history of CALL

The History of Computer Assisted Language Learning Web Exhibition

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The History of CALL Web Exhibition

So, here it is, the first (as far as we know, and we should know!) Illustrated History of Computer Assisted Language Learning, what is shown here is our new Dreamweaver version, it duplicates what was shown
on 31 May at CALICO 2000 in A1 Poster format (840mm x 600 mm).

What you are about to see is the "backbone" of a future larger Academic History, which we hope to build gradually, subject to funding. We also hope to release a CD-ROM with a lot more resources. There remain in this initial version some omissions, especially in the 90s, gradually the gaps will be filled, help us do this by telling us where you find these gaps and inaccuracies. We will also mention your name under acknowledgements (unless you tell us NOT to).

This academic history, full of hyperlinks which we will implement gradually will also have quite a number of external contributors, would you like to be among them? If so, see details for external contributors.

At any point, you may return to the Index page by clicking the History of CALL icon and logo in the top right hand corner of every poster, this will enable YOU to view the full history with some 15,000 words and hundreds of graphics. We hope you enjoy reading it, starting with the Introduction.

Philippe 3 October 2000

Index

Introduction

Interestingly, when I started searches on the web, the first link to appear was «A brief history of CALL», which sadly had nothing to do with Computer Assisted Language Learning and a lot to do with the army, perhaps that was a fitting tribute to the role played by the US military in the development of the field. There will be omissions, there will remain some inaccuracies, which we would like you to correct, and for those, I plead guilty as the primary author and most will be corrected by the time

this Exhibition hits Dundee at EUROCALL 2000, but there will also be newly discovered facts at a time when CALL might play an increasing strategic role in enthusing and educating more and more learners to become more multilingual and more multicultural. There will also be a much more serious attempt at building upon our knowledge beyond this exhibition with the larger academic version of the History of CALL which will feature thematic summaries from an increasing list of external contributors. This will also benefit from being indefinitely updateable and linkable given that it will only be shown in the digital medium. If use of the first person is made in this narrative, it is purely because I must bear primary responsibility for any errors or omissions.

The US Army CALL site

Introduction

Writing the history of CALL seemed to be the obvious initiative to take as we approached the end of the millennium, not just because somehow we had to mark the passage of the century, but because the field had acquired a maturity which is often described in the work of the last 10 years. Now that the millennium page is turned, the field resembles, in my personal view, linguistics around the early 70s, a field with a large number of developing branches. Yet the initiative itself was taken for a very practical reason which hits many small scale CALL developers in the academic world, how to retain a key colleague funded from a previous research project and how to utilize fully his graphic skills. Limited funding needed to be obtained quickly, which ruled out conventional grants, and the History of CALL initiative was born thanks to the generous support of the two prime organizations in the field, CALICO and EUROCALL. Support was also quickly obtained from WorldCALL.

The results of this first exhibition are limited by the time scale which a small team had to accommodate, by the difficulty in obtaining some sources, and by the sheer monumental dimension of the task. This is not meant to be any authoritative historical statement, simply an informal gathering of facts and trends about the evolution of our field. The selections made in this first effort reflect my editorial choices and the fact that I am addressing an informed audience.

Many aspects will be changed when version 2 due to be published live in late August 2000 is designed for the general public. Much of what is found in the next 39 posters comes from publications and the WWW. It is indeed obvious that none of this could have happened without the invention of the world's largest library and network. Thank you, Tim Berners-Lee and Robert Caillau!

Tim Berners-Lee

Robert Caillau

Acknowledgements and Future Plans

This is the first showing of what has been over the past 6 months a "labour of love" by a dedicated team. There are times when we thought we might not be showing the complete story at CALICO 2000, through the set-backs which befall any digital development project.

Despite the considerable help from everyone in proof-reading, despite the large Panel of Experts, I must take full responsibility for any errors and omissions which, thanks to you, will be corrected in time for the next Live Exhibition due to take place at EUROCALL 2000.

Our longer term plans include perhaps the production of a CD-ROM with good indexing, including the entire Academic History and the two Live Exhibition versions. We may also produce a set of powerpoint slides which you could use and adapt in your lectures.

Efforts might even result in a History of CALL Quiz with some entertaining features. As we close the final chapter, we see a field of CALL in permanent evolution which will stretch the limits of technology and intelligence with DVDs, virtual reality, speech-enabled simulations and, as a scholar in the domain recently put it, terrific Web-Side Stories.

We hope that this history will serve to help us take stock of our past achievements and errors.

CALL in Scotland : The contemporary period

Brian Farrington

Glasgow and Strathclyde: Pioneering work by **Mike Harland**, **Paul Donnelly** from the **University of Glasgow** Dept of Hispanic Studies. This also involved **Niall Sclater** who is now at **Strathclyde University**. Of course, Strathclyde is also home to **Miranda Stewart**. More recently, some work has been done using **MOOs** in the Italian Dept by **Stella Peyronel**. **Glasgow Caledonian University** is home to **Hugh O'Donnell**, another Hispanist, who, like the Glasgow team was one of the Hypercard pioneers in Scotland. Recent work at GCU has involved **Paul Mohr**, a Germanist.

So a good deal of work has been done in Scotland. It is also worth mentioning the importance of informal interest groups such as **SHUG** which started life as the "**Scottish Hypercard Users Group**" and became the "Scottish Hypermedia Users Group". Not the most attractive, mnemonic or fortunate acronym but it provided a lively interdisciplinary forum for people involved in multimedia development.

Of course, Scotland in the Year 2000 will be seen to have played an essential role in the History of CALL, not least because of the meeting of British pioneers, which will be shown at the Live Exhibition, and which took place because of the History of CALL initiative, at the award-winning hotel and restaurant in Auchterhouse, the Old Mansion House. From left to right, Rex Last, John Higgins, Graham Davies and Brian Farrington, who between them have more than a century of experience in CALL. The future of CALL is indeed bright in the land of "Silicon Glen".

CALL in Scotland : The contemporary period

Brian Farrington

1995 to the present day

Space does not allow me to add here more than a brief description of the contributions of CALL scholars based in Scotland whose work came out in the contemporary period, starting in the 80s, but mostly in the 90s. Most of them are cited below. Higher Education in Scotland is divided into 4 regions with a total of more than 10 universities. This poster is still a draft and will be expanded on in due course.

Fife & Tayside: Bernard Bentley and **Alan Patterson** at St Andrews worked on Spanish Language and Literature respectively. **Don. Friend**, an EFL specialist produced a pronunciation program for English, **Bridget Cook** has worked in CALL in Dundee for more than a decade, **Delcloque** led the **CALLIFaT** Project which involved the Universities of Abertay Dundee, Dundee and St Andrews.

Aberdeenshire and Highlands: The work at Aberdeen is extensively reviewed above. There is some good work on the Web for **Gaelic** at **SUHI Scottish University of the Highlands and Islands**.

Edinburgh and Stirlingshire: Most notable at the **University of Edinburg**h was the **SPELL Project** led by **Prof. Mervyn Jack**, then at **CSTR**, a real landmark in Speech Technology in Language Learning, some work also by **Peter Dayan** in French. At **Napier University**, excellent work in the language of negotiation by a team comprising **Bénédicte Cebrian** and **Tom Wight** et al. At **Heriot-Watt**, participation in the **LEVERAGE Project** (**Prof. Terry Mayes**, not a linguist but one of the pioneers of CAL in Scotland) and of course all the work done by **ICBL** including the LTDI. At Stirling, probably the best known work in Scotland, by John Higgins and the **Linguists' Workbench** development.

CALL in Scotland - Brian Farrington

1982 CALL workshop at Jordanhill College of Education, Glasgow. Presentations by **John Higgins**, **Tim Johns**, Rex Last and others to a mixed audience of school and university language teachers.

1984 CALL forms an integral part of the beginners' course run by the German Department of Aberdeen University, using programs designed by **Gordon Burgess**.
1986 SCETALL Conference at the University of Aberdeen on CALL, presentations by Graham Davies, John Higgins, Tim Johns, and Rex Last to a mixed public of secondary school and university teachers.

Five day Conference on Computers in Modern Languages at Aberdeen College Of Education, organised by Alastair Campbell and attended by over a hundred teachers, including several from Germany.Among other presentations, Stewart Reid made a strong case for the wide distribution of minimal technology, he suggested the installation of one Sinclair Spectrum in most modern languages classrooms.
1993 John Higgins joins Centre for English Language Teaching at Stirling University,
launches postgraduate degree course in CALL and TESOL. CALL components include
e-mail and web for language learning, software writing, concordancing and data-driven
learning. The course attracts students from many different countries.

Gordon Burgess

John Higgins

CALL in Scotland - Brian Farrington

These were distributed free to all Scottish schools possessing an Apple II machine. BonAccord, later adapted first for **BBC Micro** and then for **PC**, is still in regular use in British universities where English to French translation figures on the Degree course.

1981 Rex Last appointed Professor of Modern Languages at the University

of Dundee. CALL figures as an integral part of courses at the University. CALL becomes a major feature of the recently opened Language Centre at the University of Glasgow.

1981 Dr Duncan Macrae-Gibson of University of Aberdeen creates a beginners' course in Old English for the BBC micro. Developed in the light of error analysis carried out over a period of years the courseware, now adapted for IBM-PCs, ran for many years and is still in use today in a number of universities and colleges.

1981 - 1985 Partly inspired by Gavin Bell of Grampian Computing Unit and Alistair Campbell, Principal Lecturer in Modern Languages at Aberdeen College of Education, who ran a course for several years on Basic programming for CALL, many teachers experimented with home made programs for a variety of micros. Prominent among these teachers were Ian Adams (Elgin Academy), Gavin Bell (Harlaw Academy, Aberdeen), Régis Gruson (Culloden Academy), Stewart Reid (Linksfield Academy, Aberdeen). Stewart Reid, Making a strong case for the wide distribution of minimal technology, had at least one Sinclair Spectrum installed in every modern languages classroom in the school.

BBC Micro

CALL in Scotland - Brian Farrington

The History of CALL in the home of Silicon Glen goes back to nearly as far as it does in Silicon Valley. The story is told here mostly by one of the real pioneers, Brian Farrington, from the University of Aberdeen, helped for the more contemporary references by Philippe Delcloque.

In **1968** the **University of Aberdeen** invested in a System 4 computer costing a million pounds, housed in a purpose built building with a army of white-coated technicians, the **memory capacity was 32K**! The University French Department adopted computer-based comprehension testing materials written by **Farrington in Fortran IV**. These were in regular use by students until 1990.

1979 John Devereux, Director of the Language Centre at the University of St Andrews invited **Rex Last** to address a meeting of **SCETALL** (Scottish Council for Educational Technology and Language Learning) attended by staff from most Scottish universities and Colleges of Education. Last demonstrated CALL materials for German running on line from the mainframe of Hull University.

1980 At the Burn French Studies Conference Farrington presented tutorial CALL materials for French grammar running on line from the University of Aberdeen mainframe.

1981-1984 Scottish Computer Based French Learning Project funded by the Scottish Education Department for three years. Initiated by Farrington, with Research Assistant Mary Crawford and a working party of teachers headed by Dr Ian Adams of Elgin Academy, the project produced CALL materials based on an early version of **BonAccord**, a semi-intelligent program running on **Apple II** computers.

An Apple II computer

The Impact of the Web on CALL Part 4

CONCLUSION

Technology, ideas and implementations are changing too rapidly for it yet to be possible to provide a definitive picture of CALL on the Web. Excellent things are being done, especially through synchronous and asynchronous forums like discussion groups, bulletin boards, Chats and MOOs. The Web already provides excellent examples of ways to motivate students and keep them interested in the work. Individual practitioners are using different combinations of approaches in a variety of ways. Included among these are hybrid approaches (designed to avoid potential problems) such as downloading activities from the Web on to a self-contained Intranet, integrating CD-ROMs and the Web, and running audio or video conferencing with Web activities. Pedagogical approaches adopted online vary greatly from traditional grammar-based teaching to innovative goal-oriented quests with the former still dominating. However, it is difficult to determine the overall teaching approach since what is freely accessible on the Web is often only part of a larger package that also invariably includes face-to-face teaching. Nevertheless, while the Web is providing an increasingly rich shared free resource to CALL practitioners, the often alluded to 'radical rethinking' of the teaching approach still has a long way to go. The goal remains to use the Web for meaningful, realistic activities, to rethink the teaching approach, and to exploit the various communication resources available in the most motivating way possible.

References Felix, U. (1998). Virtual Language Learning: Finding the Gems Amongst the Pebbles, Melbourne: Language Australia. Warschauer, M. (1995). Virtual Connections: Online Activities and projects for Networking Language Learners, Hawai'i: University of Hawai'i Press. Warschauer, M. (1996). "Computer-mediated Collaborative Learning: Theory and Practice", Modern Language Journal, 18 (4), pp.470-481.

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The Impact of the Web on CALL Part 3

Professional development

These sites exist for various professional purposes - dissemination of information, exchanges of ideas and discussions as in WELL, training as in ICT4LT the provision of technical information as in Language Interactive, and enrichment as in LOTELinx.

Co-operative ventures

The Web lends itself perfectly to co-operative and collaborative activities between students at the same or different institutions, often with the final goal of publishing the work online. One excellent example is the **Project-driven Foreign Language Learning** which integrates multimedia tools into project-driven language learning and in which students share the outcomes of their work with worldwide audiences by publishing on the Web.

