity related to consumption, than to the traditional agricultural productive forms of work. Hardly anyone among villagers in Hungary would call the activity of a media person serious work.

The *attitude* towards enterprise and entrepreneurs is similarly ambivalent in most of Europe. Even in Britain, the home of the modern capitalist enterprise and entrepreneurship, the majority of people are more respectful towards the landed gentry than to the rich businessman (Vincent 1991). It is even more so in Central Europe where capitalism was created by foreigners (mostly from Western Europe) or by entrepreneurs from marginal social groups, and the capitalist enterprise was never considered to be a gentleman's activity or something consistent with traditional national cultural norms.

The *motivation* to work also differs between social groups. Some social groups consider work as an unavoidable inconvenience in life and they work only as much as absolutely necessary for their survival. Middle class people

see work more as a source of material abundance and social status and they are willing to perform extra–work to improve their social and economic well–being.

Some individuals and social groups differ from middle class people not only in what value they attribute to work but also in how they prefer working. Some of those who work a lot do not favour the strictly regulated modern work organisations where work is performed in a pre–defined time and space order. They prefer working in more flexible work systems.

Work is also *divided by gender*. Though the strict sexual division of work is more typical in some regions and in some social strata than in others, it is obvious everywhere in Europe. This is hardly – and with technical development to an even less extent – the consequence of biological differences between sexes, but is more related to the traditional negative discrimination towards women in European societies. That is how many of the traditional male and female jobs survive economic and technical development.

Work is also divided by *age*. Young people, for example, are more frequent in modern economic sectors and modern jobs, while older people are over–represented in high ranking positions. Though legislation in Europe has been quite successful in changing this situation and eliminating sexual, age or other discrimination in the workplace and in the world of work in general – the success is still only partial.

Work is the basis of *social prestige* and one's social status is expressed through work too. In the currently dominant European value system, wealth and employment go parallel with social success. Unemployed people are considered as socially unsuccessful as well (Warr 1987). The economically inactive (children, the chronically ill or the handicapped) are considered dependent persons by most of the economically active.

Variations also occur in this respect by countries and by social groups: in some social strata work and social success are closely related, where in some others they run independently. The above–mentioned tendency of close correlation between social and economic career is stronger in Protestant than in Catholic cultures (coming from the differences in work ethics).

In many countries (as in Hungary too) employment as a form of performing work is still an integral part of the male role and less considered as a necessary social or economic criterion for the achievement of social status by the female.

The way people build up their own *identities* and develop their self–respect is also related to the work they perform. Other people also identify you on the basis of what kind of work you perform. Only very few people can say, however, that they live for work which makes sense to them

and which they enjoy doing. Those who work exclusively for money and do not have any joy in their work, do not see what sense their work makes and do not gain any social respect for their work, can feel *alienated* by work (Jahoda 1982, Warr 1987).

VI.

As tourists we may have experienced how differently work is performed in different European countries. Besides the above–mentioned examples we can also consider that the opening hours of shops, banks or offices vary almost country by country. If we take a job abroad or work together with foreigners at home, we also realise how other countries' work style differs from ours. The working style is related to how *work is regulated.*

One form of regulation is the legal one. The European Labour law provides very detailed regulation in the formal sphere of work. Wage systems, employment conditions, working hours, some holidays etc are all regulated formally and centrally in the legal sphere of work.

On fundamental issues European labour law is unified, and makes a similar regulation in every EU member country.

At the same time, there are also many locally, nationally or regionally regulated elements of work. Legal regulations mostly reflect the real conditions and the balance of power between the participants in the world of work. If this is not so conflict can occur, sometimes in the form of *mass demonstrations or strikes*. Law regulates even these actions and most other conflicts.

Besides legal regulations, which appear in laws, *traditions* are equally important regulators. Traditional values and behavioural patterns are very influential in the informal economy (like the household) but they also affect how laws are implemented in practice. The division of work by sex and age in the household for example is more determined and regulated by tradition and less by technical or economic circumstances formulated in laws (especially in multi–generation traditional families). Even if the man is a professional cook, the woman will cook the lunch at home. The practice of siesta in the Mediterranean is also maintained more by tradition than by current economic or technical necessities. National holidays are also related to national traditions and vary country by country.

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Anne GALLIVAN
Mercy Secondary School Mounthawk, IE

ORDINARY PEOPLE

A Reflection

Ordinary People is the title we selected to represent the Irish pavilion. It was chosen because it is a universal theme. It reflects our estimation of our place within the partnership. When we were embarking on this innovative Network we had experience of Comenius 1 project work, of cooperation and collaboration with countries from other regions in the European Union working on a common theme based on Cultural Heritage. Four years ago at the discussion stage of Neothemi we were acutely aware of the digital divide, of the possible difficulties of accessing and presenting cultural icons of our heritage while maintaining the integrity of the traditions. With the support and encouragement of the partners we feel we achieved our target.

The Virtual museum was accomplished through detailed clear communication and the skills of the Technical Team in Molise. The website www.neothemi–ireland.com a vital contribution to the project for which we had full responsibility was a considerable undertaking. Tom Gallivan of Killorglin Community College is responsible for that. Comenius students in Mounthawk made their contributions which are dedicated to preserving traditions, through the medium of film, web pages, CD–ROM presentation of local museums (for dissemination purposes at Open days in schools, at transnational meetings held in the course of the project). They are continuing to provide material for the section dedicated to student work in the Norway pavilion. For those of you who are not familiar with neothemi–ireland.com or the work, we will try to give you a synopsis of what is on–line and we will indicate the connections we have made with similar themes in the partner web–sites.

The main thrust of our website deals with the specific skills of craftspeople who worked in stone, bronze, iron, gold and timber. These were artists in their own right. The farmers and the boat builders not only provided us with a unique legacy which can be experienced and enjoyed but they left us a

record of the way in which our civilisation evolved. "People leave their signs on everything when they work with it" Csaba Banfalvy Hungary" Culture and Work". From Neolithic to Modern, pages contain text and subthemes which explain in detail the work embodied in the stone ,bronze, iron, gold and timber structures. Gif animations illustrate the information. You will see samples of Standing stones or Menhirs erected down through the ages, Orthostats–Cists which may have contained remains of the dead and may have been used during the Bronze and Iron Age.

Forts made of dry stone walling every bit as impressive and equal to those of Neolithic times continued to be built in the Iron Age. Dun an Oir the fort of metal/gold, one such structure, was built on a promontory in Smerwick Harbour in Dingle, Co. Kerry. Raths ie. Ring Forts were built by the Fosse and Ditch method (a piece of land was surrounded by a series of ditches) – the most famous being the Hill of Tara. The Rath/Fairy Fort was used as a fortified living area for both people and livestock. Through the ages warfare and acts of aggression motivated our forbears to construct fortifications such as Dun Beag and Staigue fort.

Communication and Interaction–/Finland suggests quite rightly – in the section on Buildings that "Buildings, Nature and the Environment are inviolable sources of Cultural Heritage" and this applies to us.

Duns were built on either cliff edges, the edge of suitable rivers banks or on the hills. Dun Aengus on the Aran Islands off the Clare/Galway coast is an e example of another type of Fort/Dun which is constructed entirely from dry stone walling. This is a Fortified Promontory fort built on the edge of the cliff face with two encircling defensive stone walls, with inbuilt steps/ramparts leading to the top.

Crannogs (fortified Forts of a different type) were man–made lake dwellings. The Crannog was constructed on a man–made island in a lake – a timber fort. The method of construction is explained in the pages. In the Norway Page "The way we do it" students in Brundalen School on the foundation course who spend many hours in the workshop describe the tools (old and new) and methodology employed by Norwegians in the construction of present day stone and timber dwellings. Some of these date back to the Vikings – "The planner and the Gjerdesaw".

The Bronze Age in Ireland brought with it the development of metalworking, its decoration and method of working. Copper and bronze were used for daily implements–cooking pots, spears arrow heads. Gold was primarily used in the production of ornaments a variety of which included Lunulae/Crescentic collars (gold discs used as buttons, torcs or neck orna-

ments). Metalworking techniques were incorporated from Europe. Twisted gold ornaments were created from lengths of gold which were twisted into Neck ornaments. These were masterpieces of metalworking and soldering. The Iron age pot, the Bronze Boar the Petrie Crown are examples of the La Tene Celtic style of metalworking displaying the repeating symmetrical design.

You can see to in our website examples of the early monastic sites Reask, Gallarus , St. Dahlins and the Cross Inscribed slab as a forerunner to the High Scripture Cross. The Monastic settlements convey the sense of Spirituality which pertained in our country. This Spirituality is a theme in the Italian pavilion. Beliefs while similar find different methods of expression. Many of our subthemes are not complete and will be ongoing for instance the rise of the Norman Castle or Tower–Carraigafoyle.

Modern–in "Relations with Nature–the Hunt" Symbols of Citizenship it is acknowledged that Hunting is "part of the British Cultural Heritage". A young student chose to share his love of hunting in a contribution he made to Norway "Sense of Identity" – hobbies. His words depict the pleasant moments he shared with his father when hunting for pheasant, duck or woodcock. It is an experience enjoyed by many Irish people too in the past and present.

Another connection occurs in relation to The Morris – Plum Jerkum and Border Morris pages. These demonstrate the traditional dance and costume of the region. Similarities can be made in the ways in which traditional dance has endured and is enjoyed by young people in Ireland to–day. They explain their level of commitment and enjoyment of Irish dance in Hobbies (Norway).

Germany explores some of the outcomes of the Industrial Revolution in "Through Memory" which paved the way for enormous changes in lifestyle and workpractice. Their page referring to the" Mahtra Peasant Museum" in Estonia,60kms south of Talinn connects with Ribbon Weavers (Great Britain) and Foley`s Farm (Ireland). They ensure that traditions will be preserved. A Comenius partner arranged for a visit by us to a similar museum in the Netherlands last May. It is fascinating and a must for museum research people. It is the Zuiderzee museum in Enkhuizen. It is a museum where Living History evokes the lifestyle of the inhabitants of the villages and towns around the former Zuiderzee. Street games, typical school room traditional costume – living conditions "peat or turf–fires" all preserved to be enjoyed and experienced by present and future generations.

Neothemi has created a very considerable amount of resource material for future projects based on Culture and Heritage.

The E.U. has at its core the aim to ensure that future generations will be spared the tragedy of the First and Second World War. Hence the related theme of Reconciliation (Great Britain) is an appropriate one on which to end our reflection. The beautiful stone sculpture with the artistic title Moonlight Sonata links with the final icon in Ordinary People, the 3 masted barque Jeanie Johntson which converts to a museum depicting the Famine in Ireland. It is also a powerful symbol as it was constructed at a crucial time in the development of the peace process in Ireland. Young people skilled in the art of shipbuilding from the Protestant areas of Belfast came South to work alongside their Catholic counterparts. Today it is also used for training young sailors.

Luciano MOLFESE*,
Giuseppina LAZZARI**, **Anna BRIANTE****
* "VII" Istituto Tecnico Industriale Statale, Napoli, IT
**"E. De Filippo" Scuola Elementare Statale, Napoli, IT

AN ICT METHODOLOGY BASED ON A GAME

Introduction

In the contemporary world of learning the starting point has to be that traditional methods of learning have been overtaken: the world in which the learner takes in information has changed.

The common and traditional way of teaching that is still very much alive relies on the requirement to rework and re–configure concepts that are in the most part abstract, because they are so far from children's daily experiences, and because everything is based upon the ability of the children themselves to remain attentive.

The continuous inputs coming in through multimedia messages and the increasing use of IT reflect a considerable change in the way children's minds work, in that they are moving away from a linear format into a style of simultaneous learning (Antinucci, 1999).

