Preface

This document is based on replies to a questionnaire sent to all teaching and research staff in the School of Cognitive and Computing Sciences. Now in its fifth edition, it is intended to provide an overview of

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David Watson . . . . . 70 :: M356999.92(:)-2(:)-7999.27(:)-6999.92(:)-6999.92(:)-6999.92(:)-6999.92(:)-6999.92(:)-7999.27(:)]TJ/R1010.95Tf100

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Max Wheeler
Nicola Woods

Virtual Reality:

Yvonne Rogers

Name: F. K. Aldrich BSc MSc DPhil
Subject Group: Psychology
Email address: francesa@cogs.susx.ac.uk
Position: Research Fellow

Recent Publications:

1. Rogers, Y & Aldrich, F. (1996). In search of clickable Dons: learning about HCI through interacting with Norman's CD-ROM. *Sigchi Bulletin*, 28(3), 44–47.

Name: Theodoros N. Arvanitis RT DPhil

Subject Group: CSAI

Email address: theoa@cogs.susx.ac.uk

Position: Lecturer in Software Design

Recent Publications:

1. Arvanitis, T. N., & Harrison, P. (1996). Visualising the topography of radiological information systems (RIS). *British Journal of Radiology (Supplement)* 69, 302.

2. Arvanitis, T. N., Papadopoulos, N., Baldock, C., & Watson, D. (1996). Interactive intranet tutoring for medical image processing. Book of Abstracts, *MEDNET 96, European Congress of the Internet in Medicine*, (CSRP 429), 28.

3. Farias, A., & Arvanitis, T. N. (1996). Building software agents for training: a case study on radiotherapy treatment planning. Anjaneyulu, K. S. R., Sasikumar, M. & Ramani, S. (eds.), *Knowledge Based Computer Systems: Research and Applications*, Narosa Publishing, 127–138.

Research Interests:

The main research interests can be identified by the following three areas:

1. Medical Imaging and Visualisation
2. Medical Informatics and the Internet
3. Software and Interactive Systems Design

Software and Interactive Systems Design: In this area I have developed interests in software engineering education and in the development of agent software to support interactive systems. One of the most important projects is the design Interface Agents for Interactive Learning Environments in Medicine, and in particular in the field of Radiotherapy Treatment Planning.

Name: Margaret A. Boden MA PhD ScD FBA
Subject Group: Philosophy
Email address: maggieb@cogs.susx.ac.uk
Position: Professor of Philosophy and Psychology

Recent Publications:

1. Boden, M. A. (ed.) (1996). *The Philosophy of Artificial Life.* Oxford University Press.
2. Boden, M. A. (1994). *Piaget*. 2nd edition, expanded. London: Harper Collins.
3. Boden, M. A. (ed.) (1996). *Dimensions of Creativity*. MIT Press.

Research Interests:

Name: G. E. Butterworth BSc MSc DPhil FBPS C.Psychol.

Subject Group: Psychology

Email address: G.Butterworth@sussex.ac.uk

Position: Professor of Psychology

Recent Publications:

1. Butterworth, G. E., & Harris, M. (1994). *Principles of Developmental Psychology.* Psychology Press, Hove.
2. Butterworth, G. E., & Morissette, P. (1996). Onset of pointing and the acquisition of language in infancy. *Journal of Reproductive and Infant Psychology*, 14, 219–231.
3. Franco, F., & Butterworth, G. E. (1996). Pointing and social awareness: declaring and requesting in the second year of life. *Journal of Child Language*, 23, 307–336.

Research Grants Currently Held:

I have just been awarded a collaborative research grant with Dr Michael Siegal of the University of Queensland, Australia. It begins in 1997, Grant Australian Research Council. Culture, cognitive development and children's concepts of astronomy and geography. ($13,340 with Dr M.Siegal, University of Queensland).

Research Interests:

Pointing in babies and how it relates to the development of speech. This is my main research field and although I am "between grants" on this topic at the moment

Biological motion analysis.

Name: Lynne Cahill BA MA DPhil

Subject Group: CSAI/Linguistics

Email address: lynneca@cogs.susx.ac.uk

Position: Research Fellow in Computational Linguistics

Recent Publications:

1. Cahill, L. J., & Gazdar, G. (1997). The inflectional phonology of German adjectives, determiners and pronouns. *Linguistics*, 35(2).
2. Cahill, L. J. (1993). Morphonology in the lexicon. *EACL–94*, Utrecht, 87–96.
3. Gaizauskas, R., Evans, R., Cahill, L. J., Walker, J., Richardson, J., & Dixon, A. (1995). POETIC: a system for gathering and disseminating traffic information. *Journal of Natural Language Engineering*, 4.