The WELL site

The ICT4LT site

The Language Interactive site

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The Impact of the Web on CALL Part 3

Virtual Connections

Connecting students to authentic environments is getting easier and more user-friendly with threaded discussion groups becoming very popular. Early Chats, MUSHES and MOOS tended to be very daunting text-based environments but some pioneers got good results nevertheless (see Warschauer 1995, 1996). Strictly speaking, these developments used the Internet and predate the Web by a decade. Still, the boundary between the terms "Web" and "Internet" is increasingly blurred, and, in any case, Websites routinely include Chat and e-mail in what they offer. The environment has since progressed tremendously with students being able to create their own three-dimensional characters through which to communicate as in **Active Worlds**. There are also now examples of entire collaborative courses run in several locations via **Active Worlds Educational Solutions**, a site for **Japanese** is currently under construction.
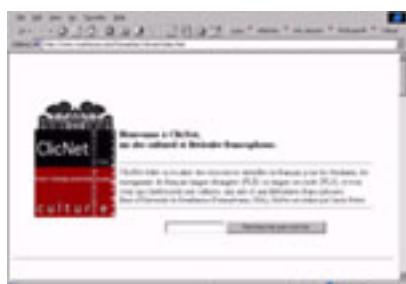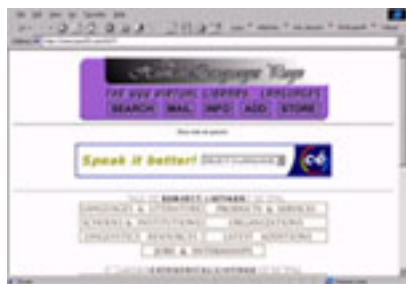
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The Active Worlds site

Japanese language site

The Impact of the Web on CALL Part 3

Metasites

Collections of resources have perhaps been the fastest growing area on the Web, with virtually every site including collections of links either for single languages or for multiple ones. As a result, enormous duplication is being generated. If there is a problem here, it is that it is fatally easy to build up comprehensive collections but difficult and time-consuming to create select collections that are well-structured and well-indexed. Comprehensive collections include the **Human Languages Pages** (over 100 languages and over 1800 links) and the **Language Hub: Worldwide resources for Languages** (164 languages). Naturally, the larger the collection, the less user-friendly it becomes, and well structured single language sites can often be more helpful to users with limited time on their hands. See, for French, the pioneering **Tennessee Bob's Famous French Links**, or **ClicNet**.

The Human Languages Pages

The Language Hub site

ClicNet

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The Impact of the Web on CALL Part 2

Publishers' Web material

This is another of the fastest growing areas with publishers like Heinle & Heinle and Prentice Hall among others providing a large variety of supplementary materials geared to their textbooks. Web activities range from simple on screen pro-formas for printing out (in more recent developments for emailing to the tutor) as in Adesso to online animated problem-solving activities created with Macromedia Flash as in Spywatch.The latter is one of the best examples to date of using animation (rather than video) to great effect.

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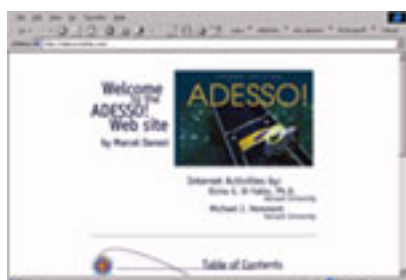


The Adesso Site

The Spywatch Site

The Impact of the Web on CALL Part 2

Webquests

This has been one of the most rapidly developing areas in Web teaching. Activities have shifted from early task-based activities like **Deutsche Internet Übungen** in which students were given a task to carry out which involved them accessing relevant Web sites and compiling information on a specific topic to elaborate experiential quests like **Dream Holiday** in which all activities are embedded online. A good introduction to the latest developments is **A WebQuest about WebQuests** .

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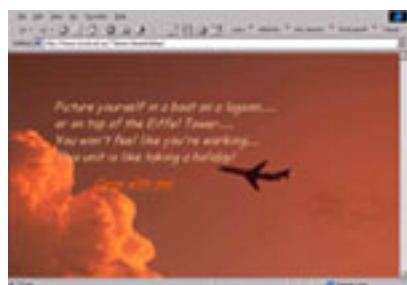
The Deutsche Internet Ubungen site

The Dream Holiday site

The Webquests about Webquests site

The Impact of the Web on CALL Part 2

Quizzes, games, templates

There is a large variety of ready-made templates for the creation of quizzes and games online to choose from. The most user-friendly and extensive **Quia** is an excellent source both for developers and for users. It offers templates allowing games and quizzes to be created very quickly in several languages. Students can then access the material and the site will keep global statistics on performance. It also houses thousands of activities that are freely available. An indication of the size of the collection is that it claims to include nearly 600 activities for languages as at 12 April 2000. Similarly **Hot Potatoes** offers six applications for the creation of interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the Web.

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The Quia site

The Hot Potatoes site

The Impact of the Web on CALL Part 2

Grammar exercises

There is a multiplicity of grammar exercises on the Web, most of them using fill-ins, usually but not always in the context of a whole sentence, or multiple choice questions. Some are an integral part of a structured course. Occasionally, this is a Web-based course, with exercises linked to pages that explain the structures. More often the exercises supplement an off-line course, and may be linked directly to specific textbooks. Grammar exercises are also available in more or less unstructured heaps with the user left to pick out the bits that will be helpful without much in the way of guidance. The grammar exercises offered in First year french@ut austin and Spanish 506 at Texas are by contrast sorted into structured sets which can be worked through sequentially. Further, all follow the same pattern, so the student has to learn only one set of conventions to navigate around the site. French Grammar Central, on the other hand draws on a variety of sites (nearly 400 claimed) with a variety of approaches from across the Web, and sorts the material only roughly into 12 very general categories like Adjectives, Articles and Determiners. Some sites such as Interdeutsch make a real attempt at teaching grammar in a communicative approach.

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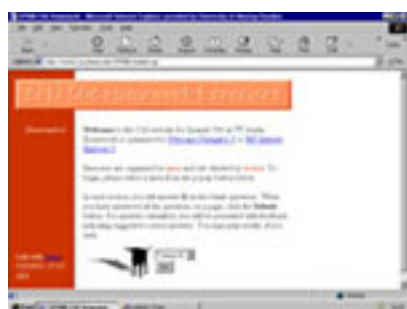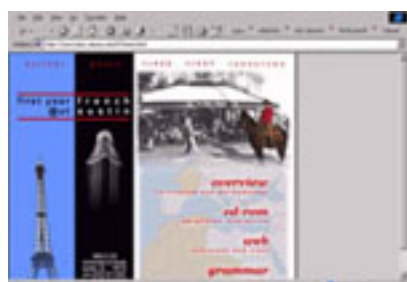
French@ut Austin's site

Spanish 506 at Texas' site

The French Grammar Central site

The Impact of the Web on CALL Part 2

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Virtual classrooms

These tend to be fee-paying stand-alone courses that are password protected, offering free trial materials open to anyone. They range from one person operations like Cyberitalian and Interdeutsch to large organisations like GlobalEnglish that employ considerable staff and offer a 24 hour attended chat site and other extensive services.

The Cyberitalian site

The Interdeutsch site

The Global English site

The Impact of the Web on CALL Part 2

Early materials

The earliest materials took the form of textbooks on the Web, grammar exercises, and large and ever growing collections of materials, often without much structure to guide the uninitiated user. They have all undergone continuous change. Examples are the Bucknell Russian Program; The German Electronic Textbook and German for Beginners.

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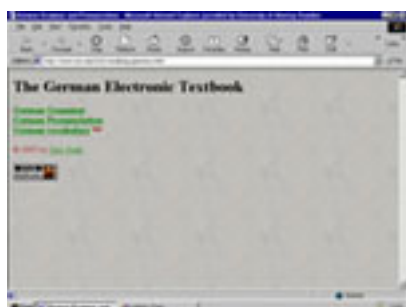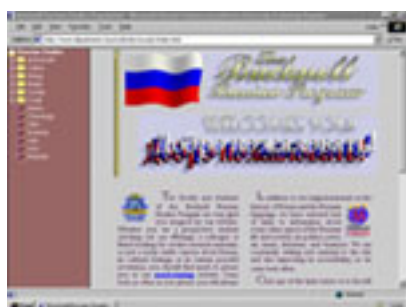
Bucknell Russian Program's site

The German Electronic Textbook site

The German for Beginners site

The Impact of the Web on CALL Part 1

Where sound is concerned, early WAV was cumbersome but Real Audio is now prevalent. By contrast, streamed video is still very rare, and will remain so until the diffusion of much greater bandwidth. **German for Beginners** includes examples of film clips while **Italia 2000** remains one of the very few sites using extensive video. We are also now seeing some experimentation with voice recording through the use of customised software that can be

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downloaded by the user in a site like **Global English**. The most recent development is the adoption of **WebCT** as a course template in sites like **Internet Based Chinese Teaching and Learning**.

Advantages for practitioners include tracking students' work, the ease with which synchronous and asynchronous communication facilities can be set up, and the user-friendly navigation structures provided. This overview cannot be comprehensive but

only representative of trends (see Felix 98 for a more extended list of sites). Where possible, early and late examples are given to demonstrate the improvement made possible by rapidly emerging software. The problem is finding early examples: active sites change with the technology and rapidly leave behind their more primitive first forms. The following is a broadly categorised overview of how the Web is currently being used for CALL.

German for Beginners Website

The Impact of the Web on CALL Part 1

INTRODUCTION

The use of Web for language teaching is relatively recent, with the first materials appearing in the early 90s. The impact, however, has been considerable, mainly because the technology has advantages over the previous generation of CALL by being cheaper and easier to develop and often cheaper and easier to run, and by offering real possibilities for authentic interaction. Advantages include the ease of development across

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platforms, and the provision of free software such as **Hot Potatoes Half-Baked Software** and applets, helper applications and plug-ins. All this makes in-house developments without excessive reliance on expert help easier than ever before. However, as with all IT solution, Web delivery is not without problems: (1) access to the Web is still often unreliable and slow, especially from modem access; (2) oral production skills cannot yet be supported meaningfully; (3) some students dislike/resist working with the Web (or any IT); (4) some students find the experience isolating; and (5) Web technology is still not well suited to delivery of sound and video. While much of this can be addressed, problems such as time commitment, financial return on investments and administrative concerns continue to exist as in CALL in general. Despite all this, the biggest advantage is perhaps that Web technology offers the possibility of tailoring an impressive and useful resource by speedily linking to existing sites without requiring much technical expertise, and by adding course specific activities through Webquests and chats or bulletin boards.

Hot Potatoes logo
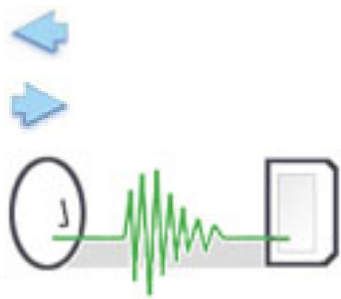
1998-2000 : " The Age of Spiritual Machines?"

2000 ReCALL published by Cambridge University Press.

First two-day **InSTIL Symposium**, supported by
CALICO, EUROCALL and ISCA.
InSTIL Journal comes out.
Publication and Public Exhibitions of the first Illustrated History of CALL.

Multitude of pre-conference events at CALICO 2000.
Creation of new NLP SIG within EUROCALL, first workshop held in Dundee.
First EUROCALL workshop for the WELL project.
First **DVD** for language learning based on **Classic Italian Film "C'eravamo tanto amati"** by a team from BYU. This is now available from Amazon.com. European company **Eurotalk** has just released a DVD for EFL based on the popular Inspector Morse detective series.

In January, WebCT.com is launched.
Meeting of **4 British pioneers at the Old Mansion House** on **Saturday 11 March 2000** to celebrate the imminent History of CALL!, well, actually to have a superb meal and wines at the no less superb Scottish manor "The Old Mansion House".

InSTIL Sig logo

From left to right: Rex Last, John Higgins, Graham Davies and Brian Farrington

1998-2000 : " The Age of Spiritual Machines?"

1999 The Year of Speech Technology, the year of maturity.
Publication of the **«Age of Spiritual Machines ...» by Ray Kurzweil.**
Release of the Pentium III processor (450, 550, 600 MHz).
Special Issue of **CALICO**, '**Tutors that Listen**' focusing on automated speech recognition.
CALL: Media, Design and Applications (Cameron, ed.)
CALL Environments: Research, practice and critical issues
(Egbert & Hanson-Smith, eds.)
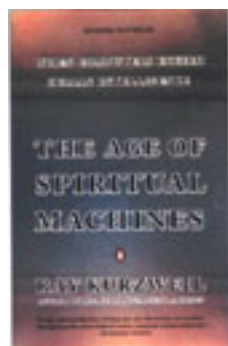
WorldCALL: Global Perspectives on Computer-Assisted Language Learning (Debski & Levy, eds.)
2 new books by the prolific CALL writer Warschauer.
An important meeting of CALL researchers and practitioners take place in Essen financed by EUROCALL with representation from CALICO and IALL. It produced a very useful policy document for the consumption of national research evaluation bodies and individual institutions.

Ray Kurweil

Kurzweils' book

1998-2000 : " The Age of Spiritual Machines?"

1998 Other important landmarks in 1998.
The **ICT4LT** starts. This stands for ICT for Language Teachers.

The **Hot Potatoes** development is
revealed at the EUROCALL Conference
in Leuven
The **MALTED** project starts.
DISSEMINATE is first presented at
WorldCALL and EUROCALL.

Jager, S, Nerbonne, J, Van Essen, A (Eds), Language Teaching and Language Technology, Lisse:
Swets & Zeitlinger; Mark Warschauer releases an article on Motivation in CALL

Half Baked Software's Stewart Arneil

Half Baked Software's Martin Holmes

Hot Potatoes website

1998 : Where the World of CALL wouldn't stand STiLL

WorldCALL
The inaugural WorldCALL Conference was organized by **June Gassin** at the **University of Melbourne**, Australia in Mid July 1998. It attracted many prominent members of the CALL community from all corners of the globe and included perhaps the best collection of Keynote Speakers at a CALL Conference hitherto. The WorldCALL web site still exists and it will point you to some reviews of the event. It also produced the valuable WorldCALL book published by Swets & Zeitlinger, which must now be considered the most prominent publisher for works in CALL. **Some of the memorable moments of the conference are captured in the pictures below:**

Two prominant Americans, Prof. Nina Garrett, then president of IALL, and David Herren from Middlebury College, who sadly has now left the field.

One of the revelation Keynotes, the impressive Dr Madan Rao from India, soon to be invited as a Keynote at a Eurocall Conference (1999).

Dr Mike Levy from the University of Queensland, Australia, whose CALL book is still considered the bible, is seen here with Françoise Blin, the excellent EUROCALL97 Organiser in Dublin.

The world reknowned HCI specialist, Prof. Ben Schneidermann (left), one of teh keynote Speakers, is seen here enjoying the friendly ambiance.