On this subject, the inventor of the 'language' Logo2, Seymour Papert, states that: "The school is based on a model of production according to which knowledge is put into people's minds…… Nowadays young learners do not need to learn concepts in this way; using modern technology, they can learn much more by doing, by undertaking their own research, and by making their own discoveries. The teacher's role is not to supply all kinds of knowledge; instead, the teacher should be a guide, managing the difficult situations when they occur, stimulating and spurring the pupil on and making suggestions…… and I think that the best way to do that is to create occasions in which the pupils can do what they are really interested in, can use the internet to collect information, can work together, can do difficult things. The teacher gives the students some suggestions, he/she works as a guide" (Seymour, 1980).

From the statement above, it is easy to understand how important it is to use teaching–methods such as research–action, cooperative learning, heuristic methods etc. If the teaching is to be effective it has also to be interesting and meaningful to the students; that means it is extremely important to consider each student's ability in relating to other people and analysing individual life experiences.

In this context, ICT has a pre–eminent importance and we need to consider how to use it in helping children to develop. It is clear that the teacher's role must change: the teacher is no longer the person who corrects mistakes, but is the person directly involved in the pupil's learning process : the teacher learns with his/her students, keeping in mind that even the production of software for teaching purposes is something that should evolve continuously.

Constructivist theory (http://www.univirtual.it/corsi/IIsemestre/midoro/download/Teorie) states that " The identity is made up or remade each time, and is not purely the sum of two different elements that can link to each other–in/out, subject/object–a lasting interaction is created (http://www.mediamente.rai.it/biblioteca). That means our identity interacts with and by means of media. This is the reason that teachers have an important task, which is to plan starting right from primary school:

- to organize, to maintain, to solve;
- to suggest, to simplify, to check out;
- to organize and to propose;
- to correct procedures in real time.

Teachers must acquire their skills by referring to "media education" (http://www.medmediaeducation.it) in order to think about their own experience with media. The use of the PC starting in the first years of the primary school is currently a core problem within education.

Until 20 years ago the problem was more about television and other mass media, but the fast invasion of new media (the personal computer, internet) has made "media education" an urgent issue with at least two possible routes to follow:

- to train the student in the new media: to make him aware of it from a technical point of view and its effect on society;
- to train the student to use the media: to enable him to learn by means of the media (Henzesberger, 2000).

Our own teaching experience has just been in the first two classes of a primary school near Naples. Our aims were to encourage a spontaneous and playful approach; to reinforce space orientation; to promote a critical awareness of media; to increase the logic and attention span; to develop creativity.

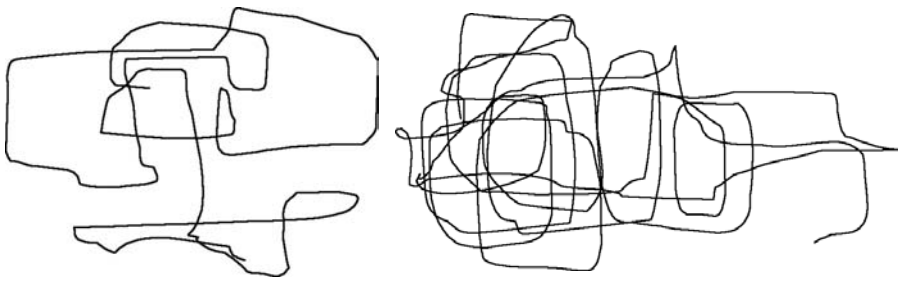
We started the children off using the computer through activities teaching basic multimedia concepts (Pontecorvo,1997; Beneventi,1999; Ferraris,1999) and eye and hand control (hand/mouse (Gambato – Pintonato,1999)). P. Beneventi defines the handling of the mouse as "an ancient gesture" meaning that the child instinctively traces some signs and verifies on the screen the effects of each gesture, in the same way as he can recognize on the sheet of paper the signs traced by the pencil.

First Teaching Methodology: from scribbling to shapes

Starting with the spontaneity of the game, we asked the pupils to produce some simple graphics through horizontal, vertical, mixed, curved lines in order to get to 'virtual scribbling'. Most of the students were very interested in this sort of activity; some of them enjoyed themselves right from the beginning, while others were worried that they might not be able to use the mouse so they did not persevere for very long. But this problem was quickly overcome thanks to the help provided by the most "trained" group of students.

We switched on the computer and opened the Word program. Naturally, the choice of programs was quite limited because of the pupils' age and what was available on the market. The children discovered that it was possible to make a scribble even without pencil and paper; they realized they could make a scribbled drawing with the mouse and display it on the computer screen.

The children could draw whatever they wanted. They could modify their drawings, so it was very easy to correct a mistake and save the page.



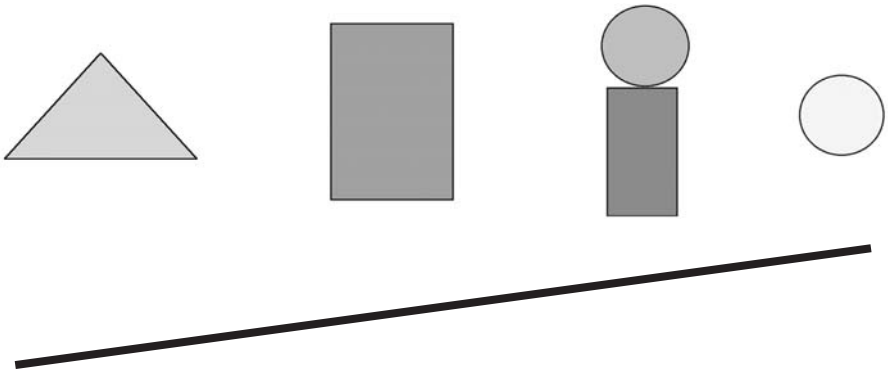
When a pupil wanted to print his own drawing, the sheet was clean and did not show any past mistakes: this meant that the pupil could feel very proud of his output.

After this we asked the children to draw geometrical shapes and to colour them in. Thanks to the computer, the shapes were well–defined and the most insecure pupils started to have more faith in their own skills and abilities. Then we went on to create a rhyme, so as to learn by heart the different names of the shapes.

Rhyme of the shapes

In Caracalla 's thermal baths there was a kite,	Nelle Terme di Caracalla c'era un aquilone
It was round (circle) like a ball,	tondo (cerchio) come una palla,
It did not fly because there was no wind	non volava perché non c'era vento
It went ahead slowly, slowly.	andava lento, lento.
It fell down and rolled away,	Cadde a terra e rotolò
and it turned into a square.	e un quadrato diventò.
A child found it	Un bambino lo trovò
And carried it behind a corner	dietro un angolo lo portò
And he turned it into a rectangle.	ed in un rettangolo lo trasformò.
The kite was very sad,	L'aquilone dispiaciuto
It invented a magic,	una magia si inventò,
It turned into a peak	a punta si trasformò
Becoming a triangle !	e un triangolo diventò!

Without giving any particular suggestions, we left the pupils free to create whatever they liked, using the shapes previously learned.



Second Teaching Methodology: The meaning of the puzzle

Another starting point for teaching children basic multimedia concepts is to play with images and postpone the teaching of PC techniques. It is important to keep under consideration the different communication–codes that are available when you use a computer: you can combine word activity with drawing, and animation with music: "the child is naturally a multimedia being, that is to say, he uses all the tools to get in touch with the external world and with himself…… And it is very important not to neglect this aspect ……it must become an important aspect the new teacher has to consider……" (interview with Roberto Marigliano "New multimedia teaching") (http://www.mediamente.rai.it/biblioteca).

While analyzing and working with the images the children learn to de–codify them. In this case the computer has a double role:

- to collect written, sound and graphic messages;
- to be a valid tool in the reaching of interdisciplinary goals.

A good activity to propose to children is that of building up a puzzle. Each student makes a drawing that has to be cut first into 4, then into more pieces. The strategies needed to re–build the drawings (that is the puzzle) are indicated by the teacher: depending on the existence or not of a frame, some images are chosen to give key clues and then the students are asked to suggest other ones. The children, in pairs, shuffle the pieces from two puzzles, and as in the first activity, they have to understand to which puzzle each piece belongs, according to the size, the shape and the colour. After the practical activity the students move on to the real use of the computer.

With the teacher's support, the children download some simple images from the internet.

We have here an example: we have planned a teaching activity starting with a topic stressed in our cultural heritage, and together with the children we surfed the net (Neothemi: A Virtual Museum (www.neothemi.net)).

We reproduced the picture of TAVOLA STROZZI (1478–9) and then we produced a puzzle giving each part to a specific group of students.

Once they had the part, each group surfed the net again to collect as much information as they could find, such as photos, historical texts, etc. The teacher of English supported the activity, providing the students with some English versions of information captured from the pages of the Virtual Museum.

Each pupil's creativity and talent led to an interesting and interactive method of learning by means of the new technologies and, of course, exploiting other student's outputs. It proved to be real and effective team–work. The areas exploited did not have to be Italian, since the Virtual Museum is made up of works from several European countries; this introduced the last part of the exercise, which was to enable Italian students to come into contact with students of the same level from a foreign country.

They had previously supplied NEOTHEMI with a similar topic and were able, using English, along with other students from different countries to enrich and to compare their knowledge of the European Cultural Tradition. Needless to say, all the stages of the work were greatly simplified by the use of the most modern ICT.

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Anna Maria PANZERA
Istituto Tecnico per il Turismo 'Livia Bottardi', Roma, IT

THE COLOURS OF THOUGHT

Eugenio Montale remarked on the occasion on which he received his Nobel prize for literature in 1975, that everyone is capable of creating poetry: one needs only a pencil and a piece of paper.

It may well be possible to extend this observation to all the arts without going so far as to reduce to too basic a level activities like writing, painting, sculpting or playing an instrument ; whilst on their own these uniquely human activities serve little purpose, they are increasingly being used in unusual and diverse contexts, in new fields of experience and forms of expression in the mass media, in advertising, in the theatre or even in the world of finance or education.

It may well be possible to create art simply with a couple of paintbrushes, a few paints and some kind of easel, or with a poor musical instrument and a very unpractised hand; one could pour out through the sheer strength of one's commitment and the most sincere passion a captivating albeit amorphous piece of work, of dubious worth or quality, as one might the "final product of one's last year at school."

It could even happen that the very concept of art could disappear through this kind of misuse, whether in academic circles or just through a well–meaning naivety.

Certainly the artist,Veronica Montanino together with some teachers and students have tried to identify, albeit unconsciously, some of the answers to these hypotheses. Actually these are questions I have been pursuing, and I would like to take this opportunity to thank my colleagues, my friend Veronica and the pupils who have committed themselves to my research and have believed so passionately in it.

First, some background : the initiative 'the colours of thought' originated in the Comenius 3 – Neothemi project was presented at the Casale della Cervelletta and formed part of the project 'Adopt a monument' for schools. Implicit within the title is the key theme of the project: the creation of a vir-

tual museum, available across the network, to facilitate cultural exchange between different European countries through the use of new computer technology. It would be impossible to give here a full description of the project, as words are a poor substitute for what can already be seen and experienced on our website www.neothemi.net. Suffice it to say that the virtual museum has been set up on three different educational levels, so as to attract a wide and heterogeneous audience to visit the site: pupils from all types of schools and of different abilities, teachers, researchers and university personnel are all catered for. Whoever visits the site will be shown pictures and writings representing all the countries of Europe as they journey through the virtual display halls and pavilions; they will learn about important monuments as well as expressions of popular culture; they will read historical writings as well as seminal essays on current issues and even the less familiar aspects of art; they will develop their understanding and knowledge of the civilizations of our continent.

In this multifarious context in Italy we chose to concentrate on the theme of the city, which we defined as an urban structure with social, political, cultural and artistic facets because these seem to be the fundamental aspects of a person's identity. The Bottardi Institute, the VII ITIS of Naples and the A. Tramello Institute of Piacenza have been working together to fill the pages of the site, using all manner of materials and research to bring the virtual city to life. The greatest value that has been gained from this work has been through the active participation of the students, who have been entirely responsible for the nature of the material and its presentation on the site, and who in their turn have gained insights and perspectives which they would not have had through the usual methods of study. I take this opportunity to mention the commitment of all my colleagues to this task and to emphasise the importance of the results we have achieved to date – unfortunately we do not have the space to present them here. Going back now to the web pages, I would like to take you with Class IV at the Bottardi Institute on a journey through the 2002/2003 academic year.