Research Grants Currently Held:

- "Multilingual Lexical Knowledge Representation", ESRC, 3 years (with Gerald Gazdar).

Research Interests:

My main interest is in (linguistic) morphology and the lexicon, although I have worked in recent years in other areas such as parsing ill-formed input and parsing for information extraction.

For four years I worked on the POETIC project, developing a system which interprets police reports of traffic incidents, builds an internal model of the incident and broadcasts automatically to motorists if necessary. My work on the project involved the Natural Language Understanding front end, and I was responsible for the reimplementation of the entire lexicon and the development of a lexicon structure which permitted relatively easy adaptation. A new lexicon for a different police siit pasasrsaptatut

language, DATR, developed by Gerald Gazdar and Roger Evans, and I have worked with both on various lexicon work.

I have a great interest in the representation of morphologically subregular forms particularly in English and other Germanic languages, and together with Gerald Gazd

Name: Catherine Cameron MSc (Clin Psychology)
Subject Group: Psychology
Email address: cathc@cogs.susx.ac.uk
Position: Lecturer in Psychology

Recent Publications:

1. Cameron, C. M. (in press). Information processing approaches to phobias. In Davey, G. C. L. (ed.), *Phobias: A Handbook of Theory, Research & Treatment*. Chichester.
2. Power, M. J., Cameron, C. M., & Dalgleish, T. I. (1996). Emotional priming in clinically depressed subjects. *Journal of Affective D*θ*14(f)-248.*β*6(T)771(y)49.1*θ*14(r)-5.529(e)ees)cM*

1. Grammar pre-compilation and parsing algorithms for wide-coverage unification-based NL grammars that perform well in practice: worst-case complexity analysis appears not to be a good predictor of practical performance with such grammars.

2. Probabilistic approaches to syntactic disambiguation, using a standard LR parse table construction technique to allow rule application to be differentially conditioned depending on context.

3. Robust analysis of unrestricted English text to produce 'shallow' phrasal analyses of sentences, taking advantage of a linguistic analysis of the use of punctuation and recent advances in lexical tagging technology.

4. Working towards the integration of statistical processing with lexicalist grammar formalisms, using a variant of Lexical Tree-Adjoining Grammar.

Name: Ron Chrisley BS (Stanford) DPhil (Oxon)
Subject Group: Philosophy
Email address: ronc@cogs.susx.ac.uk
Position: Lecturer in Philosophy

Recent Publications:

1. Chrisley, R. (1995). Taking embodiment seriously: non-conceptual content and robotics. In Ford, K., Glymour, C., & Hayes, P. (eds.), *Android Epistemology*. Cambridge: AAAI/MIT Press, 141–166.
2. Chrisley, R. (1994). Why everything doesn't realize every computation. *Minds & Machines*, 4(4), 403–420.
3. Chrisley, R. (1993). Connectionism, cognitive maps, and the development of objectivity. *Artificial Intelligence Review*, 7, 329–354.

Research Interests:

My research focuses on ways of representing the world that are less objective than we usually think adult human cognition is. For example, I am interested in how anima

Artificial life: Is there a unified philosophy behind Alife research? Can Alife research suggest new ways

Name: Dave Cliff BSc MA DPhil
Subject Group: CSAI
Email address: davec@cogs.susx.ac.uk
Position: Lecturer in Computer Science and Artificial Intelligence

Recent Publications:

1. Cliff, D., Harvey, I., & Husbands, P. (1993). Exploration

main reason is that the computational neuroethology approach requires a continuous data-path through the synthetic 'neural' network from sensory input to motor output, in order that the semantics of the system are grounded in the environment. Currently available computer power only allows for relatively simple (ie, insect-like) sensory-to-motor networks to be simulated.