Another prominant Australian Prof. Uschi Felix from Monash (leftmost) is seen here with Dr David Harrison (centre) and a Japanese colleague. David interestingly used to teach Japanese at the University of Stirling in Scotland.

Perhaps the most amusing picture is one of several members of teh EUROCALL Executive Committee supplemented by Josef Colpaert from Didascalia in Belgium (centre of picture), accidentally captured under the sign: Professors Court Cafe. The number of actual full Professors in the is limited to two, Prof. Graham Davies, President of EUROCALL, third from left, and Prof. Graham Chesters, Treasurer of EUROCALL, third from right.

1998 : Where the World of CALL wouldn't stand STiLL

STILL98
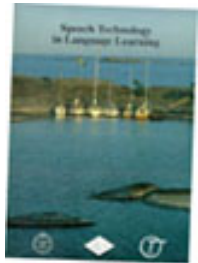
1998 will be remembered as a vintage year in CALL. In addition to the standard fare of the CALICO Conference in San Diego and the EUROCALL Conference in Leuven (who attracted the highest ever number of participants, 460), the CALL community was treated to two exceptional events:

The European Speech Communication Association, now renamed **ISCA** (International replacing European) organized the STiLL workshop in

The Scientific Committee of STiLL 98 included scholars from
the CALL and Speech communities and it was indeed the first
time that the two communities met at a Conference. Delcloque
provided a review of the event which was presented informally at the CAPITAL 98 Seminar in Leuven and
figured more formally in the proceedings of the InSTIL 99 Seminar in Besançon.
Pictures of the tranquil setting of Marholmen are presented
here and Flege is shown opening proceedings.

Marholmen, one hour from Stockholm,at the end of May.

World renowed Prof. Jim Flege
kicks off procedings

All participants were accommodated
in very pleasant log cabins
complete with sauna.

The tranquil setting of Marholmen - The Conerence Centre was located in a holiday village belonging to one of Sweden's major labour unions.

1995-1997 : From Chorus to Oscar

1997 First issue of the on-line journal ALSIC in France (Chanier, ed.)
Computer-Assisted Language Learning: Context and contextualization (Levy).

Release of **OSCAR** by Language Publications Interactive.
Systran, the machine translation project puts MT engines on the net.
Technology-Enhanced Language Learning (Bush & Terry).
Working with Sasan Salari, Murray developed a product so well received by his peers that they **launched Web CT commercially**.

1995-1997 : From Chorus to Oscar

1996 Pennington publishes "**The power of CALL**".
Start of the FDTL projects in the UK including the **WELL**, SMILE and CIEL projects.
Intel's P6 chip, the sixth-generation chip, anticipated in April and expected to be twice as fast as the Pentium
Les Langues Modernes, "Le multimédia dans tous ses états, n°1".
Telecollaboration in Foreign Language Learning (Warschauer (ed.))
CALICO 96, Alburquerque, J.W. Oller Junior «The media is a massage».
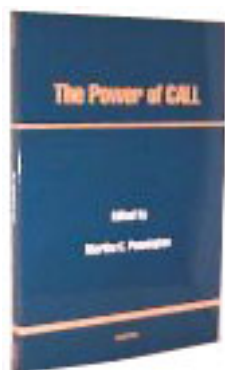
1997 First issue of the e-journal, 'Language Learning & Technology'. It should be noted that this is just one of the many achievements of the **University of Hawaii** in this field. It has also produced excellent training in CALL and a remarkable database of softwareand courseware, as well a list of very useful reports and publications.

The Power of CALL Book

1995-1997 : From Chorus to Oscar

1995
Introduction of Windows '95 (September).
RealAudio, an audio streaming technology,
lets users hear in real time.
ATELL Consortium in Australia begun.
Email for English Language Teaching (Warschauer).
CALL Chorus appears, a CALL magazine edited by **Jim Duber** in California.
DVD-ROM is announced (8,5Gb = 12 CDROM!)
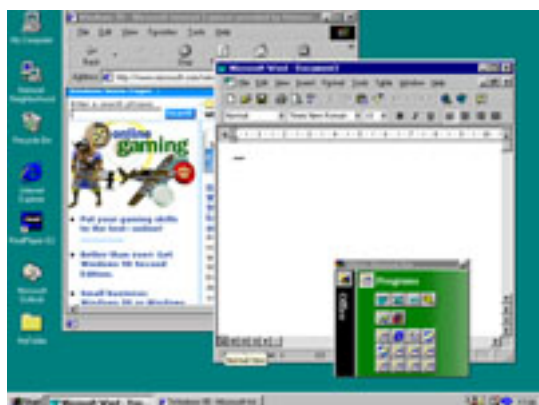
The **RAPIDO** report is published (Bickerton).
The **University of British Columbia** awarded **Murray Goldberg** a grant to develop
Web Course Tools (Web CT) as a way to apply innovative technologies to facilitate course
preparation and enrich students' learning experiences.
The CALICO Conference takes place in **Middlebury,** one of the most famous institutions in the USA
for languages. It will also produce the **CALICOW** T-Shirt, probably the best Conference T-Shirt of
all times. It was also at that conference that the Hypercard work of **Rodney Tamblyn** was discovered.
EUROCALL 95 happened in Valencia, where **Ana Gimeno** accommodated us in the magnificent
Hotel Melia.

RealPlayer

Windows 95

1993-1994 : EUROCALL, Mosaic and OLA

1994 Pentium (P54C: 130 MHz) introduced.

Launch of Netscape Navigator (Netscape for short).

Bougaïeff, André "Le français assisté par ordinateur des collèges et des universités du Canada/French CALL in Canadian Colleges and Universities".

Montréal: Observatoire canadien/québecois des industriés de la langue (agence de coopération culturelle et technique).

Memorable **EUROCALL 94 Conference in Karlsruhe** where the T-Shirt tradition was established, a fact which I don't need to be reminded of as the next Conference organizer. **Bernd Rüschoff** also acquired the nickname of the **Rottweiler**.

Examples of the Oral Language Archive programme

1993-1994 : EUROCALL, Mosaic and OLA

The **CAMILLE Consortium** of 5 universities starts. Its ambition is to produce materials for autonomous and tutor-guided learning in a networked situation. Products will start coming out in the mid to late 90s including **Travailler en France**, **l'Acte de Vente**, **Español Interactivo** and **Español en Marcha**.

In March, **Marc Andreessen** and one part of his team leave NCSA and create "Mosaic Communications Corp" soon to be renamed Netscape. Netscape Navigator made the WWW develop.

25-27 May : First WWW International conference at CERN.

VRML (Virtual Reality Modeling Language) is launched.

In August, at Boston, the IW3C2 (International WWW Conference Committee) is created. Its goal is to supervise the evolution of the WWW. CERN, NCSA and MIT take part in this committee.

Chris Jones starts work on the **Oral Language Archive** at **Carnegie Mellon University**.

Jung, Udo O.H. & Lieber, G. (1993): International Bibliography of Computer Assisted Language Learning - vol. II. Frankfurt/Main: Peter Lang Verlag.

Marc Andressen

1993-1994 : EUROCALL, Mosaic and OLA

1993 EUROCALL conference in HULL : Official formation of the association. Beginning of **TELL** consortium in the UK.
ESSE Conference (European Society for the Study of English): first "New technologies" workshop, convenor **Prof. David Bickerton**, Bordeaux, France, conference organizer: **Prof. Michel Perrin**.

Release of **Mosaic**, the first world wide web graphical browser, created by a government laboratory-the National Center for Supercomputing Applications-at the University of Illinois, Urbana-Champaign.
Microsoft misses the WWW boat, it will take a few years before it attempts to impose Explorer as the browser of choice. This may lead to the company being split up in two.
WWW grows more and more : 50 HTTP servers in January, 200 in October.
First search engines: Infoseek, Lycos, Webcrawler
Hodder release **Hotel Europa CD-ROM**.

1990-1992 : The Web changes the World

1991 The email discussion group, TESL-L is founded.
Gopher released by Paul Lindner & Mark McCahill.
World-Wide Web (WWW) released by CERN.
Start of the JANET IP Service within the UK academic network.

The Institute for Language and Speech Processing is founded in Athens.

France InterActive multimedia project, the precursor to CAMILLE, starts at the
University of Teeside in the UK.
Levin, L., D. Evans, and D. Gates. «The ALICE system: a workbench for learning
and using language.» CALICO Journal 9, 72-89.
Sanders, Ruth. «Error analysis in purely syntactic parsing of free input: the example
of German.» CALICO Journal 9: 72-89.

1992 Internet hits 1million users.
First interesting tools on Internet : search tools, etc
CALICO, unusually, organizes a **conference in Europe in Maastricht on 12-14
August** with the title: "Bridges: Technology and Language Learning: The State of
the Art".
The term, '**Surfing the Internet**' is coined by **Jean Armour Polly**.

1990-1992 : The Web changes the World

1990 First **ECHT** Conference (European Conference for Hypermedia Technology) in Paris. The 1994 conference took place in Edinburgh.
The end of ARPANET, which is now included within NSFNet : The network of the NSF becomes the core of Internet between 1990 and 1995.
In October : at CERN, the **World Wide Web** is born.

In November : Proposal for a Hypertext Project is published by Tim Berners-Lee and Robert Cailliau : first prototype of the WWW.
Pierre Lévy publishes «Les technologies de l'Intelligence»
In the gulf war, journalists make an intense use of CHAT, in particular CNN.
Publication of «**The age of intelligent machines**» by **Raymond Kurzweil**.
CTIML is born.
First 486 First IALL biennial conference.

Special CALICO issue on ICALI (Intelligent Computer Assisted Language Instruction)
First issue of the journal, '**Computer Assisted Language Learning**' (**Cameron**, ed.).
Hypercard 2.0 adds multiple windows, superimposed color support and other features.
French Company **Auralog** is founded by Nagi Sioufi. They will be first to use Speech Recognition in CALL courseware, using an engine written by **Brian Scott**. They have since then won a string of awards.

Ray Kurzweil
The Age of Intelligent Machines

Pierre Lévy
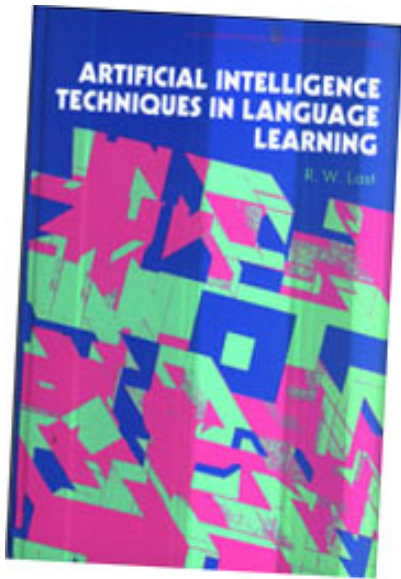
The Late 80s : From Knowledge Navigator to the WWW

Call is really coming off age in France, Les langues Modernes release a special issue: Le point sur l'EAO, n 5, (APLV) Paris.

Tim Johns publishes "Whence and Whither Classroom Concordancing?" in Bongaerts, T., P. de Haan, S. Lobbe, and H. Wekker (eds.) Computer Applications in Language Learning (Foris).
It was also at the end of the 80s what **RISC** processors where invented.
A major contribution throughout the 80s was made by the **second Executive Director of CALICO, Frank Borchardt**. He was responsible for many pioneering developments at **Duke University** including the famous CALIS language, which remains to this day, one of the most "intelligent" developments in learner response processing ever seen. The Wincalis team also ensured that many foreign characters were supported by windows-based CALL systems and Wincalis was the first major authoring system dedicated to language learning to support the emerging Unicode standard in the next decade.
First issue of RECALL.
Rex Last publishes "**Artificial Intelligence in Language Learning**".

A milestone publication by our very local hero and pioneer, D-Rex (Dundee Rex Last)

The Late 80s : From Knowledge Navigator to the WWW

1988 Internet Relay Chat is designed by **Jarkko Oikarinen** at the **University of Oulu** in Finland.

The company **Autodesk** buys and attempts to develop the project **Xanadu**, brainchild of **Ted Nelson**.

The first **British conference on hypertext** takes place in Scotland in **Aberdeen**.

The Internet's rate of growth increases more and more: it reaches 6,200 hosts before the WWW is even created.

The Sanders re-write Spion in PROLOG.

The **first EUROCALL constitution** is written in **November 1988**.

Dieter Wolff publishes an essential article entitled "**CALL in England: the state of the art in 88**" this is released by the **British Council**.

Udo Jung publishes "*An International Bibliography of CALL with annotations in German*" Frankfurt am Main: Peter Lang.

Jarkko Oikarinen

Xanadu logo

The Late 80s : From Knowledge Navigator to the WWW

1987 More events that year.
Legenhausen, L. & Wolff, D. (eds.) publish Computer Assisted Language Learning and Innovative EFL Methodology. Universität Augsburg: Augsburger I & I-Schriften.
The NIALL Journal changed its name to **JETT** (Journal of Educational Techniques and technologies) and then changed its name to the IALL Journal in 1990.
Start of **Exeter CALL Conferences**.

John Sculley, CEO of Apple, presents his vision "**The Knowledge Navigator**".
In November, **Hypertext 87**, first conference about hypertext, at the **University of North Carolina**, organised by the **ACM (Association for Computing Machinery)**.
Agreement between publishers and the French Ministry for Education : 'les licences mixtes" provide substantial discounts on educational software for secondary schools.
Jones C & Fortescue, S, publish Using Computers in the Language Classroom, Longman.

The Knowledge Navigator

The contribution of Hypercard to CALL

In addition, all the early commercial programs produced by pioneering company, **Hyperglot**, founded by **Dr Martin Rice** from Tennessee were written in HyperCard (**Learn to Speak Series**). In the UK, one of the similar popular programs was **Speakwrite**. It must also be remembered that many impressive and sophisticated color products were produced, well before HyperCard had started supporting the use of color. The best-selling game **Myst** is one example, the **D-Day** landing CD-ROM offered to President Clinton by the French company who made it in 1994 (to commemorate the 50th anniversary) is another. The famous videodisc "**A la rencontre de Philippe**" produced at **MIT** was controlled by a HyperCard stack.