The area which we have been particularly preoccupied with investigating in the Italian pavilion is that of the relationship between 'the city' and 'knowledge'. This is a huge and undefined field with continually varying boundaries and which can be approached from many points of view; it is important to identify in the first place what is meant by 'knowledge' and then to try and determine how something so ephemeral and constantly changing interacts with something as material and substantial as 'the city'.

It all really began during the 2001/2002 academic year. Limiting themselves at first to the idea of knowledge as the sum of acquirable pieces of informa-

tion and experience, the students observed that the city offers exactly this and furthermore is able to recreate freshly this type of knowledge through its physiognomy, presented both in the context of closed and open spaces. The spaces described as 'closed' areas of knowledge for example would be those in which it is possible to sense or become aware of a culture with its own clear imprint, whose nature has been formed from within, but which is nonetheless capable of constant change and development: schools, universities, museums, libraries, as well as more unusual places, like literary cafés. The 'open' places can be described as those which are defined by the human presence and interaction between individual human beings, where history is made, or which develop through the demands of modern life. An example of those places where history is made is the streets and the architecture of the town centres in which one can read quite clearly the drama of human existence; an example of the second type is in the suburbs where one can see attempts to improve and develop upon the present, where sometimes a new and modern type of aesthetics is imposed to possibly bizarre effect on the local populace, who become passive consumers of a real but distant culture.

This was already a new area of experience for our students. Some brainstorming sessions however quickly made us aware of some enormous problems, which in turn raised others. In the first phase the students were daunted by the richness of the various stimuli they were required to respond to (especially as this was quite different from what they would normally expect from the school curriculum). They were amazed to discover that the sources of knowledge need not be only books, television or the computer, but also the earth on which they trod every day. We had to be careful to capture formally what emerged from general discussion, as we needed also to keep the Neothemi network informed of all our findings during the first year of the project. And so we prepared the first catalogues of information on many well–known places providing knowledge, containing short historical and artistic profiles: the Laurentian Library of Florence, the Vatican Library, the most famous Italian literary cafés, the University of Padua, the Neapolitan coastline redolent of the past, named after Admiral Caracciolo. For each catalogue there were many links with relevant sites, whether literary ones, publishing houses, or those of artists and authors, to consider. Although they presented comprehensive information, the catalogues were only intended to represent the first stage in the approach to our theme, and to demonstrate how much knowledge could be gained through the study of what might be considered inanimate structures and buildings. Our research, following this

iconographic style of working, proved very stimulating to the students and inspired them to new heights as they made use of technology they had not used before.

And so on to academic year 2002/2003. When we came back to our research, it became clear to us that we would need to take cognizance of a change in circumstances which would influence our way of working. We realized that it was not enough to limit ourselves to pre–existing materials and images; the students felt a compelling need to establish a more dynamic link between themselves and the areas they were uncovering. They wanted to engage with the subject under research, to make an original contribution, to make their own impact in some way. How were we to link this requirement with the theme we were pursuing of 'the city' and 'knowledge'?

We were helped in this by something else that arose as a result of the academic programme for that year. The students were required as part of their studies to familiarise themselves with the world of modern artistic and literary production, which currently seems to be characterised by a need for progressive individual self expression. Western art, as Montale affirms, vacillates between classicism and romanticism, between dynamic and static forms, between the universal and the highly individual, between meaning and significance, between sound and content. We added line and colour, in recognition of something particularly dear to my students, the power of synaesthesia. The importance of the synaesthetic image is that it provides a release from the artifice of words and verbal techniques, a way of thinking through images, of combining perceptions and sensations. These images rise above the limitations of what is seen and recognized in concrete form, expressing themselves in lines, colours, forms (and possibly sounds) that become sensations or non verbal thoughts. In this way the quintessential nature of reality can be captured and experienced in non–verbal form.

Once the students found themselves spontaneously moving in this direction, it became clear that they were operating within the sphere currently occupied by the contemporary arts (the avant–garde, the abstract, free art) and they began to encounter particular authors (for example Burri and Giacometti) without setting out on any kind of iconographic study. I want to emphasise at this point how much of what was happening was unpremeditated; while it is never difficult for a teacher to lead students down a well–trodden path, it was extraordinary to see the agility, intelligence and sensitivity with which the students moved into a totally unknown field, examining everything with fresh eyes and without preconceptions. And so we needed to harness this new flow of creative energy, and find a way of merg-

ing it with the work we had already done on 'the city' and 'knowledge'. My own particular interests led me to talk to the class about Gibellina, one of the artists who was enlisted to restore the cultural and historical identity of a city devastated by the earthquake of 1968. Part of this task was the restoration of hope in the future through the recreation and rebuilding of the past.

At this point it became obvious that there would be much value to be gained from working closely with someone who had done some work in this field, who had interpreted art in terms of a relationship with spaces, of an interaction between the internal, spiritual, personal dimension and the physical, external, more durable world. It needed to be an artist whose thoughts instinctively transformed themselves into simple expressive gestures and movements. Veronica Montanino brought into our class the wealth of her experience, teaching us about the different ways in which contemporary art is created, talking to us about her personal life and her first attempts at visual experimentation. This had led her into constant self examination and change as she attempted to find a form of self expression that related to the external world. (Veronica Montanino, it should be remembered, has exhibited her work both individually and in collections, and has also won the national competition for creative young artists sponsored by the Lazio Region Head Office and the Council of Fondi). Montanino managed to convince the students that the technical skills of an artist could also become a very powerful means of expression: and these were people who had had little experience of any kind of art. In the end we managed to create an art workshop which operated on a theoretical and a practical level; it was a kind of studio where we could pursue our investigations into aesthetics, ideas and perceptions and enjoy feeling that we were at the cutting edge of the creative process.

But would it be enough simply to 'create'? It is well known that one of the problematic areas in the world of art is the tension between social and civil realities. This is not simply about trying to achieve some sort of notoriety: a work of art can seem to make a complete statement but does not necessarily present all its various meanings openly; instead, it can seem to rely on cross references which the viewer is required to unravel through the application of good sense. Sometimes this means exposing as yet unarticulated thoughts, bringing them forward with a freshness which can be simultaneously irresistible and disquieting: it is like finding a whole fresh meaning behind what would normally be discarded as a cliché. For this reason, an essential part of our workshop comprised the investigation into works of art in the formative early stages. This led naturally to a link with the 'Adopt a monument' project for schools, principally because our institution had chosen the park and the farm-

house of Cervelletta as our 'monument', which was badly in need of restoration and refurbishment. We found ourselves propelled with new energy via this route into our discussions on getting to know and exploit urban spaces.

This project has many implications: (1) for the students it meant becoming accustomed to the idea of using artistic materials instead of the more conventional communication tools, and using them to achieve a more direct transference of thought into expression through the creation of visual objects; (2) to establish and develop a new relationship with the spaces presented through the Cervelletta buildings and park, up till then seen purely in terms of static historical information. The possibility of its being 'experienced' and transformed by the creation of particular objects had never been considered before; (3) it would be possible to document and interrogate the whole experience, in order to create materials to share with our Partners on the website; (4) to create perhaps for the first time for the inhabitants of Cervelletta as they became involved with our work, surroundings which would also become an aesthetic experience.

So that is how we arrived at where we are now. The first meetings with Veronica Montanino got the students thinking about concepts like the relationship between us and space, and how to transform and give expression to that while preserving a sense of appropriateness, identity and movement. We had at our disposal some slides showing how the artist had found original solutions to problems encountered in working with 'closed' spaces: living environments, passages from one space to another, decorative elements that helped to expand or constrain spaces within particular parameters for different purposes. The students noticed that spaces can seem to change dimension simply by the use of a particular colour on a wall, or the introduction of more or less geometric shapes; they noticed particularly how geometric shapes can seem to create space, redefining what might be described as 'full' or 'empty'. Just through this an environment can be experienced differently and can seem simply to express itself in terms of its immediate surroundings, but also can project something of itself to a wider external audience. It is important to note that these colours and shapes were not entirely 'abstract' either: indeed although on the one hand it was difficult to decipher anything immediately recognizable in the straight lines and the curves of the figures, on the other one became aware of something of the artist herself expressed in her encounter with the subject of her art. In this way the transformation of an environment became a definitive experience, because it was concerned with the quintessence of humanity and not simply an attempt at superficial decoration.

Although at first disorientated by this confusion of apparently meaningless images, the students progressively developed a more discerning and sensitive eye, to the point at which they were confidently expressing precise interpretations of different images and at the same time analysing the materials and means of execution. It became clear to them that the power of the image was inexorably linked to the choice of material selected; the skill of the artist lay in matching the intrinsic qualities of the materials to the essence of the image. A whole new world opened up to them. Having now moved beyond traditional styles of presentation, the students immersed themselves in the expressions possible along the axis of 'abstract' to 'concrete', and applied them particularly to the spaces presented within an old farmhouse. Through many site visits they developed an understanding and appreciation of the possibilities of the place; my colleague Stefano Santelli conducted a seminar with them on the architectural challenges to be faced when dealing with 'open' and 'closed' spaces and of the importance of the preparation work, in itself an aesthetic experience. The roughness of the walls for example inspired further research into different ways they could be tackled to enhance them; as there was no furniture of any sort, the students came up with the solution of huge panels which could replace the feeling of 'empty space' with an emotive atmosphere rather than to fill the space with concrete three dimensional objects. The images would have to project a material consistency and be expressed in quiet tones (reflecting the supporting walls) or impose themselves through the brightness of the surfaces and the brilliance of their colours (if pursuing the route of perception through contrast). The students chose the second option, which encouraged the use of 'simple' pigments, easily applied, and of primary colours.

At this point the different tasks were divided between different groups in the class: as happens in the organization of any show or cultural event, someone had to take on the role of press officer and manage public relations; someone took on the job of drawing up the lists of technical requirements for the work, with a workplan; others took on the role of general overview and production of the narrative rationale for the work, while yet others took on themselves the job of producing the paintings required. Sketches were prepared, modified and approved by the team, not simply for the sake of consistency, nor just so that the sketches could be placed under the expert eye of the artist, but because another important dynamic was emerging in the form of an understanding and appreciation of the power of the group over and above the contribution of each individual member.

Armed with the necessary tools (paintbrushes, paints, varnishes, panels) the students began to convert their sketches into actual structures which

had been carefully measured beforehand. The application of pencil lines and then the colours presented them with technical challenges which were resolved with the practical help of the artist, without in any sense having to relinquish their roles. Some of the work was changed as they went along, when the artists thought that they were not achieving the effect they had agreed they were looking for, by now engrained in their consciousness. This was another unexpected outcome: the students discovered, as did the teachers, that it is perfectly possible to challenge and turn well–established ideas or preconceptions upside down.

The fruits of our labour (which in itself was groundbreaking and gave to the participants a real sense of what education and learning is all about) are now there for all to see and I hope that even the sceptics will change their views when they see them. Many people have demonstrated their support for our work and have also helped us in practical ways, for example in helping us to get into some of the more inaccessible parts of the farmhouse (the so called 'cellar' for example, where scaling the stairs was in itself an adventure). It would be impossible to mention everyone by name or to thank everyone individually, but for them and on behalf of all of us I would like to draw everyone's attention to some of the words written for all to read at the entrance to the exhibition: "This is a dream come true" (Gaia Monti, student); "A work of many hands, a powerful manifestation of the effectiveness of your endeavours" (Augusto Pieroni, University of La Sapienza and art critic); "the exhibition stands proudly alongside any current exhibition of modern art" (Laura Falaschi, art historian and teacher at the Bottardi Institute).