The practical application of this work involves 'neural network' simulation for issues arising in ***animate vision*** with ***nonuniform sampling***. Animate vision is a recent paradigm in computer vision. Animate vision systems have dynamic control of the image-capture device (cameras or eyes): animate vision systems are capable of 'looking around'. Besides acknowledging the behavioural contexts of vision, a capability to look around offers a number of computational advantages. These advantages are further supplemented by the fact that animate vision systems can profitably employ spatially variant ("foveal") sampling, where the imaging resolution varies across the image surface. Such sampling is found in many predatory animals (including humans), where the retina has a small localised high-acuity region known as a ***fovea***. Foveal vision offers additional computational benefits (the details of which depend on the nature of the nonuniformities) when linked to an animate vision system.

Animate foveal vision is found in insects. The visual behaviour of the male ***Syritta pipiens*** hoverfly is a good example, being remarkably close (in functional terms) to corresponding behaviour in humans. I've done practical work involving a simulation of an artificial insect, inspired by male ***Syritta***, in a complete environment. The simulation was based on prior work in the biology literature, and resulted (amongst other things) in the re-evaluation of the available data. It also demonstrated that sophisticated visually guided behaviours can be generated without reliance on internal representations of the type traditionally employed in the AI literature.

More recently, I've been working with Phil Husbands and Inman Harvey (COGS, Sussex) on using artificial evolution techniques to develop neural-network 'controller' architectures for simple visually guided robots: the visual sensing morphology is under genetic control, and we are working towards the evolution of animate foveal vision systems. This work is in its early stages, but has already been remarkably successful. I am also working with Geoffrey Miller (COGS, Sussex until 1 Jan 95; Psychology, Nottingham thereafter) on the co-evolution of visually guided pursuit-evasion strategies in simulated robots; with Paul Benjamin (Biology, Sussex) on simulating neurona

Name: Richard A. Coates MA PhD FSA

Subject Group: Linguistics

Email address: richardc@cogs.susx.ac.uk

Position: Professor of Linguistics

Recent Publications:

1. Coates, R. (1993). *Hampshire place-names.* Ensign.
2. Coates, R. (1994). Morphophonemics. In Asher, R. E. (ed.), *Encyclopedia of Language and Linguistics*, Pergamon, 2602–2612.
3. Coates, R. (1995). The place-name Owermoigne, Dorset, England. *Indogermanische Forschungen*, 100, 244–51.

Research Interests:

My main interest is in historical linguistics in general and the accountability of synchronic theory construction to the facts of language change. (Hence my attachment, for the latter, to Royal Skousen's *Analogical Modeling of Language* (Kluever 1989)). My work is mainly etymological, and I have a special interest in the origin and history of place and personal names.

Many of my publications deal with Old English, but I have also covered problems in Scots Gaelic, Welsh, French, ancient Scandinavian and some of the older languages of Europe. This kind of work has led me to be interested in the theoretical nature of proper names, and I have recently evolved an approach which is sensitive to the historical notion of ***becoming-a-name***, which is problematic if names are merely a set of indicators of unique referents, listed in a kind of mental dictionary or ***onomasticon***. How do they get there? In my view, what we are thinking of as names ***par excellence*** are one end of a typological continuum of referring expressions, distinguished by lack of intensional content. ***Becoming-a-name*** is therefore the process of losing intensional content; it is a pragmatic notion which, for speakers, on given occasions of use, may refer without commitment to any intensional content the words in a referring expression may have. It is a process internal to the speaker; expressions are more namelike the more frequently a speaker does not commit herself to the sense of the transparent etymology of a referring expression. (If you can't see why I believe all this see the first 10 pages or so of my CSRP 175.) On the basis of this, I can give a principled answer to the old conundrum about whether non-denotational expressions like ***the zodiac*** are proper names or not, ***viz.*** "maybe"!

I have been developing interest in morphology, and in semantic aspects of the relationship between related word-forms. For the rest, my work is normal science (in Kuhn's sense) within historical linguistics; I have emphasised here the parts that have most potential contacts with the cognitive sciences.

Name: Graham C. L. Davey BA PhD

Subject Group: Psychology

Email address: grahamda@cogs.susx.ac.uk

Position: Professor of Psychology

Recent Publications:

1. Davey, G. C. L. (1995). Preparedness and phobias: specific evolved associations or a generalized expectancy bias? *Behavioral & Brain Sciences*, 18, 289–297.
2. McDonald, A. S., & Davey, G. C. L. (1996). Psychiatric disorders and accidental injury. *Clinical Psychology Review*, 16, 105–127.
3. Davey G. C. L., Tallis, F., & Capuzzo, N. (1996). Beliefs about the consequences of worrying. *Cognitive Therapy & Research*, 20, 499-518.