John Sculley, CEO of Apple presents his vision "The Knowledge Navigator".
In November, *Hypertext 87*, first conference about hypertext, at the University of North Carolina, organized by the **ACM (Association for Computing Machinery).**
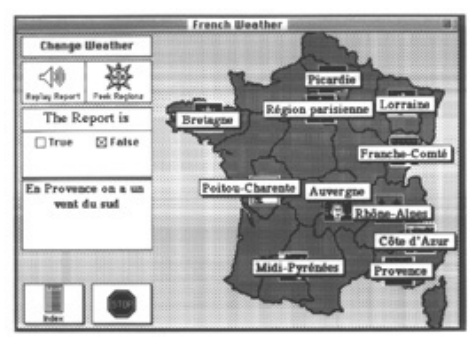
To use HyperCard terminology, two stacks are shown here, the work of Brian McCarthy and Ray Stace who may have produced more language learning programs in HyperCard than anyone else.

The contribution of Hypercard to CALL

It is difficult to single out any of the outstanding work which was done in HyperCard for language learning. It spans all continents and many nations. Scholars in the field will be familiar with such names as **David Herren and his easy to use templates**, **Brian McCarthy** from Australia and **Rodney Tamblyn** from New Zealand, to name just three. Scotland also had
several linguists using HyperCard, who receive a mention on our posters covering the History of CALL in Scotland. The most prominent team was based at the University of Glasgow and consisted of **Paul Donnelly**, **Mike Harland** and

Niall Sclater. Authoring systems for language learning were also written in HyperCard, such **(Super)MacLang (Otmar Foelsche and Judith Frommer)**, **Libra (Michael Farris)** as well as individual modules by many authors. For a much more detailed account, visit one of the many Web Sites on HyperCard in LL, including **Claire Bradin**'s and an extended history in the Academic version of this exhibition.

To illustrate the work, through shortage of space, we have selected a couple of programs from the most prolific writing team in HyperCard in Language Learning, linguist **Brian McCarthy** and programmer **Ray Stace** from the **University of Wollongong** in Australia.

David Herren

Rodney Tamblyn

Claire Bradin

The contribution of Hypercard to CALL

1987 HyperCard was developed around the same time as Guide but was released a year later. It was invented by **Bill Atkinson** and **Dan Winkler**. Perhaps a lesser known fact is that it started life as "Wildcard". The best selling book designed to learn HyperCard which sold more than 300,000

copies was written by **Danny Goodman**. Despite working only on the Macintosh, HyperCard
was an astonishing phenomenon in CAL authoring across disciplines. The programming
language associated with HyperCard, **Hypertalk** became the most used language in the world
at one stage. HyperCard also produced a critical mass community of CALL authors, not
inhibited by cost (HyperCard was initially free and then inexpensive), or difficulty in use (it was
much easier to use than most authoring tools at the time).

But HyperCard had limitations too, especially in terms of how it was able to analyze a string of characters. It was not a particular "intelligent" language. It was not good at processing foreign characters and one had to increase the power of the authoring by writing enhancement routines in Pascal and then C.

A Frenchman was very good at doing that and he produced a remarkable collection of **external commands** or **XCMDs** for use with HyperCard. It soon brought him world fame and best selling books. His name is **Frédéric Rinaldi** and no HyperCard author could escape the use of his free

software.

Bill Atkinson

Minitel, Microconcord, Eurocall takes shape

A year after the release of CD-I by Philips, **DVI** was announced to the world. Mike Bush, who was present at the second Microsoft International Conference recalls how "in 1987 **RCA's Sarnoff Labs** announced DVI to the world with a standing ovation. Eventually **DVI was sold to Intel** and inserted in the **MMX on-chip instruction set**. Much of this is documented in Bush's chapter in the 1991 CALICO Volume entitled "Interactive Videodisc: The Why and the How".

A DVI machine

Minitel, Microconcord, Eurocall takes shape

CALL begins to see the appearance of games and microworlds particularly stimulated by the birth of the commercial side of the industry. Some major players in the CALL industry started as small firms in the late 80s, in particular, **Dr Martin Rice** left a university in Tennessee to start **Hyperglot**, which then became The Learning Company and is now **Softkey**. Dr Rice is now one of the Directors of Softkey.

Motorola releases the **68030**, which was to proliferate in Macs.

IBM launches the PS/2, equipped with Operating System or **OS/2** (**Operating System/2**).
Two Important norms appear **MCA** (**Micro Channel Architecture**) and **VGA** (**Video Graphics Array**).

Publication of **COBUILD**

The **T.L.T.P.** network is formed in the UK. This stands for **Teaching and Learning Technology Programme**, it will be responsible for large scale developments in CAL in many disciplines. Specifically in languages, its prime implementation will be the well-known **TELL** developments (Technology-Enhanced Language Learning). It will also support the development of a number of other language projects such as "**French for Scientists and Engineers**" led by **Anny King** at the **University of Cambridge**.

Minitel, Microconcord, Eurocall takes shape

Leech & Candlin (eds) publish *Computers in English Language Teaching and Research*, Longman. It was also in the 80s that another well-known program by Graham Davies, Fun with texts was produced.

Tim Johns released the famous concordancing program Microconcord.
Aldus PageMaker appears, the first major Desktop Publishing system sealing the supremacy of the Macintosh in this domain.
Glyn Holmes, one of the early pioneers in Canada publishes one of the first Histories of CALL, in his article which starts with the title "7 years of CALL".

The leading Computer Magazine Byte makes the comment that despite the graphic and sound quality present in inexpensive platforms such as the Atari or the (Commodore) Amiga, the world of computers continues to be dominated by Apple-Macs and IBM-PCs, a war of religion which was only beginning.

The Minitel in general was to have a significant influence on work in CALL, perhaps particularly outside France. Before the birth of the World Wide Web, Minitel, which was something of a technical "tour de force" for France presented the first huge library of authentic sources. Some service providers in the UK, such as Prestel gave access to Minitel emulators on PCs to schools, colleges and universities.

The Minitel, product of France Telecom and Alcatel

A GUIDE to Hypercard?

The first doctoral thesis on CALL in Europe is published: the author **Françoise Demaizière**, the title "**Enseignement Assisté par Ordinateur**", Ophrys: Paris.

In France too, the ADI (Agence de l'Informatique) promotes the ARLEQUIN system, designed at Paris VII University and the DIANE Authoring system.

In the East of France, CLEO is created, the "Centre Lorrain de l' Enseignement Assisté par Ordinateur". It is an educational software library, which also works on the Minitel, it publishes a newsletter '"La lettre du CLEO". The copy shown is the seventh newsletter published 2 years later in 1988.

A GUIDE to Hypercard?

GUIDE is invented by **Prof. Peter Brown**, then at a **University in Kent**, now at the University of Exeter. Guide is a crucial development as it was the first Hypertext/Hypermedia authoring system. It precedes HyperCard by more than one year. It was initially implemented on the Macintosh and then ported over to Windows PCs where it became quite popular. It was marketed by a Scottish society company called **OWL** (**Office Workstations Limited**). This happened in 1987.

Philips invent the CD-I (Compact disc interactive). This was never a big hit in language learning although quite a lot of programs were produced with the possibility of

choosing one's language, just like in a CD-ROM, the platform was mostly designed for games and indeed quite a lot of Games CD-I could be used for language learning with children.

John Higgins, in his article "The coming of the clone" voices the widespread concern over compatibility problems.

A GUIDE to Hypercard?

1986 On **31st January 1986**, the Liège meeting of the EUROCALL group took place. The minutes were written by Graham Davies on 3.5 pages of A4. In attendance at Liège were the host **Jacques Noël** from the **Université de Liège** with a number of his colleagues such as Archibald Michiels, by coincidence a contemporary of Philippe Delcloque as a postgraduate student in the University of London in the mid to late 70s, André Moulin, Dieter Wolff and Lienhard Legenhausen from Düsseldorf, **Marlies Smit-Kreusen** from Delft in Holland, **Leni Dam** from Copenhagen and **Scott Windeatt** from Lancaster.
The Second International Conference on Computer Assisted Language Learning, lead-up to EUROCALL Conferences was hosted and organized by **Lienhard Legenhausen** and **Dieter Wolff** at Düsseldorf University in 1986 (April 10-12). Legenhausen and Wolff have continued to make a significant contribution to the field ever since.
There is a publication: Legenhausen, L. & Wolff, D. (eds.) (1987): Computer Assisted Language Learning and Innovative EFL Methodology. Universität Augsburg: Augsburger I & I-Schriften.

Bill Goodman invents **HyperCard** but it won't be released by Apple (free) until 1987.

First Rüschoff publication in German: (1986): Fremdsprachenunterricht mit computergestützten Materialien: didaktische Überlegungen und Beispiele. München: Hueber Second (revised) edition in 1988.

David meets Goliath : The Mac is born

software with similar functionalities: WINDOWS is born. It won't be a immediate success.

First 32 bit Microprocessor by Intel: the **80386** (386 Mhz).

TALKBACK program by D. Chandler, based on the ELIZA program approach. The same approach will later be used by John Higgins in the CHATTERBOX program (simulation of an «intelligent» dialogue- an interview for a job- [with open input, and keywords matching techniques]).

IRIS INTERMEDIA

1985 Development of **INTERMEDIA** by a team of **Brown University**, managed by **Norman Meyrowitz** and **Nicole Yankelovitch**, conceived as a learning and research tool.
To counter the success of the Apple Macintosh, IBM asks Microsoft to make

Graham Davies, Eurocall founder, and first President (elected in 1993) publishes «Talking BASIC: An Introduction to BASIC for users of Language», Cassels.
The CNDP (Centre National de la Documentation Pédagogique, Paris, France) publishes its first educational software catalogue, Logiciels Microsavoirs.
At the same time, French minister Laurent Fabius (and G. Trigano) launches the IPT «Informatique Pour Tous» initiative in French schools.
Brumfit, Phillips & Skehan (eds) publish «Computers in English Language Teaching: A View from the classroom», ELT documents 122, Pergamon.
John Self writes «Microcomputers in Education», Harvester Press.

Graham Davies

Laurent Fabius

David meets Goliath : The Mac is born

1984 Frank Halasz and **Randall Trigg** from the **Xerox Corporation** invent **Notecards**, an important hypermedia system working on a Unix workstation.
Release of the Macintosh by Apple: a revolutionary machine for its ease of use (because of the mouse, graphic interface), and a machine which can talk!
John Higgins and Tim Johns publish Computers in Language Learning (Collins).
Mary-Ann Lyman produces one of her first programs:
«Computerized Lessons: Rendez-Vous».

Phillips releases the first CD-ROM
(Compact Disk- Read Only Memory).

EUROCALL was apparently coined in 1984, a EUROCALL group meeting took place on January 31st 1986 at the University of Liège in Belgium (see later). Graham Davies wrote the report for this meeting.

Geoffrey Leech, one of the
initiators of EUROCALL

The CD-ROM
invented by Phillips

The 80s : Digital Beginnings and the Birth of the "British School"

Philippe Khan, who will create **BORLAND**, develops the language PASCAL to **TURBO-PASCAL**. Some of the first CALL publications appear in France: Les Langues Modernes (APLV) Enseignement Assisté par Ordinateur, n1, pp7-90, Paris. Actes du Vié, colloque du GERAS, Université Paris IX Dauphine, cahier n°114 (A collection of articles including a presentation by the CUEP Team from Lille, France, of PIGE, the ancestor of their SAM / SAM NET authoring language).

The **Sanders** (**Ruth and Alton**) start work on Spion, one of the first AI attempts in CALL in the form of an adventure game telling the story of an East German spy in Berlin.

The Apple IIe and the IBM XT are released.

Microsoft Word appears, the word processor in general makes a strong appearance in CALL.

First issue of the **CALICO Journal**.

Alton Sanders

The 1st CALICO journal

The 80s : Digital Beginnings and the Birth of the "British School"

Beginning of the development of **HYPERTIES** (Hypertext The Interactive Encyclopedia System) by **Ben Schneiderman**, at the **University of Maryland**, one of the first developments in Hypertext/Hypermedia publishing given that Ted Nelson's **Xanadu** had not yet seen the light of day. Schneiderman was to be a Keynote Speaker at the first WorldCALL conference (see poster on 1998).

Substantial **videodisc developments** with the first and most extensively covered in the literature: **Montevidisco** (BYU), followed soon by "**Herr Kommissar**" and "**A la rencontre de Philippe**". In Europe, the award-winning British company **Vektor** leads the way. **Expodisc** also comes out.

At the **US Air Force** Academy in 1987, the **interactive videodisc language-learning center** boasted 48 workstations delivering 100s of hours of instruction which constituted up to 50% of classroom instruction in several languages (private communication from Mike Bush). This is covered in great detail by Bush in his **ACTFL** monograph released in 1997 "**Technology-Assisted Language Learning**".

Ben Schneiderman

The 80s : Digital Beginnings and the Birth of the "British School"

Genuine start for what might be called the **British School** or Tradition in CALL.

Bernd Rüschoff comments in a private communication: «As far as I am concerned, it might be worth mentioning that I got involved while living and working in Britain in the early eighties, meeting at presentations and workshops, e.g. at International House (London), and making friends with the likes of Graham Glyn Jones, John Higgins, Tim Johns, etc... It was John Higgins, who advised me on the purchase of my very first computer (a **Grundy Newbrain**)

Bernd returned to Germany in late 1982 with a Newbrain!, and was either the first or among the very first to have established the use of PCs rather than large mainframes in CALL in Germany. Bernd was also one of the first scholars to publish internationally in the field from Germany.

Bernd Rüschoff

The 80s : Mindstorms, Commodores and laptops

Epson brings out its **first laptop**. It had of course been beaten to **this first by IBM with the 1500** in 1975 and then the **Osborne**.
Control Data Corporation, the new owners of PLATO release PLATO materials for several micros.
The **Commodore 64** comes out. It uses a TV-set as a monitor.

1983: Digital Equipment Corporation publishes a history of computer-based education.
TESOL Steering Committee approves the creation of a CALL SIG with **Vance Stevens** as its first Chair.