There are so many more things I would like to tell you about but I have run out of space. Instead I would like to conclude by quoting the words of Harold Rosenberg, American critic of Abstract Expressionism, in 1976: "Art is a special way of thinking (…) that rises above the mind to encompass the whole person (…)"; "a facility of the mind" according to Spinoza "through which things become real within ourselves."

(Translated by Susan Hartley)

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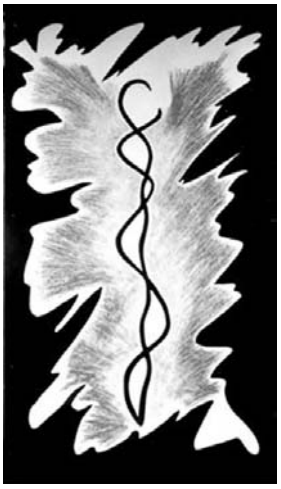
Dimensions: cm.120 x 100. The painting is made on mediodensit, with black, blue, white and red enamels. The artist wanted to represent one moment of inward confusion: the marked lines in the lower part, dark coloured, show some negative thoughts; the white shapes in the centre underline the serenity of the free thinking the artist would like to reach.

Fig. 1 – Gaia Monti, Catharsis



Work on mediodensit, cm. 186 x 105. Turned towards the verticals, it is realized with black and white enamels, yellow and red crayons. The linear black shapes represent two interlaced bodies. You can see around these ones the energy of a hug, made by the bright yellow/red rays, which show the powerful union between the two figures.

Fig. 2 – Daria Stancampiano, Energy

The dimension is cm. 60 x 150. The artist used white enamel in the background, brown and red enamels for the two geometric figures. The rest is made by mediodensit. The painting represent a seated man and a woman laid on him; it wants to throw into relief the power and the prevalence of the man compared to the elegance of the woman.

Fig. 3 – Giorgia Bonomo, Subtractive picture

As the title says, the artists created this work according to their inspiration at the moment. For this reason, the painting has a content more emotional than semantic or symbolic. It was realized with golden and red enamels; red, golden and silver crayons; mediodensit. When the painting was finished, squirts of black and white paints were added. The dimension is cm.140 x 80.

Fig. 4 – Daria Stancampiano and Federica Di Vito, Free Interpretation

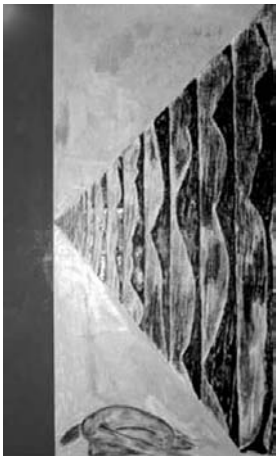


Fig. 5 – Veronica Montanino, Untitled Mixed technique

Maria PELUSO
Istituto Tecnico per il Turismo 'Livia Bottardi', Roma, IT

ITINERARIES WITHIN THE NEOTHEMI WEBSITE: LINKING THEMES AND CONTENTS

The workshop aimed to encourage participants to start new Comenius 1 projects, demonstrating despite the apparent diversity among countries, that it is possible to find a great number of similarities within the general framework of Cultural Heritage.

Themes and contents of three national pavilions: Italy, Ireland and Denmark were presented with the aim of showing how it is possible to find thematic links and cultural itineraries within the Neothemi website, despite the different approach of each country. Neothemi provides, in fact, a virtual access to the different aspects of European culture for everybody. Some of these have great potential for educational use and can be used when comparing the varied aspects of cultural heritage in Europe.

With the approaching bicentenary of Hans Christian Andersen in 2005, Denmark chose to contribute to the workshop focusing on the famous Danish representative of folklore and traditions who in his time made many travels to experience other cultures in both Europe and elsewhere. In addition to this journey, the City Images of the Italian pavilion showed the visitor the different faces of the art, traditions and spirituality of Italy, whose rich past and memorable events still influence contemporary culture and life.

The Irish partner invited the spectators–navigators of their pavilion Ordinary People to ponder samples of the vast wealth of monuments and treasures to be admired in the "green areas" or open spaces in the Irish landscape, to consider briefly or to examine "in greater detail" (in the website) the depth of knowledge and the Mastery of Craft which these heritage sites represent.

The workshop was run in the following stages:

1. Warm up activities

a) Each institution briefly introduced themselves and some general guidelines were given for the workshop, stating that the emphasis would be mainly visual.
b) A worksheet (attached below) was handed out to participants: they were asked to develop hypotheses about some possible thematic links between the sub themes that Italy, Denmark and Ireland have chosen to build their own pavilions around, respectively, City Images, Folklore and Traditions and Ordinary People.

2. Slide show presentation of each national pavilion

Each country presented its own pavilion by means of a slide show aimed at giving a brief overview of the themes and contents of the three websites. During the three presentations people were asked to accomplish two tasks:
- Check their previous hypotheses;
- Find new links /itineraries.

The Italian slide show presented a sequence of images starting with the following slide as a way of facilitating audience involvement and encouraging them to enter into the show in the right spirit:

Art treasures
Traditions and customs
Spirituality
Culture and knowledge
Past and present life

Become visible through our....
City images.

The sequence of images attempted to convey to the audience the "feeling" of the city as representing the cultural identity of the past as well as of the contemporary world. At the same time it was meant to create a link between the "reality" of the existing works of art and the "virtuality" of the website content in a reciprocal and dynamic exchange of cultural values.

Two very famous film soundtracks "Life is beautiful" (Roberto Benigni) and "Amarcord" (Federico Fellini) were chosen to accompany the slide show, thus reinforcing the cultural ambience of the images so well known abroad.

3. Group discussion

At the end of the three presentations and to encourage maximum participation, people were asked to form small multinational groups to discuss their hypotheses on the possible links between the three countries.

4. Feedback

Volunteers were asked to report back the results of the discussions in each group. Some links had become obvious right at the beginning, while others were stimulated by the three presentations. Cultural "routes" were found, for example, within the theme of Spirituality (Italy) which was linked to the Irish Norman/Anglo Norman ecclesiastical structures and to the Christian Age (St. Patrick, Monasteries) as well as to Folk Tales and Family parties and annual celebrations in the Danish pavilion. The theme of Daily Life (Denmark) also was linked to the Italian City planning and Squares and to the Irish Modern/C18th – C21st pages for the common contents regarding cultural heritage. The examples mentioned above are only two of the many itineraries that participants to the workshop highlighted but in the Neothemi website visitors have the opportunity to experience a greater choice of cultural heritage routes and itineraries.

In conclusion, some educational aspects need to be underlined, regarding all the work carried out during the three years of the project in the Italian institution. First of all team work has been one of the most relevant aspects of the project both for teachers and for students. The activation of cooperative learning techniques has enabled students to accomplish the tasks required by the project according to their own abilities. At the same time teachers have developed a greater consciousness about team teaching.

A second important result has been that the students have been actively involved in carrying out the activities of the project. The materials they have produced are the results of a responsible choice of contents and technical devices. These choices have caused discussions about different opinions and points of view but these discussions have allowed students to become more flexible, to solve problems and to adapt their different views in order to reach a common agreement aiming at the fulfilment of the objectives of the

project. The different topics students have dealt with, have given them a wider view of the Italian cultural heritage and at the same time they have had the opportunity to feel part of the even wider European cultural heritage, thus overcoming the boundaries of national barriers and dangerous stereotypes.

Worksheet handed out to participants

Itineraries within the NEOTHEMI website: linking themes and contents (Denmark – Ireland – Italy – Rome)

1. Pre–viewing activity (5')

In the table below are reported the sub theme titles as they appear in our national pavilions on the NEOTHEMI website. Come to a hypothesis about some possible thematic links matching the titles in A, B and C.

A. FOLKLORE AND TRADITIONS DENMARK	B. ORDINARY PEOPLE IRELAND	C. CITY IMAGES ITALY
▪ Ballads and folk songs ▪ Folk tales ▪ Family parties and annual celebrations ▪ Daily life ▪ Prehistory	▪ Bronze – Iron Age ▪ Neolithic ▪ Norman – Anglo Norman ▪ Christian Age ▪ Modern Age	▪ City planning ▪ Squares and bridges ▪ Knowledge ▪ Green areas ▪ Spirituality

2. Viewing activity (15')

While you are watching the three slide shows

- Check your hypothesis;
- Find new links.

3. Post – viewing activity (10')

Group discussion.

Arrange groups in a minimum of 3 countries together and discuss your ideas about itineraries.

Feedback (10')

Inger LANGSETH*, Sean NEILL**
*Brundalen vgs Trondheim, NO,
**University of Warwick, UK

MECHANISMS TO ENCOURAGE PRODUCTIVE LEARNING IN THE NEOTHEMI PROJECT

Summary

This paper concentrates on the design of the NEOTHEMI virtual museum to encourage 'situated learning'. This is difficult to ensure when dealing with cultural heritage which is remote in space or time. The limited resources available to the project limit interactivity, though there is a 3–D interactive virtual museum front–end. The strategies used to encourage engagement by users in the project website, which is still under development, include problem–solving themes, using students' own writing and work, hyperlinks within and between national pavilions to permit alternative paths and promote discussion between different groups of users, and guidance to teachers on using discussion, drama and other active strategies

The NEOTHEMI project (Saccone 2002) is one of the first Comenius III projects supported by the E.U. The partners include a range of institution types with varying access to academic resources and to the possibility of working directly in schools – universities (Finland, France, Italy, Portugal, UK), teachers' centres (Denmark, Germany) and secondary schools / colleges (Ireland, Italy, Norway). As a result of these different resources and differences in national approaches to education, the content of national 'pavilions' (subsections of the NEOTHEMI website) are rather different. This paper describes some of the themes available across the pavilions in the NEOTHEMI site, and relates them to the learning styles they support.

As Pritchard (2004) points out, learning from the Internet will be most productive when it engages learners in an actively constructivist learning experience, where they process and reform information. He discusses the many ways in which the teacher can get children to think productively about even poorly structured Internet material, via planning and structuring the

learning situation, and via discussion with the class. Such actions by the teacher promote 'engagement' by learners, avoiding the situation described by Pritchard and others, by which children simply cut and paste information from the Internet into their work, without considering the implications of the material they are working with. Such approaches increase the educational value which can be extracted from the many sites on the Internet which contain educationally useful information, but have been set up by non–educationalists, often addressed to an interested adult audience, but one which may be more knowledgeable than most child audiences. However, a dedicated educational site such as NEOTHEMI should be able to provide material which itself engages learners, thus reducing the burden of preparation for the teacher and making productive use easier. There are however certain problems in embodying this engagement in a site concerned with European cultural heritage.

Many aspects of cultural heritage are 'static', either literally, in the case of the built cultural environment or many cultural artefacts such as popular or high–art artworks, or metaphorically, such as in the case of the concepts related to citizenship: in such cases one productive approach to engagement, the use of animations as described for science sites by Pritchard (2004), is not possible. Two other approaches to engagement are possible and are used in NEOTHEMI; the use of material written by other students and hyperlinking between pages both within and between themes to encourage students to take individual and diverse paths through the material, to encourage discussion between groups who have followed different paths (Neill 2002, 2004). These are discussed more fully below.

A particular difficulty is the problem related to 'situated learning' (Pritchard 2004) – learning related to the prior knowledge of the learner. Such learning will depend on specific culturally available experiences – for example Lahti et al. (2004) describe how children developed understanding of the historical development of artefacts (ladles) both through direct experience, starting from their everyday life, and through intensive work using the Knowledge Forum networked learning environment. As Pritchard points out, city children in England may find it difficult to appreciate why country dwellers have an unsentimental view of foxes and support fox–hunting (this topic is discussed further below), while country children may not empathise with the hazards of life on inner–city estates, even though they may be within fairly easy travelling distance of each other. This becomes more problematic in respect to cultural situations which are remote from young learners, especially, in space, time, or both (Neill 2004). It is far more difficult for children in southern Europe or the United Kingdom and Ireland, where climac-

tic variation over the year is relatively limited and most activities can be carried on in much the same way year–round, to understand the experience of children living in Scandinavia, where wide ranges of temperature and day–length mean that in summer the same outdoor activities (swimming, concerts, barbecues) are possible as in southern Europe and the Atlantic rim, while in winter it can be necessary to 'batten down' indoors and limit outdoor activities (Neill 2004). Thus the Finnish 'Saami' theme explores children's games and lives in an environment which will be very unfamiliar to most European schoolchildren – that of the reindeer pastoralists of Lapland. Saami children play games with reindeer bones – an apparently gruesome practice which city–living users might find it difficult to empathise with.