Research Grants:

- ESRC (R000235939) An appraisal of evaluative conditioning. £93,474, 1995-8
- The Wellcome Trust (044740/Z/95/Z) UCS rehearsal and the enhancement of phobic responding. £94,856, 1995-8.

Research Interests:

The development of contemporary models of human conditioning and their application to anxiety disorders

This project is concerned with the development of a two-component model of human conditioning which is applicable to an understanding of the aetiology, mainten

Name: Benedict du Boulay BSc PGCE PhD

Subject Group: CSAI

Email address: bend@cogs.susx.ac.uk

Position: Professor of Artificial Intelligence
Dean, School of Cognitive and Computing Sciences

Recent Publications:

1. Lemut, E., du Boulay, J. B. H., & Dettori, G. (eds.) (1993). *Cognitive Models and Intelligent Environments for Learning Programming*, NATO ASI Series (Series F: Computer and Systems Sciences), Vol. 111, Springer-Verlag.

2. Teather, B. A., Sharples, M., Jeffery, N., Teather, D., du Boulay, B., Direne, A. I., & du Boulay, G. H. (1994). Statistical modelling and structured image description for intelligent tutoring in MR imaging of the head. *Rivista di Neuroradiologia*, 7, 29–35.

3. del Soldato, T., & du Boulay, B. (1996). Implementation of motivational tactics in tutoring systems. *Journal of Artificial Intelligence in Education*, 6(4), 337–378.

Research Grants Currently Held:

ESRC Cognitive Engineering Programme. "A Cognitive Engineering Approach to the Design of of Computer-Based Training in Radiology". Two years, about 90K (co-applicant with Dr M. Sharples, Prof. D. Teather (De Montfort), Prof. G. du Boulay (Institute of Neurology, London).

Research Interests:

My main research interest lies in the application of A.I. techniques in education. For some time I have been interested in the problems faced by novices in learning to program. At first this interest focused on Logo but more recently I have looked at Pascal and at Prolog. Some of this work has been empirical and involved studying novices' m7hih4.64311(t)-6.93181221686(o)-4.1112s426(L).93181(g)-4.1-6.(e)5.64311

tracing the changing pattern of variable instantiation and data values than is usual. Against the fashion this is a textual rather than a graphical tracer.

Recent work concentrated on novices learning Prolog and specifically the design of tracing tools to help them. Chris Taylor, Mukesh Patel and I ran experiments to look at differences in user performance between textual and graphical tracers and showed that the textual tracers did as well as the graphical. We also designed a tracer notation, TTT, which combines the best of both worlds.

I have also worked in the area of Intelligent Tutoring Systems, producing (with Bill Imlah) a system for French that influenced a line of development at Exeter under Yazdani and others. I worked with Mike Sharples to produce the underlying knowledge representation for a tutor to teach Radiology and with Darina Dicheva produced a tutor for a logical game based on attribute blocks. This latter improved on

Name: Steve Easterbrook BSc PhD

Subject Group: CSAI

Email address: steveea@cogs.susx.ac.uk

Position: Lecturer in Computer Science and Artificial Intelligence

Recent Publications:

1. Easterbrook, S. M., & Nuseibeh, B. A. (1996). Using viewpoints for inconsistency management. *Software Engineering Journal*, 11(1).

2. Easterbrook, S. M., & Callahan, J. (1997). Formal methods for V&V of partial specifications: an experience report. *Proceedings, Third IEEE International Symposium on Requirements Engineering (RE'97)*, Annapolis, Maryland.

3. Easterbrook, S. M., & Callahan, J. (1996). Independent validation of specifications: a coordination headache. *Proceedings, IEEE Fifth Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE'96) – Workshop on Requirements Engineering in and for Networked Enterprises*, Stanford, 232–237.

Research Interests:

My main research interest is the development and representation of shared understanding in the design process. My research is primarily concerned with the softwa

by participants in the design process. By externalising these models, participants share them with one another, and develop an understanding of each other's perspectives. This provides a basis for communication between disparate communities, while reducing the chance of misunderstandings. It also allows

such as functions over some data space and a meaning is associated with a process in a manner completely

Name: Graham Hole BSc PhD
Subject Group: Psychology

Name: Richard Howarth BSc PhD

Subject Group: CSAI

Email address: richardh@cogs.susx.ac.uk

Position: Research Fellow

Recent Publications:

1. Howarth, R. J., & Buxton, H. (1993). Selective attention in dynamic vision. *Proceedings of the Thirteenth IJCAI Conference*, 1579–1584.