Tim O'Shea (right) and **John Self** (left) publish their important book: (1983): «Learning and Teaching with Computers (Harvester series in cognitive science, 1. Computer assisted instruction»; Brighton: The Harvester Press

The 1st laptop : Epson HX20

The famous Commodore64

John Self

Tim O'Shea

The 80s : Mindstorms, Commodores and laptops

Years later in Logo Update, Vol 4, Number 1, Fall 1995, **José Armando Valente** writes:

Logo as a Window into the Mind

In the early days of computers in education, Logo made a big impact because it provided powerful computational facilities for children and a completely different way of talking about education. Some of these facilities, such as graphics, were revolutionary considering the computer power available at that moment, and for many years Logo was the only educational software that allowed students to develop educational computer activities. The developers of Logo did everything possible and impossible to implement these facilities because they stressed important pedagogical issues. Even today the pedagogical innovations introduced by Logo, the Logo aesthetics, are an important landmark in education. People who still use and value Logo today do it because of its aesthetics and because of its potential as a revolutionary educational tool.

Papert, Seymour **Mindstorms**: Children, Computers and Powerful Ideas Basic Books, New York, 1980 Papert, Seymour «Is Programming a Good Activity for Children?» Logo Update, (2) 1, Fall 1993

For all such prophecies, M.I.T. Computing Professor Joseph Weizenbaum has answers ranging from disapproval to scorn. He has insisted that «giving children computers to play with...cannot touch...any real problem,» and he has described the new computer generation as «bright young men of disheveled appearance [playing out] megalomaniacal fantasies of omnipotence.»

The 80s : Mindstorms, Commodores and laptops

1980 Release of the BBC Micro.

Some educators do believe they see the outlines for change. **Seymour Papert**, Professor of mathematics and education at MIT and author of "**Mindstorms: Children, Computers and Powerful Ideas**", invented the computer language named **Logo**, with which children as young as six can program computers to design mathematical figures. Before they can do that, however, they must learn how to analyze a problem logically, step by step. «Getting a computer to do something,» says Papert, «requires the underlying process to be described, on some level, with enough precision to be carried out by the machine.»

A typical BBC Micro game

The 80s : The Age of Enlightenment

1980 might well be regarded as the year of Seymour Papert, Logo and Mindstorms.

John Higgins writes the first version of Storyboard.

1981 IBM introduces the first PC or Personal Computer.

Seymour Papert

Papert's famous
book: Mindstorms

John Higgins

Text reconstruction exercises by John Higgins, using web-based software created by Martin Holmes

The 80s : The Age of Enlightenment

The 80s may well come to be regarded as the most important decade in the development in computing and perhaps even in the development of computers as a tool for learning.

How can we substantiate this bold claim:

1. The beginning of the 80s sealed the predominence of the microcomputer and made computing available to the masses for the first time. In 1982, **Time Magazine** voted the Computer Machine of the Year (see article below).
2. It was in the 80s that CAL(L) developments reached critical mass and were no longer the domain of a privileged few.
3. At the end of the 80s, the World Wide Web was invented, although it wouldn't enter the public sphere until the early 90s.
4. It was also in the 80s that major progress occurred in related areas of machine intelligence such as speech recognition, machine-assisted translation, artificial intelligence and generally natural language processing, including in CALL.

The TICCIT Project over the next decade and beyond

Many good academic articles have been written about TICCIT and the reader is referred to the excellent CALICO monograph Series Volume 3, 1995.

There are nine prepositions in German that can be used with either the accusative or dative case. The case of the noun or pronoun following the preposition depends on the situation described in the sentence. These prepositions are the following:

an	in	unter
auf	neben	vor
hinter	über	zwischen

1/6

These prepositions have the following approximate meanings:

an	at, to, by	über	over, about
auf	on top of	unter	under, among
hinter	behind	vor	before, in front of
in	in, into	zwischen	between
neben	next to, near		

2/6

In the sentence below, the word in yellow shows the dative case.

Das Bild hängt an der Wand.

Das Bild hängt an der Wand.

The noun or pronoun following an shows dative case because there is no motion.

This picture illustrates the 1st two frames of the Rule in the accusative-dative preposition

An example frame

An example frame with help

The TICCIT Project over the next decade and beyond

August 1994: TICCIT is removed from service at BYU after serving an average of 2,000 (3,500 at its peak) students per year for fourteen years. Much of the TICCIT courseware continues to be used today after being converted to a BYU-created, DOS delivery system known a **Computerized Language Instruction and Practice Software (CLIPS)**.

TICCIT is on par with PLATO as one of the real landmarks in this field. It can be considered the first real multimedia project. It is also the first major project driven by a particular instructional theory. As Levy puts it (1997:18-19): A central tenet of the TICCIT system is learner control (Merrill 1980b; Jones 1995: 90).

In TICCIT learner control event involved "Special keys including keys marked Rule, Example, Practice, Advice, Objective, Easy, Hard, … this enabled the student to have control over both the content and the learning strategies used for study.

The excellent book about
the History of CALL
in North America

The TICCIT Project over the next decade and beyond

1977: Based on the success of the original TICCIT English courseware at Brigham Young University, Dr. Frank Otto begins development of an English as a Second Language course. In his search for federal funding, he establishes contacts which eventually lead to the creation of CALICO in 1982/3.

1978-9: Creation of foreign language courseware using the TICCIT rule-example-practice model begins. Eventually courseware for Danish, French, German, Italian, Japanese, Norwegian, Portuguese, Spanish and Swedish is created.

1983: Hazeltine announces MicroTICCIT, a revised hardware design using IBM PCs as terminals. Interaction is enhanced with the addition of a light pen, videodisc, and a 15" floppy disc audio device. Work begins immediately at BYU on CALL videodisc projects using re-purposed feature films: "Raiders of the Lost Ark" for ESL, "Black Orpheus" for Portuguese, "Seventh Seal" for Swedish, and "We All Loved Each other So Much" for Italian.

Frank Otto

The TICCIT Project

1972-1974: Development of hardware, software, courseware and ancillary materials for the TICCIT project involving hundreds of people and millions of dollars.

September 1974: Initial testing of TICCIT courseware begins at Northern Virginia Community College and Phoenix College.

September 1975: Full-scale use of TICCIT Maths and English begins at BYU.

1976: NSF funding ends. TICCIT is evaluated by the Educational Testing Service along with the University of Illinois PLATO System. Both systems are given mixed reviews. MITRE hands off development to the **Hazeltine Corporation** to attempt to make the TICCIT system a commercial product. Eventually **Loral** and **Ford Aerospace** would also attempt to commercialize TICCIT.

October 1971: MITRE submits a proposal to the National Science Foundation to develop the TICCIT system into a complete instructional authoring and delivery system using resources at the University of Texas at Austin and Brigham Young University. The goal of the project is to deliver complete semester courses in algebra and English grammar, mechanics, spelling, and composition to two community colleges.

Using TICCIT

The TICCIT lab

The TICCIT lab

The TICCIT Project

The historical timeline has been contributed by **Harold Hendricks** from **Brigham Young University**. Discussion of TICCIT includes quotes from Mike Levy (1997) and Randall Jones (1995).
The co-principal investigator of the TICCIT project and mastermind of many of the concepts is **Dr. C. Victor Bunderson**.

1967: The development of a computer-assisted instructional system combining the recently developed "mini-computer" with television technology is begun by the MITRE corporation. This system is called **Time-shared, Interactive, Computer-Controlled Educational Television** or **TICCET**, and promises to deliver large amounts of individually controlled instructional material to as many as 300 users.

July 1971: MITRE demonstrates the first interactive television system, now known as **TICCIT** (Time-shared, Interactive, Computer-Controlled, Information Television) in Reston, VA. In their expanded vision, TICCIT is now a community service as well as an educational tool.

Interactive Television system : TICCIT

The Late 70s : Floppies, videodiscs and the beginning of "intelligence"

1979 Utah State University ties **Apple to videodisc** for CAI. It was actually in the 80s that videodisc technology was going to play an essential role in CALL.
Micromodems come out and Ethernet connections begin.
Intel introduces the 8088, which will become the heart of the IBM PC.

Hard disc systems are added to micros.
Creation of CompuServe.
The language **ADA** is created by Jean Ichbiah in France.

1979-81 «Les 10 000 micros» project in France , secondary schools are equipped with machines and teacher training starts.
Brumfit & Johnson publish «**The Communicative Approach to Language Teaching**».
It was also in the late 70s that the **Smalltalk** language was invented and that **Tim Johns**, pioneer of concordancing and data-driven learning wrote his first program for mainframe computers at the University of Birmingham. This was called "Jumbler".

A Hard Disc

Tim Johns

The Late 70s : Floppies, videodiscs and the beginning of "intelligence"

1978 TRANSPAC (**Transmission par Paquets**) by the DGT : first high speed communication network in France.
MicroPro announce the **first word processor** on a microcomputer,
WordMaster, precursor to Wordstar.
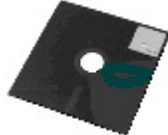
Apple and Radio Shack announce 51/4 inch floppy disc drives.
Widdowson releases «Teaching Language as Communication» and Munby
releases Communicative Syllabus Design.
Weischedel, Ralph M., Wilfried M. Voge, and Mark James publish
«An Artificial Intelligence Approach to Language Instruction.»
In Artificial Intelligence 10: 225-42
Plato passes to the intelligent terminal.

The 1st NALL journal

A 5 1/4 inch floppy disc

The Late 70s : David meets Goliath, The years of Apple and Microsoft

First OS for micro-computers : **CPM** ("**Control Program for Microcomputer**").
Bruce Sherwood publishes details of «The TUTOR Language. Minneapolis, MN: Control Data Instruction.» In Artificial Intelligence 10: 225-40.
MICROSOFT (Microcomputer Softwares) is created by **Paul Allen** and **William Gates**.

Under the stewardship of **Graham Davies**, the School of Language Studies in Ealing College of Higher Education, London starts work in CALL. It will soon become the **NCCALL**, (**National Center for Computer Assisted Language Learning**) and will play a major role in Great Britain. It will publish the first British newsletter on CALL, **CALLBOARD**.

1978 First hypermedia system, **Aspen Movie Map**, developed by Andrew Lippman (MIT).
The release of the **8088** by INTEL is a commercial success.
Definition of the OSI model : **Open Systems Interconnexion**.

Graham Davies

Andrew Lippman

The Late 70s : David meets Goliath, The years of Apple and Microsoft

1975 Altair 8800, Zilog Z80, MOS 6502, Motorola 6800 microprocessors.
Altair microcomputer kit (based on 8080): This was the first microcomputer using BASIC.

Cecil Wood, and Gerhard Clausing publish «The computer-tutor in media-aided language programs.» in the NALLD-Journal 8, 3: 11-20.
BIP- basic instruction program is born.
Until the mid-1970s most computers had a restricted character set of upper case letters.

1976 Wilkins publishes «**Notional Syllabuses**».
Apple Computer is formed, release of Apple I (6502-based).
Texas instruments announces the **TMS9000**,
the first **16-bit microprocessor**.
Control data corporation markets the PLATO system as a
commercial product.
Release of Commodore PET (6502), Apple II (6502) and
Radio Shack TRS-80 (Z-80).
Birth of Total Physical Response method and the Natural Approach.
The norm **X25** is adopted by the CCITT. It will become an universal norm.

The Altair 8800

Apple II computer

The 2 founders of Apple:
Steve Jobs and Steve Wosniak

The Early 70s : Release of the Mini and the Start of the Micro

Interactive Discovery Learning appeared at the same time, IDL is a theory applied to math and science mainly. It argues that communicative skills can be achieved through interactive learning. (**Shin Jong Wan**, from her Web Site).

SCHOLAR (intelligent system tutor) The OCDE announces that it is in favor of information learning. First American national conference on Computer Learning. Edinburgh's CONCORD.
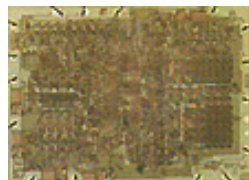
1972 8-bit 8008 chip introduced. Phillips demonstrates the first laser videodisc. The Board of Mathematical Sciences recommends computer literacy.

1973 The first microcomputer: the 8008-based Scelbi 8-H The CERL PLATO IV system becomes operational

First issue of **SYSTEM**, a highly respected journal in the field..

Birth of Minnesota consortium, the MECC (Minnesota Educational Computer Consortium) **1974** First issue of Oregon Computing Teacher Magazine (later, The Computing Teacher) Richard Atkinson publishes «Teaching children to read using a computer». In American Psychologist: 169-178

One of the first publication on TICCIT appears, by the co-founder of the Project: **Bunderson, C. Victor «The design and production of learner-controlled courseware for the TICCIT system: a progress report.» International Journal of Man-Machine Studies 6: 479-91.**

The Intel 8008 chip

1st Issue of SYSTEM

The Early 70s : Release of the Mini and the Start of the Micro

1970 First electronic conferencing system DELPHI Development of memory chip by Intel.
1971 Ray Tomlinson invents the program e-mail for distributed network.
Intel introduces the world's first microprocessor, the **4004**,
invented in 1969 by Ted Hoff, S. Mazor and F. Fagin. (Byte, 1990).
David Merrill will develop **Component Display Theory** from his
participation in the **TICCIT Project** (see separate poster on TICCIT,
which stands for Time-shared, Interactive, Computer Controlled
Information Television). Merrill led the Project and is responsible for
many outstanding achievements in instructional technology for which
he has received awards and honors. CDT ultimately developed into Elaboration Theory and more recently
into Instructional Transaction Theory, described by Merrill's current research team at Utah State University
as «an instructional design theory designed to enable the development of intelligent computer-based
instructional design tools».
CDT was applied to **CAI (Computer Assisted Instruction)** in all kinds of disciplines. Its premises are
that the learning goals , instruction and evaluation should be consistent.
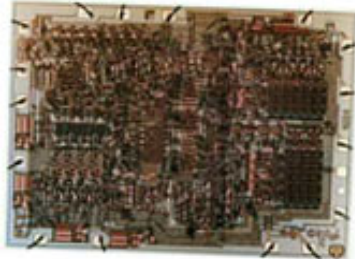
Intel 4004 chip

Davis Merrill

Internal view of the 4004 chip

The Late 60s : Is the Hippy Era a Happy Era

Early attempts were also made to use computers for conversation and another authoring language
called **PILOT** came out.