The most obvious way of engaging users is to provide problem–solving activities, which require active participation. Constraints on the money available to the project limited the approaches which could be used, so heavily interactive edutainment approaches such as those of 'The Way Things Work' were not possible – but as Oksanen (2004) points out, such approaches impose their own covert assumptions on the user. The problem–solving activities used in NEOTHEMI are therefore of a simpler nature.

- The Saami theme asks users to guess what the bones and other Saami playthings are used for.
- The Finnish theme 'Buildings and Environment' includes a pictorial quiz where successive pictures, starting from a close–up of a detail, test users' ability to identify the buildings in the theme.
- In 'History on the Canals' users have to try to work out why canal structures, such a bridges, were built in the way they are – the answer is only accessible through the teachers' pages.
- For 'Gothic Tales', users have to devise their own ending for the Gothic Tale 'Mr Fox' – their own ending can be an alternative to the traditional ending, again 'hidden' on the teachers' pages.
- In 'Participation' clues are given to allow users to decide for themselves whether that think the legend of Lady Godiva is true or not – but as the true answer is unknown, the theme provides no answer.
- The last two activities could be discussed in circle time – the theme 'Democracy', discussed below, provides guidelines for this. Such discussion could encourage 'metacognition' – where students think about their thinking (Pritchard 2004).

Another way of addressing the problem of engagement which has been used in NEOTHEMI is to use work done by students themselves and presenting their own views (Saccone 2004).

- In the Norwegian pavilion, secondary students from Norway and Sicily visited each other and recorded their impressions in the theme 'Everything's Foreign', contrasting the Northern and Southern European viewpoints.
- In the UK pavilion two themes use students' own writing to record their responses to a foreign culture; in the 'Globalisation' theme, the foreign culture is that of China, as seen through the eyes of Coventry secondary students on an educational visit: in the 'Respecting Diversity' theme, the foreign culture is that of the UK, as seen by asylum–seeker students from a range of countries.
- The latter theme also includes open–ended questions for users to think about, drawn up by the asylum–seekers themselves; their experiences had given them maturity which made them question the more juvenile behaviour of their native contemporaries.
- The Norwegian themes 'Me and School' and '15 Minutes of Fame' use secondary students own accounts (in a range of languages) of their perceptions of home, school and outside concerns.
- The Italian themes 'Invisible Outskirts' and 'The Colours of Thought' (Saccone 2004) present projects where students have used a wide range of techniques, including ICT, to express their experiences, especially of the urban cultural environment.
- Other themes drawing directly on work with children are the Finnish themes 'Buildings and Environment', which explores young children's own responses to familiar local landmark buildings, and 'Seasonal Celebrations'.
- The other northern and southern Italian themes, and the French theme on textiles, draw on student work, but in a less personally immediate way.

An alternative approach, which has been used in NEOTHEMI both within pavilions (Neill 2002) and is currently being set up between pavilions, is to make hyperlinks between different aspects to encourage students to approach a topic from a range of different viewpoints.

- The Hungarian pavilion on 'The Culture of Work' discusses aspects of the culture of work at an analytical level; it includes a 'Gallery' showing traditional craft work, which links to specific themes in other national pavilions –
- 'Foley's Farm' from the Irish pavilion (traditional agricultural practice in Ireland),
- 'Ribbon Weaving' and 'History on the Canals' from the UK pavilion (work in the English Midlands in the 19th and early 20th. centuries),
- 'Industrial Revolution' (linked to the 19th. century Völkinger Hütte ironworks, a World Heritage site),
- 'Travel and Transport' and

- 'Agriculture' from the German pavilion.

There are also links between 'The Culture of Work' and current issues in relation to work –

- 'Equality at Work' and 'Financial Awareness' in the UK pavilion,
- students' accounts of how they learnt skills in 'The Way We Do It' in the Norwegian pavilion.

For another example, the German pavilion, referred to above, includes the themes 'In Time of War' and 'Buildings – Virtual Synagogue', which deal with the bombing of the industrial city of Kaiserslautern at the end of the war and the destruction of the Kaiserslautern synagogue shortly after Kristallnacht, which link to the British themes 'Moonlight Sonata', and 'Reconciliation' which deal with the destruction of Coventry Cathedral in the raids of 1940, and the subsequent work of the Cathedral in promoting international reconciliation. By following the links between these themes, users encounter material which can prompt questions such as:

- was the greater destruction of German cities by the Allies more reprehensible than the destruction of British cities by the Germans, even though the Germans were the aggressors?
- should the bomber crews, whose casualty rate was higher than those they bombed, get greater or less sympathy?
- can war be justified in modern circumstances, for example in Iraq?
- how do the views in the UK about situations such as Iraq compare with those of asylum–seekers from Iraq, currently in Coventry schools?
- how does the deliberate destruction of Kaiserslautern synagogue compare with the accidental destruction of Coventry Cathedral?
- how does the building of a new cathedral in Coventry compare with the virtual reconstruction of the Kaiserslautern synagogue?

These links include a range of different approaches; descriptive and pictorial material from both sides in World War II, open–ended questions posed on the web–pages, and students' own writing, from the asylum–seekers mentioned above.

Similarly, the UK theme on fox–hunting, which approaches the issues raised in an analytical way, looking at issues such as the economic arguments, the effect on other species of removing control on foxes, and the balance between civil liberties and preventing cruelty, links to the Norwegian theme 'Making Headlines' – a student's account of his efforts to prevent the killing of endangered wolves in Norway.

Controversial issues such as these are appropriately debated away from the computer; the UK 'Democracy' theme includes guidance for pupils and

teachers on debating controversial issues at various levels of difficulty, and is linked to the web–pages on a range of controversial issues across the NEOTHEMI pavilions, such as '15 Minutes of Fame' from Norway and 'Famine' from Ireland. This theme has two strands; that for pupils illustrates groups of children discussing issues related to feelings, and suggests ways in which they can address issues which raise interpersonal problems, support each other and control their feelings. The strand for teachers draws on research in affective education in providing guidance as to how teachers can run effective circle time sessions; it is closely matched to the pages for pupils. This is one example of a NEOTHEMI theme where extensive support for teachers is provided; other examples are the UK 'Gothic Tales' theme, based on Drama work for student teachers at Warwick University, where the teachers' support pages discuss the advantages of closed–story format, whose apparent restrictiveness forces student writers to be more creative in their responses (this theme links to 'Folklore' in the Danish pavilion and 'The Kalevala' (the Finnish national epic) in the Finnish pavilion); both the UK and Norwegian pavilions have 'Teachers' Corners' which provide overall guidance to teachers on the way the material can be used.

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Margarida FELGUEIRAS
University of Porto, PT

EDUCATION AND EDUCATIONAL HERITAGE: SCHOOL BUILDINGS

The aim of this paper is to present some of the preconceptions on which was based the choice of the theme for the Portuguese website – educational heritage – and how the website was built. The importance of educational heritage is enhanced, as a means of acknowledging some of the cultural features, which bound European citizens, and how it is possible to work on these using the media. We will try to illustrate this with school buildings built in communities of different cultural traditions, whose knowledge makes sense when compared and confronted with others in their present place. The image storage possibilities in CD, saved in a remote e–mail or in a specific site, and pictures taken by digital cameras or scanner, allow independent work by students and the organization of evocative presentations of different themes. The use of internet research is presented as a powerful and fast mean of data storage; it also allows the comparison of realities – a journey within cultures.

Education, memories and material culture

In the last decades, a set of memoirs of "less important people" has appeared (Andrés–Gallego, 1993), connected to their daily life and accompanied by a set of artefacts which recall the repetitive and common ways of life– the search for subsistence, the type of basic organization, the working relationships and gestures, the development of a set of orders and values, and the transmission of knowledge to the youngest – according to their social class. All these life–styles are characterized by social class divisions of genre and age, registered in the daily artefacts and spaces, which have shaped practice and distinguished meanings. It is from this perspective that archaeologists, anthropologists, pre–historians and Marxists could speak of material culture, in both the most ancient human groups or in more recent epochs. It

is as educational historians, heirs of this historical–cultural tradition, that we speak of the materiality of the scholastic culture and why it is important to understand the organization of educational spaces. These appear as an articulated set, which transpires in hygienic, pedagogic, disciplinary and, obviously, in architectural conceptions. The buildings originated a pedagogical statement, which leads to social and language power. Its persistence in time affects the implementation of other pedagogies, compelled by successive reorganizations. Knowing the history of the school building is to travel through time and acknowledge the different ways of appropriation of what today seems to have only a unique and uniform use; to recognize the importance that communities gave to scholastic education and the place which children had in society.

The history of education and scholar spaces

Only recently has the study of the scholastic space and time been highlighted in educational historiography. (Julia, 1995; Magalhães, 1999; Nóvoa, Santa–Clara, 2004).

Educational History has enhanced the school space, not as a scene or continent, in Escolano's words, but as a kind of speech which is materialized in the school architecture that " established a system of values, such as order, discipline and rationality" (Escolano Benito, 2000, p.183). The space of these familiar places cannot be reduced only to the physical description. It is a vivid space, loaded with meanings, which included the 'known place'. These spaces should be considered as 'lived spaces', connected to personal representations and collective rules, rhythms and actors' roles. Viñao Frago believes that there are bonds between the physical configuration and the internal disposition of people and objects in the concrete spaces, and the pedagogical means and methods used. (Viñao Frago, 1998, p.101)

To look at a building and its spaces is to invoke functions and also bestowing them with meaning about experiences through the recollection of how they were lived in. The spaces were, therefore, symbolized and rebuilt beyond their primary functions. The delimitation and disposition of spaces reflect the pedagogical innovations and speeches which represent them also as a strict dependency with time rhythm and scholar practices. Localization of buildings within the urban limits reveals the social importance which education is given: or its marginal stature, when schools are relegated to the city limits. For example, Comenius himself built the schools in the city centre near the greatest public buildings: churchs, curias or markets.

We will try to present the transformations which buildings have suffered, going beyond the localization and physical or topographical approach and searching for anthropological interpretations which reveal the social and cultural meaning (Felgueiras, 2002).

The scholastic material has gained only very recently the attention of historians, usually those who have tried to unite the study of the past to action in favour of museological conservation. In many European countries, a movement in favour of protecting the scholastic heritage has been formed and has created a high number of museums, showing the importance of the study of scholastic equipment and didactic material. In this movement are involved many teachers, a large number of them already retired, as well as students, historians and museologists. The initiatives in this field were a success, confirmed by the public joining in with enthusiasm. As years passed by, it was necessary to rethink ways of reaching the public and revealing the content in an interesting way. The internet has allowed the access to another type of public.

School buildings in Portugal

In Portugal, the elementary schools were few until the 20th century. The Government appealed to individuals to solve the problem. As well as the Government, several groups have participated in school construction – trade unions, churches, philanthropists, freemasons, social centres connected to political parties, companies – leaving their mark as they supported education.

The individuals, who built schools, would offer them to the Government, looking for some benefits, such as titles of nobility, to be allowed to guarantee a job as a teacher to a relative or only for economic, philanthropic or social reasons.

The first drawing conceived for a primary school was the result of Count de Ferreira's will (1866). Count Ferreira left a legacy for the construction of 120 primary schools throughout the country.