2. Howarth, R. J. (1995). Interpreting a dynamic and uncertain world: high-level vision. *Artificial Intelligence Review*, 9(1), 37–63.

3. Howarth, R. J., & Buxton, H. (1996). Visual surveillance monitoring and watching. *Proceedings of the Fourth European Conference on Computer Vision*, Springer-Verlag, Vol. 2, 321–334.

Research Interests:

Most of my research interests are related to computer vision, although I'm mainly interested in how to use the results from computer vision, for example, the recognition of an object in a scene, to build a conceptual description of each object's behaviour in the scene. This is part of something we can call "high-level vision" which combines AI techniques with the perceptual processing. Current work has used the movement of road-traffic at a roundabout which simplifies some of the visual processing because most of the moving scene objects have rigid bodies. This includes modelling the environment using spatial representation and reasoning, often using analogical models to index prior knowledge, as well as reasoning about the changes that take place over time. In addition to the behaviour of the various moving objects in the scene, it is also useful to consider the behaviour of the observer watching the scene. This "active vision" approach broadens my field of interest further to include the consideration of things like how these various behaviours might be learnt, how the visual task of the observer can affect interpretation, how the visual tasks are situated in the dynamic environment, and how this top-down control affects system design.

Name: Phil Husbands BSc MSc PhD

Subject Group: CSAI

Email address: philh@cogs.susx.ac.uk

Position: Lecturer in Artificial Intelligence

Recent Publications:

1. Husbands, P., Harvey, I., & Cliff, D. (1995). Circle in the round: state space attractors for evolved visually guided robots. *Robotics and Autonomous Systems*, 15(1–2), 83–106.

2. McIlhagga, M., Husbands, P., & Ives, R. (1996). A comparison of search techniques on a wing-box optimisation problem. In Voigt, H., Ebeling, W., Rechenberg, I., & Schwefel, H.-P. (eds.), *Proceedings of PPSN IV*, Springer Verlag, LNCS Vol. 1141, 614–623.

3. Harvey, I., Husbands, P., & Cliff, D. (1994). Seeing the light: artificial evolution, real vision. In Cliff, D., Husbands, P., Meyer, J.-A., & Wilson, S. (eds.), *Proc. 3rd Int. Conf. on Simulation of Adaptive Behavior*, MIT Press, 392–401.

Name: Alan Jeffrey BSc DPhil

Subject Group: CSAI

Email address: alanje@cogs.susx.ac.uk

Position: Lecturer in Computer Science

Recent Publications:

1. Aceto, L., & Jeffrey, A. (1995). A complete axiomatization of timed bisimulation for a class of timed regular behaviours. *Theoretical Computer Science*, 152(2): 251–268.

2. Jeffrey, A. (1994). A fully abstract semantics for concurrent graph reduction. In *Proc. LICS 94*.

3. Jeffrey, A. (1993). A chemical abstract machine for graph reduction. In *Proc. MFPS 93*, Springer-Verlag LNCS 802.

Research Interests:

I am employed on SERC project GR/H 16537 to investigate formal models of concurrent systems. In particular, I am investigating links between theories of concurrency and functional programming. This includes concurrent models of graph reduction, type theories for concurrent languages, and the interaction between the semantics of data and the semantics of concurrent processes.

I am task leader of the Processes and Datatypes task of the CONCUR2 Esprit Basic Research Action.

I have an active interest in electronic typesetting, especially Lamport's LaTeX document markup language. I am a member of the LaTeX3 project team, and one of the authors of LaTeX 2ε.

Name: Bruce F. Katz BA PhD
Subject Group: CSAI

Name: Bill R. Keller BSc MA DPhil

Subject Group: CSAI

Email address: billk@cogs.susx.ac.uk

Position: Lecturer in Artificial Intelligence

Recent Publications:

1. Keller, B. (1996). An evaluation semantics for DATR theories. In *Proceedings of COLING96*, 646–651.
2. Keller, B. (1995). DATR theories and DATR models. In *Proceedings of the 33rd Annual Meeting of the Association for Computational Linguistics*, 55–62.
3. Keller, B., & Weir, D. (1995). A tractable extension of linear indexed grammars. In *Proceedings of the 7th Conference of the European Chapter of the Association for Computational Linguistics*, 75–82.