According to an extract from the Mackido web site, it was also in the late 60s that «**UNIX** was developed … by **Ken Thompson** and **Dennis Ritchie** at AT&T Bell Labs, it was strongly influenced by Multics, an operating system for minicomputers of the time. It was designed from the ground up to be a multitasking, multi user operating system with protected memory - fully buzzword-
compliant even by today's standards. Multi-threading was adapted, and incorporated later, but fit in the architecture well.

UNIX was also coded completely in the C programming language, making it machine independent - something of a novelty back then, when operating systems were written in straight assembly.» UNIX is an Operating System used by serious programmers which has had little influence on CALL.

Ken Thompson

Dennis Ritchie

The Late 60s : Is the Hippy Era a Happy Era

The **IBM 1500** appears.

The Scientific Language Project at University of Essex, England starts under the leadership of Alford who wanted to facilitate the reading of Russian articles by scientists.
It was also around the same time that the **first concordancing program** appeared. The processing of research papers was slow and labor intensive as it required each paper to be transcribed using teletypes and it necessitated the presence of a specialist dictionary on the host mainframe computer.

So at the end of the pioneering 60s, during the McLuhan years, the years of much liberation and social turmoil in Europe and America, CALL was making rapid progress. Mini-computers were about to be born, well after the advent of the mini-skirt and around the time of the Austin Mini.

The IBM 1500

The Late 60s : Is the Hippy Era a Happy Era

1966 Conference of Fall Joint Computer, spectacular demonstration of **Douglas Engelbart** of NLS system (oN Line System) and of his inventions and in particular the «mouse».
First installation of a packet switching network, in Great Britain, at the NPL
Invitation to tender for ARPA: Bolt Beranek and Newman (BBN) buy it.
IBM develops another network : Token Ring, the ancestor of IEEE 802.05.
Crocker manage the «Network Working Group», this group will develop some norms for ARPANET and after that for the Internet.

J.C.R. Licklider publishes a text about the potentialities of communication of networks.
The language **PASCAL** is invented by **Niklaus Wirth**.
First cheap micro-computer : the PDP 8 (Programmed Data Processor) by Digital Equipment Corporation.
The Norm RS-232-C appears.

OPE project in France «Ordinateur pour l'étudiant», Paris VII University, Prof Y Le Corre.
The **LOGO** language is invented at MIT by Seymour Papert (see later).
Computers in Teaching in the Humanities, the **CATH** journal publishes its first issue.

The First Mouse
Niklaus Wirth

The Mid to Late 60s : Stony Brook

Previously Elling had suggested "The class which went to the computer performed markedly better, not only in writing, but also in reading. This was a surprise: since it was a writing drill, one would expect writing to improve, but reading also showed significant gain". (Elling)

The program involved the use of teletypes. The "machines were connected to the IBM Headquarters in Valhalla, New York. If you've never used a teletypewriter, you may not know how noisy they are, and six or eight of them in a small room is very noisy". (Elling)

Personnel involved were **William Morris from IBM** and subsequently Stony Brook, a psychologist. **Edward Adams** was the "man in charge" at "Big Blue". The development involved mostly German although experiments were also conducted in French. The project moved on in the early 80s with an implementation on the Commodore PET computer.

1966 Rex Last starts in HULL.

Bob Taylor (ARPA, Computer Research Program) , develops the idea of connecting some computers. Creation at **Brown University** of The Hypertext Editing System, by Ted Nelson et **Andries Van Dam** Hypertext Editing System becomes FRESS (File Retrieval and Editing System) produced at Brown.

The Mid to Late 60s : Stony Brook

The **Stony Brook "Experiment"** in New York gathers speed. "Big Blue", which has done a great deal for education in general, was to be one of the early commercial funders of CALL development. The story in told in an interview of **John Russell** by his colleague Barbara Elling included in the Festschrift to John R. Russell edited by Ruth Sanders (See posters on Other Histories of CALL).
Extracts are reproduced here:
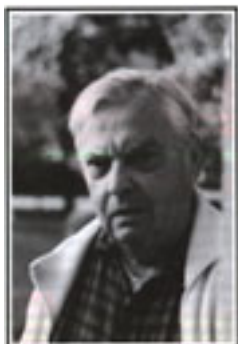
Russell recounts: "the Department of Modern Languages… was visited by representatives from IBM… who explained that they were convinced that the computer could be used as an instrument to help in education and specifically in language education". (Elling)
"The computer was an IBM 1800 with a 1500 CPU, it was located in the basement of what was then called the Social Sciences Building, where there were 32 stations". (Elling)
The approach taken owed much to programmed learning which was prevalent at the time. It might be described today as "drill and kill" or indeed "overkill" (Elling)
Interestingly, in common with other observations in the 60s and 70s in the PLATO and TICCIT projects, the program and approach were popular with students: "The computer proved very popular, more popular than the classes, I would say; students simply did not miss the computer; they like it, they felt they learned from it". (Elling)

The Mid to Late 60s : Stony Brook

Ahmad et al (1985: 28) state that "The late 60s and early 70s are of particular historical importance to CALL."

1965 The word "Hypertext" is official. Ted Nelson presents at the Conference of the Association for Computing Machinery (ACM). Start of the **Stanford Language Project**: It is not entirely clear from the literature whether Patrick Suppes, who is often associated with this project, did in fact start it. Ahmad et al (1985:28) clearly state that the work was carried out under the supervision of Van Campen in the Slavic Languages Department." The project used a teletype linked to an audio tape recorder.

This pioneering system was replaced in time with a bilingual Visual Display Unit or VDU and a computer-generated audio system. "Although the first newsletter was not printed until Spring of 1966, apparently an organizational meeting for the **National Association of Language Lab Directors** was held in 1965, possibly in Chicago". Extract from **IALL Web Site** (International Association for Language Laboratories). "NALLD changed its name … to IALL, International Association for Learning Labs (and later changed it again to **International Association for Language Learning Technology**)".

A Visual Display Unit

The 60s : "The pioneering wilderness", back to BASIC

BASIC (**Beginner's All-purpose Symbolic Instruction Code**) is invented by Thomas Kurtz and John Kemeny. The work at Dartmouth interestingly involved the first examples of the useful feature of "randomization" in order to avoid the presentation of questions in the same sequence, which eventually results in students simply learning that sequence rather than retaining the material under study.

```
Program quiz (input,output);
Var German_word: string;
Var student_answer: string;
begin
    German_word:='gross';
    writeln ("What is the German equivalent of "big"?");
    readln (student_answer);
    while student_answer <> German_word do
    begin
        writeln ("Your answer is incorrect.");
        writeln ("Please try again.");
        readln (student_answer)
    end;
    writeln ("Well done and good-bye for now.")
end.
```

6.5.1   The CALL program in BASIC

```
100   G$ = "gross"
110   PRINT "What is the German equivalent of 'big'?"
120   INPUT S$
130   IF S$ = G$ THEN GOTO 170
140   PRINT "Your answer is incorrect."
150   PRINT "Please try again."
160   GOTO 110
170   PRINT "Well done and good-bye for now."
180   STOP
190   END
```

Project APARNET (ARPA): extension of packet switching (the ancestor of the Internet). In France, Jean-Claude Gardin produces the "**SYNTOL** (SYNTagmatic Organization Language) General Model, indexing language for scientific fields.

BASIC code

Pascal code

The 60s : "The pioneering wilderness", back to BASIC

The Stony Brook "Experiment"
IBM approaches **Ferdinand Ruplin**, a "freshly baked Ph.D in Middle High German literature... with a proposal... to write the content portion of a CAI (Computer Assisted Instruction) program for German". (Ruplin). This literary and historical linguistics specialist was, as he puts it in his article in the Festschrift to John R. Russell published by CALICO, flattered. He suggested the involvement of his new colleague **John Russell**, partly because of his remaining skepticism and «because of his fluent and up-to-the-minute German». Russell's participation, which is presented later in a full discussion of the Project was to start a lifetime involvement in the field.

The first videodisk is invented by **D.Cregg**.

1964 Seymour Cray invents the supercomputer CDC 6600, which will be followed by the IBM 90
The Computer Language PL 1 comes out (Programming Language 1).

Seymour Cray

A Videodisc

The CDC6600 Supercomputer

The 60s : "The pioneering wilderness", back to BASIC

1960 First prototype of documentary server (MIT): project TIP (Technical Information Project),
the first time that one could navigate through a bibliographic database (**Eugene Garfield**).

1961 Network and the Internet: Paul Baran, from the RAND Corporation, develops the idea of "Packet switching network" in "On Distributed Communications Networks". This was the first network model in military communication.

1963 Douglas Engelbart publishes his paper "A Conceptual Framework for the Augmentation of Man's Intellect", this is the beginning of project H-LAM/T (Human using Language, Artifacts, and Methodology, in which he is Trained), which will become NLS (**oN-Line System**).

The word "**Hypertext**" is created by **Ted Nelson**, who prefers it to "Linktext", "Jumptext" or "Zapwrite", although it will not enter the public domain until 1965. The Oxford English Dictionary Additions Series defines hypertext as: "Text which does not form a single sequence and which may be read in various orders; specially text and graphics ... which are interconnected in such a way that a reader of the material (as displayed at a computer terminal, etc.) can discontinue reading one document at certain points in order to consult other related matter.

Eugene Garfield

Ted Nelson

The 60s : "The pioneering wilderness" featuring PLATO

An attempt was made at one stage to increase sophistication by adding a Text to Speech Synthesis mechanism within PLATO. The on-line help facilities for students and teachers were very good. The development of PLATO was guided by practical rather than theoretical concerns. During the 70s, PLATO made significant progress. The range of languages mentioned in Ahmad et al (1985: 31) is: "Chinese, English, Esperanto, French, German, Hindi, Latin, Modern Hebrew, Modern Greek, Norwegian, Russian and Swedish", all the more remarkable that PLATO now appears to have abandoned the supply of language materials!

```
unit      Translate
calc      tries <= 0
at        1010
write     Translate the following sentence to French:

          She read the last ten pages for us.

arrow     1510
answer    Elle nous a lu les dix dernières pages.
ok
write     Correct.
no
calc      tries <= tries + 1
writec    tries > 2, dernier, dix, dernier, lu (lire, 4), la page;;
endarrow
```

A good summary of the impact of PLATO is also given in Hart (1995:30) "In the latter part of the seventies, our PLATO Laboratory was delivering over 50,000 student hours of language instruction every semester, plus another 50,000 hours in other curricula". It involved around 12 different languages. Levy (1997:17) adds: "It was a ground-breaking project in numerous ways, and, whatever its limitations, it was the first project to engage language teachers and technical staff in the development of CALL materials in a co-ordinated way."

The archetypal TUTOR language instruction program

The 60s : "The pioneering wilderness" featuring PLATO

One innovative feature, designed to counterbalance the limitations of Machine Translation (especially in these early days) was the **Sentence Judger** program which, according to **Ahmad et al** (1997: 30) "performed three important functions:
(a) it looks for key-words or synonyms in the student's answer,
(b) it indicates misspelling, and
(c) it allows the prescription of word order.

Another advantage of PLATO was the ability do display different alphabets on the same screen. According to Hart (**1995**), quoted in Levy (1997:16), in **1979**, "PLATO was able to provide a highly co-ordinated and sophisticated site management system, one that is still unequalled today with microcomputer networks". The latter comment is no longer strictly accurate as several systems now, including web-based ones, provide these facilities.

PLATO used an authoring language called **TUTOR**. This was influenced by the linear, programmed instruction approach of the day and did not have the flexibility of object-orientated programming. It was nevertheless easy to use.

The 60s : "The pioneering wilderness" featuring PLATO

Levy (**1997**) quotes Stern (1983: 169) describing this period as characterized by "pedagogically audiolingualism, psychologically behaviorism, linguistically structuralism".

This poster covers the entire period of the evolution of PLATO from the early 60s to the present day.

1960 PLATO, (Programmed Logic for Automatic Teaching Operations), a five million dollar project was apparently started by **Don Bitzer**, a Professor of Electrical Engineering. The mainframe system was designed to deliver learning packages to a large number of students. It already included a communication system in the form of **note files** which could be used for liaison between tutor and learner, between learner groups and for Bulletin Board type announcements. The **tracking** facilities of PLATO were also impressive. **Curtin** was among the first teachers to use PLATO for language teaching. Her group designed a program to help translate Russian into English.

The PLATO website at www.plato.com

The 50s : Preparing the Ground

1958 A very important development for the Internet and processing standards starts in the USA:
ARPA, the (**Advanced Research Projects Agency**) is born.
Conference in Zurich : program of research for the creation of a universal standard language : ALGOL (ALGOrithmic Language)
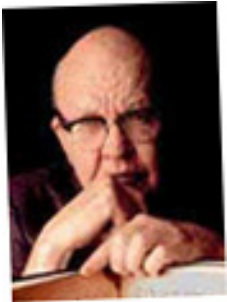
The first Integrated Circuit is born: **J. Kilby** of Texas Instruments.
From 1958 to 1962, **Douglas Engelbart**, a radar engineer, who had been so impressed and influenced by Vannevar Bush starts introducing the notions of interactivity, interface and the mouse at the **SRI (Stanford Research Institute)**.

1959 COBOL (Common Business Oriented Language) is born.
First language for Artificial Intelligence: **LISP (LISt Processing)**, invented by **John McCarthy of MIT**. It is also apparently in the late 50s that the first CALL program appeared.

J. Kilby

The 50s : Preparing the Ground

1954 The first computer to be sold on a large scale is the **IBM 650**.
Birth of the silicium transistor, The Uniprinter 1, the Earl Masterson printer.
Skinner advocates programmed instruction.

.

1955 First commercial network and first database SABRE (Semi Automatic Business Related Environment) by IBM.

The IBM 650

A computer is made with transistors: the TRADIC (Bell): this is the beginning of the second generation of computers. The Hans-Peter Luhn's system of indexation is born: **KWIC (KeyWord In Context)**.

1956 Birth of the first magnetic disc: the RAMAC 305 (again by IBM).
1957 The first universal computer language is created by a group of scientists at the Watson Scientific Computing Laboratory : **FORTRAN** is born, it stands for (**FORmula TRANslating**).
The first Artificial Intelligence Program is written: LOGIC THEORIST, by Simon, Newell, and Shaw. This is followed by the «General Problem Solver». The first mathematical model for indexing languages is introduced by J.W. Perry, A. Kent and C.N. Mooers.
Skinner publishes Verbal Behavior.