In Portugal, schools built by individuals or collectively by societies were integrated into the State system in 1936 or even during the military dictatorship period (1926 – 1933) This way, all references to their origin have vanished. A result is the idea that the establishment of the educational system and the school network was the almost exclusive result of action by the "Estado Novo" dictatorship.

Inventory papers of the assets of primary schools and about the action of the "Brazilians" (Felgueiras 2000) revealed the participation of the civil soci-

ety in the process of establishing elementary education. This allows us to interrogate the past in several ways and also to assert that private initiative alone is not enough to achieve one of the tasks of a modern and more fair society: the access of all citizens to education.

In the Portuguese case, activities in favour of education, in the 19th century or beginning of the 20th century, were often connected to other initiatives of a philanthropical character, such as protection of minors, similar to measures taken in central European countries, such as Germany, France, or Switzerland.

The structure of the website about the educational heritage

Regarding the perspectives mentioned above about the importance of the buildings and the way they are inhabited in different epochs, we chose four sub themes: school buildings, games on the playground, books and didactic material and scholastic buildings. We defined the school buildings sub–theme as the main one, because from the different typologies of buildings one can 'read' the changes in education politics and pedagogical orientation. This allows us to relate with local or more general data, such as pedagogical material and furniture used, and to understand better a certain epoch. The games on the playground, which pass across generations, spaces and civilizations, lead us to a transversality of toys and games. Many of the games which no longer exist in our societies are played by children from underdeveloped countries. In addition, those who access the website will find toys and games which are common in different times and countries, allowing a journey between cultures.

There is an introductory text about educational heritage which emphasises the difference between our educative society and those from the past or present, where universal education of children still was not or is not a reality. Each of the three sub themes is chronologically structured with a short explicative text, followed by pictures. When necessary, there are links to further explicative texts, or clarifying specific terms, and also to other aspects of the website. Moreover, the readers can get to know elements of the history of Portuguese education and can compare it to the reality in their own region or another country, widening their comprehension of the diversity of Europe. It is thanks to this differentiated circulation and adaptation of conceptions and experiences that it is possible to speak about a wide common cultural heritage across countries, despite all the differences.

Reflecting on the use of the website

We are not describing the website content here, as it would be repeating what is already there which can be accessed on the internet. It is important to reflect in the way that the content can be used in a scholarly context or by students.

The website about educational heritage has concise texts and several pictures, which make it easy to read, although we doubt that the adolescents, who research on the Net in an independent way, would spend enough time reading the whole sequence. They will only do it if they need to for a project, or if they are curious about confronting the past and the present. More profound research of the presented information would occur if the website is to be used on a scholarly context, allowing students to question about the differences and similarities between their current schools and the ones of the past; comparing their routines with the ones of other students in other European countries. They also can access the themes of the "NEOTHEMI" website, find new connections between them, widening the concept of material and immaterial culture, awaking to the importance of the working actions and rhythms, which mould our individual and social identity.

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PART IV

Neothemi
Final evaluation

Sean NEILL
University of Warwick, UK

ASSESSMENT OF THE NEOTHEMI PROJECT AN ON–LINE SURVEY

Summary

Most of the respondents were students (mostly girls) in large (secondary) schools, primarily in suburban areas. Adult users were mostly teachers, including senior staff; half were in smaller (under 500) and nearly a third in rural schools, suggesting NEOTHEMI was reaching its target of making cultural heritage available to those who could not readily access it in the real world for geographical reasons. Rural students were significantly more favourable to the educational use of the Internet, though their cultural attitudes were more parochial than those of urban students. NEOTHEMI had been most used in language work and had helped students understand both their own and other cultures better, and to understand different points of view and difficult issues. The most serious problem in using NEOTHEMI was insufficient time; the quantity and speed of computers, and technical issues such as downloading plug–ins and the risk of accessing unsuitable websites, were seen as less serious. Factor analysis showed teachers' views were more differentiated than those of students; teachers simultaneously emphasized problems and benefits, in a differentiated and subject–related way. Teachers stressed the educational aspects of IT use more than students; there were few statistical differences for the social effects of IT use, except that students rejected gender differences in IT use more strongly than teachers. Many respondents saw the Internet as encouraging social skills, and did not see it as a distraction from 'real' work, though lack of ICT knowledge by teachers was sometimes seen as a problem. Respondents supported the use of the Internet more with older than younger students.

Introduction

Despite the stereotype of teachers being reluctant to embrace ICT, relevant content can be effective in eliciting usage (Mumtaz 2000); students can be more motivated and competent in using ICT in arts contexts than their

teachers (Ellis & Long 2004). The NEOTHEMI project proposal (Saccone et al., 2001) was 'to create an interesting and inviting e–learning environment, which could give benefit to its various visitors: children, students, teachers, researchers, and groups who would not be able to visit museums and culturally meaningful places in reality'. In assessing the effectiveness of the project as delivered (Saccone 2004), it was therefore necessary to investigate who had been using the site. Firstly, it was desirable to assess whether the intended educational audience had in fact been using the site, though the site was intended to be available to general users as well. Secondly, there had been concern at the planning stage of the project that factors such as inadequate computing provision, and fears of children accessing unsuitable sites if allowed to use the internet, would inhibit usage. It was also desirable to assess how general attitudes to using the Internet for education related to attitudes to the NEOTHEMI website. As described in the methodology section, the questionnaire contained sections to address these issues. In discussing the questionnaire results, after considering the composition of the sample, the educational benefits derived from using NEOTHEMI, and the problems encountered in using it, are explored, followed by the educational value, and problems, of using the Internet in general. Though adults and students answered the same questionnaire, differences between their conceptual structuring of educational ideas were explored by factor analysis, covered in the final section of the results.

Methodology

An on–line survey, using Questionmark Perception (Question Mark 2002), was linked to the project homepage and to individual themes. As with all on–line surveys, response rate was low, with 293 completed questionnaires being completed by August 2004, as against a much larger number of uncompleted questionnaires and a high daily hit rate. Total visits to the project central homepage to August 2004 exceeded 5000 but many users came direct to individual country pavilions or themes via search engines; for example the daily hit rate on all UK pages exceeded 600 during May to August 2004, substantially more than the daily rate during 2003. Not all national pavilions had hit counters, and it is likely that these two counters represent only a minority of total users.

The questionnaire was set out on four pages to allow data to be collected from uncompleted questionnaires with priority being given to the aspects most immediately related to the project; the first page asked which theme had been looked at, followed by a second page asking what had been gained

from using the project theme and what difficulties had been experienced. Biographical information was collected on the third page and general opinions on the educational use of the Internet on the final page. This analysis is primarily based on the completed questionnaires, as these allow the analysis of sub–groups in relation to biographical information.

Characteristics of the sample

The sample was female–dominated; over two–thirds (71%) of the sample were female with 28% being male – but among adult respondents males were in a small minority. Gender differences in response are therefore analysed separately for students and adults below –Three–quarters (73% were students, with most of the remainder adults in education – classteachers (14%), subject leaders (3%) senior teachers (2%) and headteachers (4%) – only 2% were museum educators or researchers. Correspondingly, a large majority of visitors to most national pavilions were students, with the German pavilion being an exception: most respondents for this pavilion were adults, probably teachers checking out the suitability of the material for use with their students. As most respondents were students, 70% were under 20, with the adults fairly evenly spread across the age–range (5% 21–30; 6% 31–40; 8% 41–50; 9% over 50); it is striking that older and more senior staff were making use of the site. In the following discussion the word 'teachers' is used to refer to all adults, because so few were non–teachers. Most respondents were in large schools (the complexity of the questionnaire made it more suitable for secondary students) with 61% in schools of 500–1000 students and 11% in schools of over 1000 students; 20% were in schools of 200–500 students with only 6% in schools of less than 200 students. Teachers were significantly more likely to be in small (499 or under), but also very large, schools than students. Most respondents (63%) were based in a suburban area, with much smaller numbers in inner–city (21%) and rural (14%) areas. However teachers were highly significantly more likely to be based in inner–city or rural areas than students, with roughly a third of teachers in each type of area. These differences between teachers and students suggest that a substantial proportion of teacher users are the type of establishment visualised as a special target when setting up NEOTHEMI – small rural schools in areas where access to cultural heritage is limited by geography. There were also some indications that users preferentially looked at themes reflecting experiences which were not available to them in reality – for example inner–city users were relatively more likely to look at the German theme

on agriculture and the British theme on the hunt, rural users to look at he German themes on 'My town now and then' and 'Times of War' (about the bombing of German industrial cities).

Results

Purposes and benefits of NEOTHEMI use

As might have been expected from the profile of users, the purpose of looking at the theme was overwhelmingly for education (85%); leisure use accounted for 11% and non–education work use for only 2%. Interestingly, there was no significant difference between students' and teachers' purposes for use, or between genders. Figures for the location of theme use matched almost exactly, with 87% of use being at school, 10% at home and 1% at work. However teachers were significantly more likely to look at themes at home (presumably for preparation purposes) than students, with 32% of use being at home.

For educational use, the major use was modern foreign languages, which accounted for 48% of responses, with work in the respondent's own language accounting for 18%; the two other major uses were for technology (15%) and social studies (10%) with other subjects (religious education, mathematics, arts, science and vocational education) accounting for percentages in low single figures. Reflecting this, 33% reported that using the NEOTHEMI theme helped them want to learn other languages very much, with 23% reporting that they were slightly enthused; 22% were not much enthused and 15% not at all enthused; 5% said this issue did not apply. This was a very significantly stronger motivation for students than teachers, with 41% of students very keen to learn languages. There were no consistent differences related to area for students or teachers, but girls (who were a significant majority of foreign language students) were highly significantly more enthusiastic than boys.

Turning to outcomes from using NEOTHEMI, about two–thirds felt they would want to find out more about the topic either very much (25%) or slightly (36%); 25% did not want to find about the topic much, and 12% would not want at all to find more about the topic or felt the issue did not apply. Teachers were highly significantly more positive than students, but there were no consistent differences related to area. Girls were significantly more positive than boys.

- Congratulations for this web site which involved me so much!!! Oh yeah!
- I like this project because it is very interesting.

Fairly similar figures applied to whether users now felt more European: 21% felt so strongly and 31% slightly, as opposed to 15% who felt not at all more European; 28% did not feel they felt much more European and 2% felt the question did not apply. Students had a wider range of views than teachers, most of whom felt not much or slightly European: they were highly significantly more likely to feel very much or not at all European, reflecting the less secure and reflective identity of the young. Inner–city students were significantly more likely to have been postively affected than others, but there were no differences for teachers. Girls were slightly but significantly more positive than boys.

Over half the respondents felt the themes helped them understand difficult issues; 43% felt they were helped slightly and 11% very much, as compared to 11% who did not feel the themes had helped at all and 7% who felt that the question of difficult issues did not apply to the theme they had looked at: 26% did not think the theme had helped much (but many themes were descriptive of cultural heritage rather than addressing issues). There was a statistically significant but educationally slight difference between students and teachers, but no differences related to area. Again girls were slightly more positive than boys.

The themes had been highly successful in getting respondents to understand different points of view with half (48%) feeling they had been helped slightly and 21% feeling they had been helped very much; only 14% did not feel they had been helped much, 9% did not feel they had been helped at all and 6% thought the statement did not apply. Students held significantly more diverse views than teachers, most of who felt the themes had helped them understand different points of view slightly better; there were no consistent differences related to area.

- This topic is very difficult but is very interesting because [it] talks about the diversity of people.

About two–thirds of respondents felt using NEOTHEMI had helped them understand their own culture better (30% agreed strongly and 36% agreed slightly); 17% felt it had not helped them much, while 9% felt it had not helped at all and 6% felt this issue did not apply to the theme they had chosen. Given that many respondents were looking at themes from other national pavilions, this implies that the comparative aspect of NEOTHEMI was helping users reflect on their own culture. However students were highly significantly less likely than teachers to feel NEOTHEMI had helped them to understand their own culture' though over half of students agreed or agreed strongly that they

now understood their own culture better, they had clearly been less reflective than teachers in this respect. Students in rural areas were significantly less likely than others to feel that they now understood their culture better, suggesting a more parochial attitude; there was no difference for teachers.

Respondents had found NEOTHEMI gave them similar assistance to understand other countries' cultures; 28% agreed strongly that it had assisted and 38% slightly; 19% felt it had not assisted much, 9% felt that they had not been helped at all and 4% felt that the issue did not apply. Here there was no difference between students and teachers, but again students (but not teachers) from rural areas were significantly less likely to feel they had been helped. Boys were also significantly less likely to feel they had been helped than girls.

- I am very happy to visit this website to know more about my own culture but also the foreign cultures.

Views were somewhat more mixed on whether NEOTHEMI had helped them understand themselves better with 22% not feeling it had helped much, 34% feeling it had helped slightly, 13% feeling it had not helped at all: 22% agreed strongly that they understood themselves better and 6% who did not feel that the statement applied.

- The topic is very good, especially my school and the others.

Once again teachers, with their more reflective approach, were more likely to agree with this statement than students, and students, but not teachers, from rural areas, were significantly less likely to feel they had been helped. Similarly boys were significantly less likely to feel they had been helped than girls.

Problems in using NEOTHEMI

Some respondents reported problems because their computers were too slow for NEOTHEMI (22% – slightly, 18% – very much) but more had little problem (not much – 14%, not at all – 32%, does not apply – 11%). Different parts of the site made different demands on computing speed, the virtual museum being the most demanding section, but the individual theme pages had been designed to a standard size of 60Kb, and should have been relatively undemanding for all but the most antiquated computers. Somewhat fewer respondents reported that there were not enough computers for NEOTHEMI (applied slightly – 22%, very much – 12%) but most respondents did not find this a problem (not much – 20%, not at all – 26%, did not apply – 18%). Students and teachers gave similar assessments of the severity of both of these problems, but suburban teachers were less likely to report difficulties with slow computers; other area effects were not significant. However girls reported both problems as being significantly more serious than boys did.

However a somewhat more serious problem was that respondents did not have enough time to use the computers for NEOTHEMI: this was very much of a problem for 23% of respondents and a slight problem for 28% – but 22% did not find it much of a problem, 16% did not find it a problem at all and 9% did not fell the issue applied. Students were highly significantly more likely to report this as a serious problem than teachers, but there were no area differences for students; suburban teachers reported significantly fewer problems than others. Girls were slightly more likely to encounter this as a problem than boys.

Many of the pages were set up in a fixed format which was presented 'on a plate' to users and respondents were therefore asked if they had had a problem because they could not alter NEOTHEMI to fit their teaching. This had been a slight problem to 21% of respondents and very much of a problem to 6%, but overall this was not a serious issue: it was not much of a problem to 32% of respondents, did not apply at all to 26% and was not at all a problem for 12%. Teachers found this a significantly less serious problem than students, with 54% of teachers reporting that the problem did not apply or was not at all serious; there were no area–related differences for teachers or students. The virtual museum section of the site required the Cortona plug–in and respondents were therefore asked if it was difficult to install plug–ins. Most had not found installing plug–ins a problem (does not apply – 25%, not at all – 22%, not much – 25%); only a minority had had problems and for most these were slight (17%) rather than serious (9%). Teachers saw this as a highly significantly less serious problem than did students (students in suburban areas found this less problematic but girls found it a slightly more serious problem than did boys), and less serious than fitting NEOTHEMI to their teaching – 68% of teachers reported that the problem did not apply or was not at all serious. Both responses counter the stereotype of teachers reluctant to take on new technology, and indicate the fitness of the NEOTHEMI provision for its educational purpose.

The risk of reaching dangerous websites was not seen as serious by most respondents; 25% did not think the risk applied, 22% did not think it at all serious, and 18% did not think there was much risk; 21% saw the risk as slight and only 13% felt there was very much of a risk. Teachers were significantly less concerned about this issue than students, with 65% thinking the risk did not apply or was not at all serious. Contrary to stereotype, boys saw it as a significantly more serious problem than did girls. There were no area–related differences. Though concern about this issue varies between countries, to the extent that in some countries schools only allow approved personnel to

use the Internet, a series of linked site such as NEOTHEMI, being used in a public place (the classroom) much reduces the possible risks.

General views on educational use of the Internet

The final section of the questionnaire asked about the educational use of the Internet in general; Support was strong for the proposal that the use of the Internet should be taught in every secondary school. Two–thirds of respondents (63%) agreed strongly with this statement and 15% agreed slightly; 12% had mixed views and 8% disagreed or disagreed strongly. Similarly, there was general agreement that every school leaver should know how to use the Internet with 47% very much in favour and 26% slightly in favour: 18% had mixed views and 6% were not much or not at all in favour. Boys were somewhat more in favour of this than girls. However there was less support for the corresponding proposal that the use of the Internet should be taught in every primary school: only 33% agreed strongly, 26% agreed slightly, while 19% had mixed views and 19% felt it should not be taught much or at all. In all three cases, teachers were highly significantly to be very much in favour (68% or more for each question).

Views were mixed on the statement It is no use to teach the Internet to children less than 6 years old; 29% had mixed views, 18% agreed slightly and 15% agreed very much, but 19% disagreed completely and 17% disagreed slightly. Here teachers were very much more likely to have mixed views than students, who held a range of views, with boys being significantly more likely than girls to be both strongly in favour and strongly opposed.

There were strong feelings on gender issues and some indignation about the questions which were perceived as sexist:

- I thought that this survey was good but there were too many questions about boys in it. Girls are as smart as boys if not smarter.
- I think that this is a good survey but some of the questions are sexist!
- I think that this survey is very sexist!
- Utterly pointless. Though I liked the way you attempted to get people against the Internet and its usage with the last page. Also you are simply applying stereotypes to internet users. It is fifty/fifty at least.

The statement boys are more eager to use the Internet received very mixed responses, with 22% saying this was not at all true, 20% agreeing with it very much and 25% having mixed views; 22% agreed slightly and 9% did not agree much. Similarly, 25% did not agree at all with the statement that the Internet is used more often by boys than girls and 11% did not agree much, as opposed to 18% who agreed slightly with this statement and 13% who

agreed strongly: 30% of respondents had mixed views. Views were more evenly spread on whether on the whole, boys seem to enjoy the Internet more than girls; 27% had mixed views, with 18% agreeing with the statement very much, 19% thinking it was not at all true, 23% agreeing with it slightly and 11% not agreeing with it much. Most teachers had mixed views or supported these statements more or less strongly, but a substantial minority of students (23% or more) disagreed completely with all of them, the difference between teachers and students being highly significant for the first two statements.

Most respondents thought teachers should use digital technologies as "constant learning companions" in all lessons; 29% agreed strongly and 29% slightly, while 22% had mixed views, 12% did not agree much and 5% did not agree at all. Teachers were highly significantly more likely to agree strongly (58% did so) than students; boys were significantly more likely to agree than girls. However over half the respondents (with no statistical difference between students and teachers – but boys were significantly more likely to agree than girls) thought students know much more about the use of the Internet than teachers (20% agreed strongly and 33% slightly); 29% had mixed views, with only 11% not agreeing much with the statement and 4% not agreeing with it at all. Half the respondents thought utilizing the Internet in teaching suffers from the poor skills of teachers (24% agreed very much with this statement, 25% agreed slightly); only 9% did not agree with the statement at all and 12% did not see it as much of a problem – 29%, the largest proportion had mixed views. Teachers were significantly more likely to consider this a problem than students, with 68% agreeing that teaching suffered. This was the only category which produced a significant gender effect for teachers – that males were more likely to think that Internet use suffered from poor skills, females to have mixed views or to disagree. Boys had significantly more divergent views than girls, most of whom had mixed views or agreed slightly with the proposition.

Half the respondents thought the Internet is most suitable for extra–curricular studies, like clubs, with 30% agreeing slightly and 23% agreeing strongly; 31% had mixed views but 6% did not think this statement was true at all and 8% did not think there was much truth in it. Teachers were significantly more likely to have mixed views than students, who were somewhat more likely to agree very much with the statement – girls were more in agreement than boys. There was less support, with no statistical difference between students and teachers, for the proposition that the use of the Internet takes too much time out of real teaching, with 27% agreeing slightly and only 10% agreeing strongly; 13% felt the proposition was not at all true, 15% did not agree with it much, but once again the largest proportion, 31%, had mixed

views. However rural students were highly significantly less likely to agree with this statement that other groups, suggesting that they saw the value of the internet in areas where other facilities were limited. Girls, however were less positive than boys. Though views were evenly spread, more respondents did not feel the Internet is too expensive to use in schools (not at all – 23%, not much – 21%) than did (slightly – 23%, very much – 12%): 19% had mixed views. A third of teachers felt that it was slightly too expensive, but a third that it was not at all too expensive, significantly different from students. Again rural students were highly significantly less likely to agree with this proposition, confirming the value they saw in the Internet as giving them a wider range of experiences. Again, girls were less positive than boys.

Respondents had mixed views (32%) on whether the use of the Internet isolates students from each other though more thought it did not (not at all – 18%, not much – 19%) than though it did (slightly – 18%, very much – 10%) but there was no statistical difference between students and teachers in these views. However rural students were again significantly less likely to feel this applied than other groups, suggesting that they saw the value of virtual communication in overcoming isolation. Correspondingly, rather more respondents thought the Internet teaches students to communicate with each other in a class (slightly – 28%, very much – 14%) than thought it did not (not much – 16%, not at all – 7%), but again the largest group had mixed views (33%): teachers were more likely to hold mixed views than students and boys had more divergent views than girls. Responses on whether the Internet teaches students social skills were similar (with no statistical difference between students and adults, with the largest group (39%) having mixed views, but more respondents thinking it did (slightly – 26%, very much – 8%) than that it did not (not much – 18%, not at all – 7%). Girls were significantly more positive than boys.

The educational perspectives of teachers and students

Factor analysis showed that teachers and students had different groups of ideas about the use of the Internet for educational purposes; in both cases some groups contained interesting and unexpected combinations of ideas. The groups discussed here are based on the varimax–rotated factor groups produced by factor analysis. Varimax rotation separates out initially broad–ranging factor groups into more discrete groups.

The first factor grouping for teachers related to the educational value of using the Internet. It contained high positive loadings for 'the Internet should be taught to all school–leavers', 'IT should be a "constant learning companion"

in all lessons', 'the Internet should be taught in all primary schools', 'the Internet should be taught in all secondary schools' and a lower positive loading for 'the internet teaches students social skills'. These respondents rejected the 'risk of reaching dangerous websites' and, to a lesser extent, that the Internet was 'too expensive to use in schools'. However they felt that 'Internet use suffers from the poor skills of teachers'. In other words, this group of teachers felt that the Internet offered a valuable learning experience for all student groups, and their main concern was with the inability of teachers to deliver it.

The views of those teachers who were reluctant to use the Internet were reflected in the second factor, which was concerned with the problems of using the Internet in mainstream schools (this factor contained negative loadings for 'the Internet should be taught in all secondary schools' and 'the Internet should be taught in all primary schools' but not for 'the Internet should be taught to all school–leavers'). This group of respondents thought strongly that 'the Internet takes too much time away from real teaching', 'the Internet isolates students from each other' and the Internet was 'too expensive to use in schools'. They were also concerned that the Internet reinforced conventional sex stereotypes because 'boys generally enjoy [it] more than girls' and it is 'used more by boys than girls'. They also felt strongly that the Internet did not 'help students understand their own culture'. This suggests a group of liberal but technophobic teachers.