Typical mathematical formula:
$$D = B^2 - 4AC$$

Equivalent FORTRAN statement:
$$D = B**2 - 4*A*C$$

The 50s : Preparing the Ground

The post-war period is marked by some very important developments which were to pave the ground for the modern computer. The illustrated timeline is shown below.

1950 The magnetic band of the BINAC : Eckert and Mauchly use some re-writeable bands.
Development of the military network SAGE (Semi Automatic Ground Environment) ancestor of NORAD, TACS, SACS...
Whirlwind at MIT, the first major CAI project: it employed some seventy engineers
and technicians and was the first computer project to use magnetic core memory and interactive display screens.
In Great Britain, J.E.L. Farradane proposes a theory of classifications (relational indexation).

1951 Hardware : Development of the UNIVAC: a fast printer.
Remington Buffer Memory : it is the interface between the central processing unit and the peripherals.
The UNIVAC 1 (UNIVersal Automatic Computer) is sold (Eckert and Mauchly).

Eckert and Mauchly
receiving an award

The 40s : The War Years - Vannevar Bush and Memex

In July, Bush publishes in Atlantic Monthly his seminal paper: « As we may think ». In November, his paper is re-published with the subtitle: «A Top US scientist foresees a possible future in which man-made machines will start to think», more than 50 years before Kurzweil's publication of «The Age of Spiritual Machines; When Computers Exceed Human Intelligence».
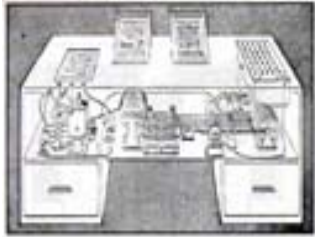
1948 HIXON Symposium (Calthec) first expression of the divergence between the first and the second definition of Cybernetics: science of control and/or science of autonomy.

In Great Britain, at the University of Manchester, the Mark 1, whose program is stored in memory, is built by Max Newman. This is still thought to be the first main-frame computer ever constructed.

A Vision of genius well ahead
of its time, MEMEX

A mainframe computer

The 40s : The War Years - Vannevar Bush and Memex

1943 Norbert Wiener, Arturo Rosenblueth, and Julian Bigelow publish "Behavior Purpose and Teleology" in Philosophy of Science.
In June, construction begins at the Moore School by Goldstine, Eckert and Mauchly of the ENIAC (Electronic Numerical Integrator and Computer), the greatest and fastest calculator ever produced by that time.

1944 As the USA is fully engaged in the European war, Bush refines the concept of Memex.
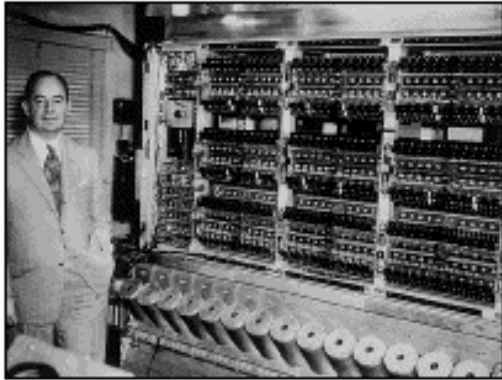
1945 As the Allies' victory is virtually complete and we approach the armistice, in June, Von Neumann publishes his paper: «First draft of a report on the EDVAC». The bases of the computer are established.

John Von Neumann

The 40s : The War Years - Vannevar Bush and Memex

The period of WW2 was obviously not as buoyant in Europe but pioneering developments were to take place in the United States in particular with Vannevar Bush and the invention of "Memex". The period is described below in chronological order.

1940 - On January 8th, the first demonstration of a communication of data at a distance between New York and Hanover is achieved by Stibitz and

Williams at the American Mathematical Society in the presence of Norbert Wiener and John Von Neuman. Telematics is born before the computer. Vannevar Bush founds the N.D.R.C. (National Defense Research Committee), his goal is to co-ordinate different aspects of research in the field. John Vincent Atanasoff and one of his students construct

the binary electronic calculator ABC (Atanasoff-Berry Computer).

1941 - On April 10th, Bush publishes a brief paper : "Memoranding regarding Memex", in which he describes the target audience for his plans.

Norbert Wiener

John Vincent Atanasoff

Vannevar Bush

Other Histories of CALL (contd)

Published History number 5 is in fact from me as a preface to the presentation of the DISSEMINATE concept and architecture. Like Warschauer's, whose history I had in fact not read when I wrote mine, my account is interpretative and probably even more idiosyncratic.

What I suggest is that the History of CALL followed a series of phases or drives which were largely led by technological considerations, thus, we, as linguists, were perhaps never in control of what we did, unlike in the development of linguistics.

To conclude, many scholars have shown a considerable interest in our history, including the pioneers not mentioned here (Davies, Higgins, Holmes, Last and others), what you are about to discover in the remaining 30 posters is the first (so far as we are aware) illustrated History of CALL. It was essential for it to be written as the field was approaching a similar maturity as the development of linguistics in the 60s or 70s, it is hoped that it will help existing and new scholars make more sense, as Davies put it in a recent article, from «the lessons of the past and the present».

Other Histories of CALL (contd)

The next History of CALL to appear in print (albeit in digital form in the well-known LLT journal) is **Warschauer's** published at the very inception of the LLT journal in Hawaii. The article, which, like most of Mark's work is extensively quoted in the field and notably in those other "web-based" histories mentioned above, fits in Category 2. This work is more interpretative. In it, Warschauer suggests that the evolution of CALL can be divided into 3 trends: Behavioral CALL, Integrative CALL and Communicative CALL. This is a useful paradigm to suggest and it encompasses the generally accepted principle that the evolution of CALL mirrors the evolution of technology and the evolution of linguistic and instructional sciences.

History number 4 is in fact perhaps the best known in the year 2000 and the most rigorously
researched, Levy's. In his well-known OUP volume entitled «CALL Context and Conceptualization», **Mike Levy** reviews the last 40 years including the work which preceded
him, which naturally does include many references to Ahmad et al, etc… Chapter 2, which
covers the historical perspective) includes 34 pages full of essential information, some of
which we cannot include in this series of posters for lack of space. We do, however, make
frequent reference to Mike's book and have included almost in its entirety the useful timeline
sent by Levy at the beginning of this effort. This original document supplied to us will also
be shown on Mike's Web Site as his contribution to this History of CALL.

Mike Levy's well known
contribution to knowledge in CALL

Other Histories of CALL

Next to be published was the Festschrift to John R. Russell released by CALICO in 1995 and suitably entitled «**Thirty Years of Computer Assisted Language Instruction**». Chapter 1, written by the Editor Ruth Sanders, retraces in 8 pages the History of CALL in North America. This also fits Category 1, although the richness of this volume lies in its approachable, almost non-academic and anedoctal style. The History is told like a good novel and I defy anyone to put this book down once they start reading it. The book is only five years old and is also a must for any newcomer to the field. It is a wonderful opportunity too for Europeans to get a sense of North American efforts.

Other Histories of CALL

This CUP publication is still in my view a highly recommended contemporary read. The volume contains just over 150 pages, but most of it is still amazingly relevant after 15 years. Chapter 3 of the book, from page 27 to 44 retraces the early history of the field from the early 60s and PLATO to the mid 80s, including sections on influential neighboring areas such as Programmed Instruction, Computational Linguistics and Machine Translation. The book was written by a very cohesive team of linguists and computer scientists including Corbett, Rogers and Sussex. This history belongs in Category 1.

Computers, Language Learning and Language Teaching

Khursbid Ahmad, Greville Corbett, Margaret Rogers and Roland Sussex

NEW DIRECTIONS IN LANGUAGE TEACHING

Cambridge University Press
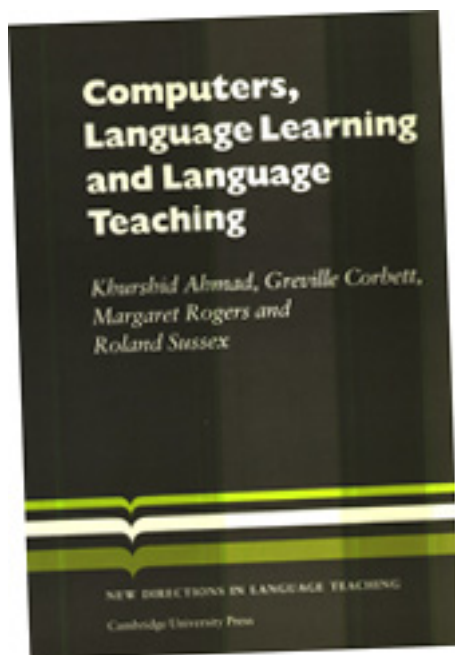
Other Histories of CALL

In any field of activity, one would expect practitioners and researchers to take stock of their history. CALL is no different. At the inception of this initiative, we found quite a number of web sites which included some History of CALL, usually as part of an introduction to the field. We had, in this way, the opportunity to discover scholars who had not been seen, as far as I am aware at CALL conferences such as CALICO, EUROCALL or WorldCALL. This, in itself, testifies to the importance of the field as a whole.

Histories of CALL published in books are fewer and they fall in two categories:

1. The properly researched, objective historical accounts which attempt to summarize the progression and might include precise dates and a comprehensive list of sources.

2. The interpretative type which tends to draw more subjective conclusions about advances and trends in the field, thus analyzing its progression in a less objective manner.

This poster will look at the input of only 5 researchers, although several more have actually written such histories. We will deal with this in chronological order starting with **Khurshid Ahmad et al** (**1985**). It should be made clear that this is, to some extent an arbitrary choice as **Rex Last** around the same time write a history too.

The Pre-History of CALL Part 4

INDEX

Language Learning, linguistics & SLA

1958 Necessity of Languages 'machine'

1959 The vision of Cyberneticist Gordon Pask.

1957 The future of learning by Simon Ramo

1959 Learning machine of Crowder.

1959 First computer assisted learning programme.

Audio Visual & Print Media

1947 LP records

1949 1st cable TV narrowcasts

1953 Ampex VTR

1935 Modern paperbacks

1948 Norbert Weinar: Cybernetics

1951 Minicom monochrome videotape recorder (VTR)

1954 Transistor radio

Telecommunications & Computers

1950 Whirlwind at MIT, the first major CAI project: it employed some seventy engineers and technicians and was the first computer project to use magnetic core memory and interactive display system.

1953 Computer printer

1959 Xerox photocopiers

1948 Mainframe computing in the UK Higher Education system began

1951 UNIVAC 1st commercial mainframe computer

1958 1st high level programming language: Fortran

The Pre-History of CALL Part 3

Audio-Visual & Print Media

| 1920 Bauhaus typography | 1927 Movies with sound | 1930 Four color offset press | 1933 EMI stereo recording |

| 1912 First educational radio in the USA | abcdeffgi pqrstuvi 123456781 | 1922 Portable radio | 1928 Magnetic recording tape | 1933 Debut of Educational television. |

Telecommunications & Computers

| 1943 Colossus electro-magnetic computer | 1945 Vannevar Bush: "As we may think" article on MEMEX |

| 1943 ENIGMA computer | 1945 ENIAC computer | 1945 Vannevar Bush's 'memex', precursor to hypertext |

Language Learning, linguistics & SLA

| 1957 Linguistics Across Cultures: Applied Linguistics for Language Teachers (Lado) | 1957 Syntactic structures (Chomsky) argues strongly against Structural Linguistics |

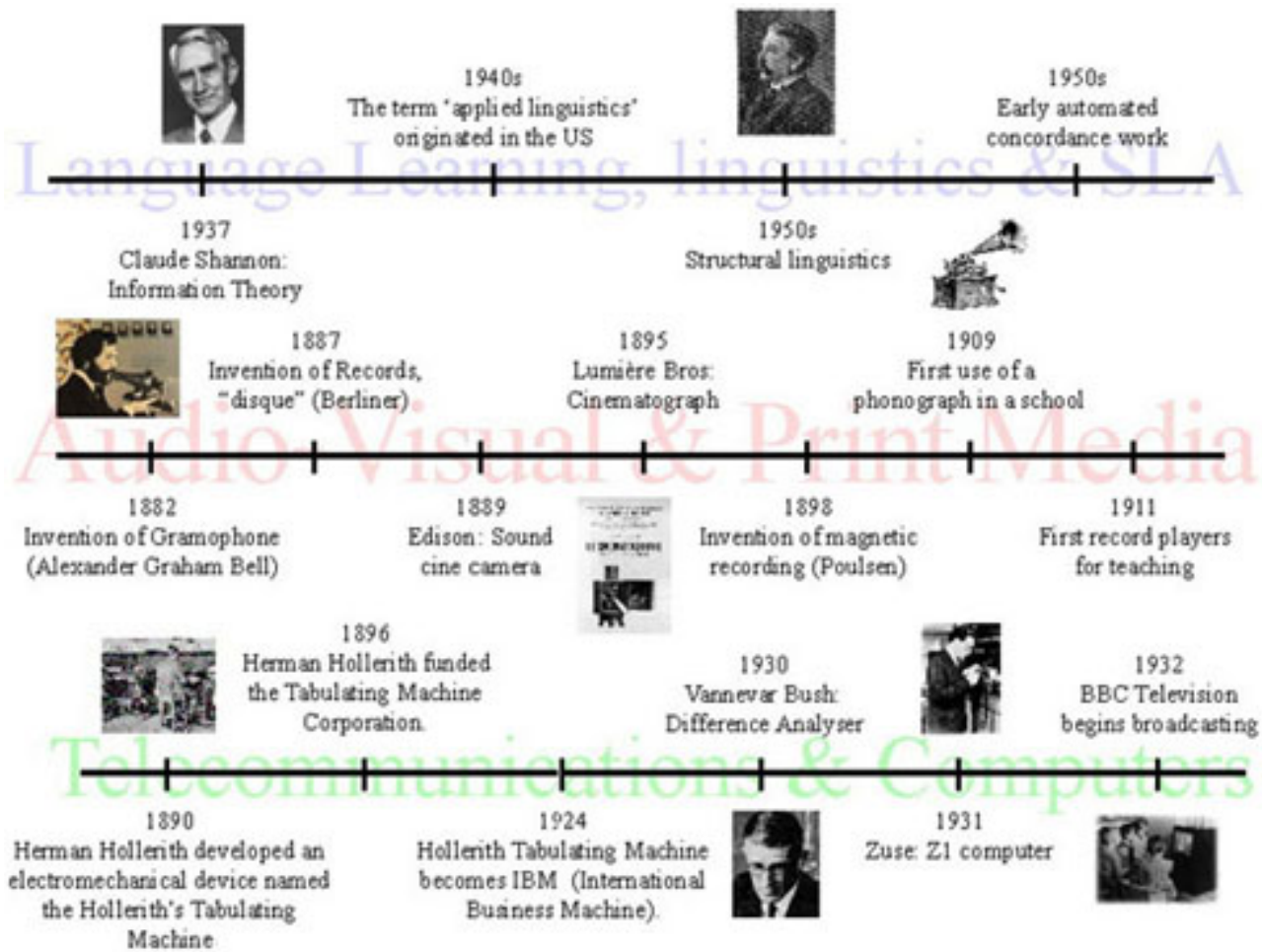| 1954 Skinner writes The Science of Learning and the Art of Teaching - advocates use of 'mechanical and electrical devices' for optimal conditions of learning. Notion of 'freeing' teacher by employing technology. | 1957 Verbal Behavior (Skinner) |