Problems in utilisation formed a separate factor; this was dominated by high loadings for technical aspects; 'not enough time for NEOTHEMI', 'computers too slow for NEOTHEMI' and 'not enough computers for NEOTHEMI', but this was allied to lower loadings for aspects suggesting general reluctance, many of which overlapped the previous factor – problems with teachers:–'students know more about the Internet than teachers', 'Internet use suffers from the poor skills of teachers' – and with "geeks" – 'boys are more eager to use the Internet', 'Internet is used more by boys', 'the Internet isolates students from each other'. However this group also had a (low) loading for 'want to learn other languages', suggesting it is comprised, partly at least, of teachers who see the opportunity NEOTHEMI offers for language learning, but feel problems related to the technical difficulties and their own lack of skill in dealing with them, reinforced by the unsupportive attitude and superior knowledge of some students.

Wanting to learn other languages also loaded onto a factor which was primarily concerned with the cultural benefits of NEOTHEMI in 'helping [students] understand other cultures', 'help [them] understand [themselves] better', 'feel more European', 'want to find out more about the topic' and 'under-

stand [their] own culture better' – many of the cultural and intercultural benefits hoped for from the project.

Table 1
teacher factors[a]

	Component							
	Educational value of the Internet	Using the Internet in schools	Problems in utilisation	Cultural benefits	Interpretative benefits	Communicative skills	Extra-curricular use	Technical problems
Understand different points of view?	.770							
Help understand own culture?	.752				.335			
Want to learn other languages?	.719							
Feel more European?	.687							
Help understand other cultures?	.686							
Help understand yourself better?	.568				.469			
Understand difficult issues?	.563						.320	
Want to find out more on topic?	.461				.341			
Internet used more by boys than girls?		.820						
Boys generally enjoy Internet more than girls?		.803						
Boys are more eager to use Internet?		.791						
Internet use isolates students from each other?		.536						
Students know more about Internet use than teachers?		.471		.459				
Internet use suffers from poor skills of teachers?		.428		.402				
Computers too slow for NEOTHEMI?			.780					
Difficult to install plug-ins?			.733					
Not enough computers for NEOTHEMI?			.668					
Could not alter NEOTHEMI to fit teaching?			.591					.436
Not enough time for NEOTHEMI?			.512				.359	
Internet should be taught in all primary schools?				.759				
Internet should be taught in all secondary schools?				.744				
Internet should be taught to all school-leavers?				.613				-.371
Internet too expensive to use in schools?					.708			
Internet takes too much time away from real teaching?	.301				.521			
Internet teaches students social skills?						.702		
Internet teaches students to communicate in a class?						.661		
No use to teach the Internet to under-6s			.401			-.455		
IT should be 'constant learning companion' in all lessons?							.803	
Internet best for extra-curricular activities e.g. clubs?		.301			.315		.510	
Risk of reaching dangerous websites?								.834

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

[a]. Rotation converged in 10 iterations.

Wanting to learn other languages loaded onto yet another factor related to interpretative benefits – primarily 'understanding different points of view' and 'understanding difficult issues'. These respondents differed from those in the previous factor, who were primarily concerned with cultural issues, in that they were concerned with philosophical and affective themes; they also differed in that they had found the project difficult to use because of 'not enough computers' and 'difficulty in installing plug–ins'; this may reflect these teachers being less technologically aware than the previous group, or that they wanted to make more extensive use of the computers to develop thought processes in their students.

The remaining factors contained only pairs of high loadings related to a specific issue; communicative skills ('Internet teaches students to communicate in a class', 'Internet teaches student social skills'), extra–curricular use ('Internet best for extra–curricular activities', 'boys are more eager to use the Internet') and technical problems ('difficult to install plug–ins', 'could not alter NEOTHEMI to fit teaching').

For students, the first factor was the benefits of NEOTHEMI in 'helping you understand different points of view', 'helping you understand your own culture better', 'wanting to learn other languages', 'feel more European', 'helping understand other cultures', 'help you understand yourselves better', 'help understand difficult issues', and 'want to find out more about the topic'. This factor combines the content of two separate factors for the teachers – the teachers separated cultural and interpetrative benefits, which students combined, suggesting a more sophisticated and differentiated use by teachers, as might be expected, but also an awareness by students that these two groups interact – to understand your own culture better by questioning your own previously taken–for–granted assumptions as a result of understanding other cultures better is to understand difficult issues. It is interesting that this student factor also has a low loading for 'the Internet takes too much time away from real teaching' – the effect of increased accountability and pressure for achievement, for example in the English National Curriculum, has been to push students towards low–level understanding presented 'on a plate' by the teacher and away from independent interpretative of challenging material. As Pritchard (2004) points out, students often prefer to use material, including the Internet, in a derivative way, but many of the NEOTHEMI themes were purposely designed to require active interpretation (Neill 2004). This viewpoint recurred, in a slightly different form, on the fifth minimising costs factor, where the main loadings were 'the Internet is too expensive to use in schools' and 'the Internet takes too much time away from real teaching' with a lower loading for 'the Internet is best for extra–curricular activities', but there were also loadings for

'help you understand yourselves better', 'want to find out more about the topic' and 'helping you understand your own culture better': here the emphasis is on other methods to achieve the same benefits as NEOTHEMI.

Table 2

student factors[a]

	Component								
	Benefits of NEOTHEMI	"Geek" factor	Technical problems of NEOTHEMI	Educational use of the Internet	Minimising costs	Social skills	Best for clubs and boys	Lack of flexibility	No use for under-6s
Internet should be taught to all school-leavers?	.782								
IT should be 'constant learning companion' in all lessons?	.774								
Internet should be taught in all primary schools?	.643	-.361				.377			
Risk of reaching dangerous websites?	-.512							.395	.314
Internet use suffers from poor skills of teachers?	.511		.335						
Internet takes too much time away from real teaching?		.789							
Internet use isolates students from each other?		.618	.307						.311
Internet too expensive to use in schools?	-.322	.616							
Boys generally enjoy Internet more than girls?		.604				.343	.338		
Internet should be taught in all secondary schools?	.525	-.564							
Help understand own culture?		-.523		.396		.419			
Not enough time for NEOTHEMI?			.835						
Computers too slow for NEOTHEMI?			.809						
Not enough computers for NEOTHEMI?			.759		.352				
Students know more about Internet use than teachers?			.469				.352		
Help understand other cultures?				.722					
Help understand yourself better?				.695					
Feel more European?				.686					
Want to find out more on topic?				.650					
Understand different points of view?					.822				
Understand difficult issues?					.763				
Want to learn other languages?			.312	.393	.479				.320
Internet teaches students to communicate in a class?						.786			
Internet teaches students social skills?	.318					.702			
Internet best for extra-curricular activities e.g. clubs?							.842		
Boys are more eager to use Internet?			.423				.705		
Internet used more by boys than girls?		.415	.306			.390	.425	-.345	
Difficult to install plug-ins?					.362			.732	
Could not alter NEOTHEMI to fit teaching?								.724	
No use to teach the Internet to under-6s									.828

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

[a]. Rotation converged in 16 iterations.

The second and third factors concerned difficulties in using NEOTHEMI; the second may be termed a "geek" factor, as it contained three high loadings for sex differences in Internet use ('Internet used more by boys than girls', 'boys generally enjoy internet more than girls' and 'boys are more eager to use the Internet'), the classic 'geek' statement 'the Internet use isolates students from each other' and two statements about the inadequacies of teachers ('students know more about Internet use than teachers' and 'Internet use suffers from the poor skills of teachers'). The last two statements recurred, in a more positive context, in the fourth factor, for educational use of the Internet, where the high loadings were for 'the Internet should be taught in all primary schools', 'the Internet should be taught in all secondary schools' and 'the Internet should be taught to all school–leavers'; in other words students saw the lack of skills among teachers as an obstacle to the desirable widespread use of the Internet.

The third factor concentrated on the technical problems of NEOTHEMI use – 'computers too slow for NEOTHEMI', 'difficult to install plug–ins', 'not enough computers for NEOTHEMI', 'could not alter NEOTHEMI to fit in with teaching' and 'not enough time for NEOTHEMI'. Interestingly, the risk of reaching dangerous websites was not included (it did not appear as part of the student factor structure). As with the first factor, students combined into one factor aspects, in this case technical problems, which were separated onto different factors for the teachers, reflecting their more differentiated response.

Discussion

Educational usage of the NEOTHEMI materials was concentrated on two main purposes – that originally planned by the project, of giving users access to and helping them understand other cultures, and use for learning foreign languages. While the questionnaire did not explicitly ask which language was being learnt, it is likely that in most cases it was English, given the popularity of this language as a foreign language in most European countries and the fact that all pavilions included English, in addition to the national language where appropriate.

Many of the national pavilions included material related to national cultural history, and as pointed out by Neill (2004) younger users in education encounter similar problems in understanding the attitudes and beliefs of previous generations in their own culture to the problems they encounter in understanding the attitudes and beliefs of other cultures, especially those

which have to deal with different geographic or climatic pressures and constraints. Thus both types of material – historical and comparative – can challenge users' taken–for–granted assumptions about their own culture and make them reconsider previously unquestioned experiences; hence users reported better understanding of their own culture as well as of other cultures. As Reid (2003) points out, in a different IT context (on–line discussion between student teachers) the more disembodied nature of on–line work can, perhaps counter–intuitively, elicit a more deliberative and considered response from users than face–to–face discussion – greater 'engagement' with the situation, in Pritchard's (2004) terms. However there was less perceived influence on personal attitudes, including feeling more European.

When we compare student and teacher thought patterns, as revealed by the factor analysis, those of teachers were more complex, reflecting their greater analytical abilities as teachers, and their emphasis on specific educational objectives. Whereas students grouped together most of the educational benefits, and the technical problems, of NEOTHEMI, teachers differentiated cultural and problem–solving benefits, and relate both benefits and difficulties of using NEOTHEMI to its use in learning other languages. Equally, teachers group together some of the benefits of Internet use with its accompanying problems – for example the perceived greater skill of students than teachers with the Internet was classified by teachers as a problem accompanying specific benefits of use, whereas students classified it with other problems. On the other hand, there are similarities in response; both separate social skill benefits from others, and cluster together the "geek" questions relating to Internet users being male social isolates.

The greater dedication of teachers to educational outcomes (except for learning languages) and their greater concern about affective educational issues than students, are paralleled in other areas of education (e.g. Puurula et al. 2001 for a European survey of affective education). Teachers reported fewer technical problems than students, which may reflect their status as providers rather than audience! It is notable that rural students appeared less receptive than others to the possibility of cultural understanding, both of their own and other cultures, offered by NEOTHEMI, suggesting a more parochial attitude to other cultures; by contrast there were no area differences in the attitudes of students to problem–solving or language learning through NEOTHEMI. There were also no area–related differences for most of the more general statements about the educational effects of the Internet, but rural students were more positive about a trio of questions – the expense of the Internet, whether it took too much time out of real teaching,

and whether it isolated students from each other – indicating that they saw the internet as valuable in avoiding isolation, and making an interesting contrast to their parochial attitude mentioned above.

Despite the strong, and sometimes vocal, opposition of students to the questions suggesting that there were gender differences in Internet use, and no difference between the sexes in their response to these questions, girls tended to be less committed to Internet use at a 'technical' level (e.g. in terms of actual technical problems, affordability, and teacher support – but girls saw 'dangerous websites' as a less serious problem than boys did). Despite this lower level of technical ease, girls were generally more positive about the educational value of NEOTHEMI than boys, suggesting the attraction of cultural–heritage material to girls.

It is also notable that suburban teachers reported fewer equipment – related problems, consistent with these areas usually being better – resourced than rural or inner–city areas. The few differences in student responses between area types were concentrated on issues related to the wider opportunities offered by the Internet in rural areas, suggesting that the differences mentioned above in relation to NEOTHEMI use are specific to projects like NEOTHEMI which overcome the relative social and resource deprivation suffered by rural students: there were no significant differences between students for more general issues, such as gender differences in Internet use. Perhaps the most serious issue was the issue of time – a serious problem with many applications of IT in education, especially those which seek to encourage reflective or constructivist practice (e.g. Maor 2003) and one which is accentuated by the demands for accountability in many national systems.

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