The Pre-History of CALL Part 2

1940s
The term 'applied linguistics'
originated in the US

1950s
Early automated
concordance work

Language Learning, linguistics & SLA

1937
Claude Shannon:
Information Theory

1950s
Structural linguistics

1887
Invention of Records,
"disque" (Berliner)

1895
Lumière Bros:
Cinematograph

1909
First use of a
phonograph in a school

Audio Visual & Print Media

1882
Invention of Gramophone
(Alexander Graham Bell)

1889
Edison: Sound
cine camera

1898
Invention of magnetic
recording (Poulsen)

1911
First record players
for teaching

1896
Herman Hollerith funded
the Tabulating Machine
Corporation.

1930
Vannevar Bush:
Difference Analyser

1932
BBC Television
begins broadcasting

Telecommunications & Computers

1890
Herman Hollerith developed an
electromechanical device named
the Hollerith's Tabulating
Machine

1924
Hollerith Tabulating Machine
becomes IBM (International
Business Machine).

1931
Zuse: Z1 computer

The Pre-History of CALL Part 1

Language Learning, linguistics & SLA

1913
Birth of sequential
individualized teaching

1925
John B. Watson, founder of
behavioralism

1899
Pavlov discovers certain laws
of the training in the animals

1924
First machine
language program.
Drum tutor

Audio Visual & Print Media

1755
Dr Johnson's A Dictionary of
the English Language

1768
Encyclopaedia Britannica

1884
Eastman:
Roll Film

1702
Daily Courant: London's 1st
Daily Newspaper

1764
Fournier
point system

1809
First American
educational patent

1877
Invention of
sound recorder
(Thomas Edison)

Telecommunications & Computers

1835
Babbage:
Analytic Engine

1874
Telegraphic system using
perforated strips (Baudot)

1833
Babbage:
Difference Engine

1868
Sholes: Typewriter

1876
Bell: Telephone

Krashen, Learning and Aquisition

In the past, methods have tended to be specialized and exclusive in technique, banishing what preceded to the scrapheap of failed technology. However it is now generally believed that successful language learning involves competence in a large number of complex and integrated skills and that successful language teaching is more likely to result from using a combination of several different language teaching approaches as no single approach can be said to be entirely successful on its own.

There are now many SLA researchers involved in CALL, so many that one of the most vibrant Special Interest Groups of CALICO is **SLAT (Second Language Acquisition and Technology)**. Among prominent names in this branch of CALL are **Nina Garrett** and **Carol Chapelle**. Prof. Chapelle's LLT article "**CALL in the year 2000, in search of research paradigms**" (**1997**) , very aptly summarizes the relationship between SLA and CALL and is probably responsible for the fact that Carol will be a Keynote Speaker at 3 CALL conferences in Europe this year, including the closing keynote at EUROCALL 2000, where a "popular" version of this Exhibition will be shown for the second time. There is also a symbiotic relationship between rigorous research in SLA and CALL, and indeed CALL offers SLA researchers the possibility of new challenges in the examination of language learning as a whole and, in particular, under conditions of partial or total autonomy. We are probably not far from the time when a new SLA approach or theory will be formulated which fully encompasses digital language learning.

Krashen, Learning and Aquisition

Recent years (**1991**), however, have witnessed a return to form with **Nunan**, and given the growing emphasis on needs analysis, individual learner's characteristics and paths, learning styles, and generally learner-centered methods, a balance between function and form is being achieved. This is important to CALL which was often criticized for advocating the worst excesses of behaviorism or for an emphasis largely on form.

We are told now that individual students should be at the center of any curriculum, not an add-on to a pre-determined set of goals. Learners must be able to make mistakes to learn to use a language effectively and students should be "provided with a safe secure environment in which making mistakes, taking risks or simply not knowing are accepted as natural aspects of learning" (Ridley, **1990**).

Humanistic approaches like Gattegno's Silent Way and **Lozanov's Suggestopaedia** subordinate teaching to learning and, like Asher's Total Physical Response method, they share this idea that stress inhibits language learning and that errors are productive.

It is also important to realize, as Selinker (**1972**) points out, that students develop their own "interlanguage" and, if this is the case, then it would seem to follow that students learn best when their learning is customized as far as possible to their needs.

David Nunan

Krashen, Learning and Aquisition

The Situational Approach attempted to predict, grade and teach language in the framework of situational contexts.

The Natural Approach was characterized by its primary concern with meaning (**Richards and Rogers - 1992**). Theoretically based on the second language acquisition approach developed by perhaps the most well-known researcher in Second Language Acquisition today, **Krashen**, it is very similar to Communicative Language Teaching. Stephen D. Krashen's SLA theory first appeared in **1982** and had a great deal of appeal in the language learning establishment. Krashen has since published around 100 books and his approach has four separate components. He and others are also responsible for the useful distinction between Learning (a conscious and explicit process) as opposed to **Acquisition** (a sub-conscious, automatic and implicit process).

The most important element of Krashen's theory is the stress put on the availability of comprehensible input. It further devalues the importance of grammar with the teacher's role being to "generate a constant flow of language input in context which enables the learner to comprehend the message".

The Whole Language approach was based on the idea that "babies acquire language through actually using it, not through practising its separate parts".

Stephen D. Krashen

Approaches to Second/Foreign Language Teaching

A year later, Asher's Total Physical Response approach was born **(1977)**. What all these approaches have in common is the emphasis which they place on learner involvement in functional and transactional situations. More influential publications followed which sealed the prevalence of the "communicative approach".
They included:

1978 Teaching Language as Communication (Widdowson) Communicative Syllabus Design (Munby)

1979 The Communicative Approach to Language Teaching (Brumfit & Johnson)

Simultaneously, a number of other approaches appeared such as the Direct Method which allowed students to perceive meaning directly through the target language by-passing translation. Grammar was learned inductively rather than taught explicitly. Materials used in learning needed to be authentic and meaning negotiated from context. Over the last few decades, linguists and pedagogues have developed language teaching methods which focus primarily on teaching communicative competence: the ability to communicate effectively with other speakers in the real world taking into account the context of the conversation.

Approaches to Second/Foreign Language Teaching

Audiolingualism peaked in the 1960s. In **1961**, the first language laboratory was established in an educational institution in the UK. The Audiolingual Approach based on behaviorism and structuralism emphasized the spoken rather than the written form and presented the learner with a carefully graded series of "conditioning and habit-forming modes of learning".

In **1963**, C. Gastagno published "The silent way".

In **1966**, the TESOL association was formed. In **1968**, Rivers published "Teaching foreign language skills". The book blended prevalent audiolingual theory with a new "cognitive" approach which was beginning to assert itself.

It was at the beginning of the 70s that the "communicative approach was born". This is generally attributed to Hymes (1972) who defined "communicative competence" as opposed to Chomskyan "linguistic competence", although Wilkins in **1971** also proposed a functional and communicative approach to language learning. Wilkins was also responsible for "Notional Syllabuses" some five years later **(1976)**.

A Language Library

Approaches to Second/Foreign Language Teaching

The aims of language learning have changed over time. Whereas in the past, learning a language was seen as an intellectual challenge (Latin, the traditional Grammar Translation Approach), in the present climate, there is a greater emphasis on learning language as a practical skill and/or as a tool for other purposes (business for instance). At the beginning of the twentieth century, as structuralism was becoming defined, the first machine designed to teach language was invented.

In **1924**, the Drum Tutor was born. Around the time Claude Shannon **(1937)** was formulating his Information Theory which was to have some influence on structural linguistics, the term "Applied Linguistics" was used for the first time, in the USA. Skinner's book "The Science of Learning and the Art of Teaching" was published in **1954**, 3 years before Lado's influential book "Applied Linguistics for Language Teachers" **(1957)**.

Contrary to what is generally known, the founder of Behaviorism was not Skinner but John B. Watson in **1925**. It is, however, Skinner's application of behaviorism to learning which was to have a lasting influence on the use of machines in education and the vogue for Audio Language Laboratories. As stated in the previous poster, **1957** was also the year of the publication of "Syntactic Structures" by Noam Chomsky.

John B. Watson
Claude Shannon

The Development of Linguistics

There is little doubt that work in many of the branches of linguistics, a description of which would exceed this Exhibition by a ratio of 10 to 1 (400 posters!), has influenced CALL, notably applied linguistics and didactics, psycholinguistics and Second Language Acquisition, computational linguistics and formal linguistics. A good approachable summary of linguistics in general is found on the impressive web site YourDictionary.com to which we direct the reader for much more detailed info. It is fair to say perhaps that psychology now has a major influence on formal linguistic investigation, which has in fact turned round the symbiotic relationship between the two sciences.

At the beginning of the century, Linguistics tended to lend much of its methodology to Psychology, now the rigor of psycholinguistic investigations impacts well both on Linguistics as a whole and CALL research. The eternal debate between innateness (Chomsky, Pinker) and behavorial reinforcement popularized by Skinner remains, and it is doubtful that Neurolinguistics or single variable isolation will resolve it in the foreseeable future.

Steven Pinker

The Development of Linguistics

The French representative of the Prague School was the famous André Martinet who sadly passed away last year after doing a lot of good to the cause of language learning in modern Europe. One of the American structuralists, Kenneth Pike, a well-known anthropolinguist, also wrote in the first serious journal in CALL, the celebrated SYSTEM (1979, Vol7, No 2).

Pike receives a tribute on the SIL (Summer Institute of Linguistics) Web Site. Timelines on the evolution on linguistics are surprisingly few and far between, at least on the web, ranging from those which go right back to 3000 years BC such as the English Language Timeline kept at Brigham Young University to one covering the birth and growth of Transformational Generative Syntax and its derivatives. Post Chomkyan linguistics showed even greater diversity with a new

linguistic theory springing up at near weekly frequency. After 7 years of study of linguistics, first in France in the European tradition, then in London, in the Anglo-American tradition, I had personally been exposed to more than 10 such speculative frameworks of investigation, including the lesser known stratificational linguistics and the London-based Daughter Dependency Grammar (Hudson).

André Martinet

Noam Chomsky

Kenneth Pike

The Development of Linguistics

Unlike CALL, linguistics, the science of language, does have a genuine prehistory as it goes back at least to Greek philosophers such as Plato, Aristotle and Socrates, so it is hardly surprising that early CALL projects adopted their names. Modern linguistics, however, has its roots in 19th century philology, a word which subsists in languages such as Spanish to be virtually synonimous

with linguistics. Philology in the narrow sense concerned itself with the study of the origin of language and its evolution over time, especially since the discovery of Indo European. Variations on philology were also found in the terms historical linguistics or diachronic linguistics as described by the father of structuralism, Swiss linguist Ferdinand de Saussure who was among those who opposed it to synchonic linguistics, the study of

the contemporary use of language. The suffix -ics implies scientific rigor and indeed, linguistics has grown to become very rigorous and a parent or model science within the humanities. Following hard on the heels of De Saussure, linguistics developed between the two world wars a European and an Anglo-American tradition, building increasingly closer links with a number of other "human" or social

sciences such as Anthropology (Levy-Strauss), Psychology (post Freud and Jung) to name just a couple. Perhaps the most prominent pre-war European school of linguistics was the Prague School still going strong and alive on the web.

Ferdinand De Saussare

Index

The 80s : The Age of Enlightenment

Machine of the Year

By the millions, it is beeping its way into offices, schools and homes

By Otto Friedrich. Reported by Michael Mortiz/San Francisco, J. Madeleine Nash/Chicago and Peter Stoler/New York

There are some occasions, though, when the most significant force in a year's news is not a single individual but a process, and a widespread recognition by a whole society that this process is changing the course of all other processes. That is why, after weighing the ebb and flow of events around the world, TIME has decided that 1982 is the year of the computer. It would have been possible to single out as Man of the Year one of the engineers or entrepreneurs who masterminded this technological revolution, but no one person has clearly dominated those turbulent events. More important, such a selection would obscure the main point. TIME's Man of the Year for 1982, the greatest influence for good or evil, is not a man at all. It is a machine: the computer.

The first fully electronic digital computer built in the U.S. dates back only to the end of World War II. Created at the University of Pennsylvania. ENIAC weighed 30 tons and contained 18,000 vacuum tubes, which failed at an average of one every seven minutes. The arrival of the transistor and miniaturized circuit in the 1950s made it possible to reduce a room-size computer to a silicon chip the size of a pea. And prices kept dropping. In contrast to the $487,000 paid for ENIAC, a top IBM personal computer today costs about $4,000, and some discounters offer a basic Timex-Sinclair 1000 for $77.95. One computer expert illustrates the trend by estimating that if the automobile business had developed like the computer business, a Rolls-Royce would now cost $2.75 and run 3 million miles on a gallon of gas.

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The Panel of Experts

The History of Computer Assisted Language Learning Web Exhibition

history of CALL

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