Research Interests:

My major area of research is natural language and computational linguistics, a topic which has interested me since my undergraduate days. Early work concerned logical theories of natural language semantics as well as parsing with Generalized Phrase Structure Grammar. Recent and current research interests include the following:

- **Semantics of DATR:**

  DATR is a knowledge representation language developed by Ge

  ain7t524n a knthl82(i)-6.93181h(,)-166.453(a)-21

- **Tractable Unification-Based Grammar Formalisms:**

  The constraint- and unification-based grammar formalisms developed in computational linguistics tend to be very powerful mathematically (as powerful as general-purpose programming languages). In work with David Weir I have developed a formalism that is more powerful than Linear Indexed Grammar (LIG), but which can also be processed in polynomial time using techniques that are similar to those developed for LIG by Vijay-Shanker and Weir. The formalism, referred to as 'partially linear PATR' manipulates feature structures rather than stacks (see Keller and Weir, 1995)

- **Feature Logics:**

  A number of researchers in computational linguistics have investigated the properties of logical languages (so-called *feature logics* for expressing constraints on linguistic objects. In previous work I have studied a variant of one of these logics — Regular Rounds-Kasper logic — which incorporates the device of *functional uncertainty* due to Kaplan and Zaenen. For full details, see: Keller (1994) "Feature Logics, Infinitary Descriptions and Grammar", CSLI Lecture Notes No.44.

Name: Martin P. Langham BA

Subject Group: Psychology

Email address: martinl@cogs.susx.ac.uk

Position: Research Fellow

Recent Publications:

1. Hole, G. J., Tyrrell, L., & Langham, M. (1996). Some factors affecting motorcyclists' conspicuity. *Ergonomics*, 39(7), 946–965.

Research Interests:

Motorcycle accidents tend to involve other road users who often claim not to have seen them in time to avoid a collision. The tradition explanation for such accidents is that the motorcyclist is relatively inconspicuous compared with other road users. Therefore the way to reduced motorcycle accidents is to make them more conspicuous. However, database studies and those accidents involving highly conspicuous police motorcycles tend to question if this hypothesis is the only explanation available. My research is funded by the universities own research development fund. My aim is to offer alternative explanations for these accidents from models of human visual search and selective attention. My current work involves the examination of how a drivers search skills change with experienced.

The current project is to examine how a traffic police officers change the way they search for vehicles at junctions during their training. Measurements are made during simple detection tasks. The recording of driver eyemovemnts and questionnaires assessing the change in hazard perception are the basis of the study. Preliminary results indicated sraae jtt1137(e)-235.452(i)-89(a)5.64534(c)5.64537.378(d)-4.10914(r110914(a)5.

Name: Rudi Lutz BSc MSc PhD

Subject Group: CSAI

Email address: rudil@cogs.susx.ac.uk

Position: Lecturer in Artificial Intelligence

Recent Publications:

1. Keller, W., & Lutz, R. K. (1996). Learning stochastic context-free grammars from corpora using a genetic algorithm. *CSRP-444*, U. of Sussex. Accepted for presentation at ICANNGA-97.

2. Keller, W., & Lutz, R. K. (1996). A new crossover operator for rapid function optimisation using a genetic algorithm. *CSRP-446*, U. of Sussex.

3. Lutz, R. K. (1996). Flowgraph parsing. In Bunt, H., & Tomita, M. (eds.) *Recent Advances in Parsing Technology*, Kluwer Academic Publishers, 359-383.

Research Interests:

Generally speaking, my main research interest is in the area of Genetic Algorithms. Currently, the specific topic I am working on is on the application of Genetic Algorithms to the problem of the inductive inference of a stochastic context free grammar for a language from a corpus of examples of sentences in that language. This work is joint research with Bill Keller, and we have had some success so far in learning grammars for some rather simple "toy" languages e.g. 2 and 3 symbol palindromes. Our ultimate aim would be to take one of the rather large corpora of natural language that now exist and try to learn a grammar for (say) English. However, our current techniques have severe scaling problems, and we are currently working on trying to address these.

A spin-off from this work has been the development of a new crossover operator (which we call *randomised and/or crossover*) which seems remarkably successful at performing function optimisation across a fairly wide range of problems. I intend to continue investigating this crossover operator (and variants) with the aim of achieving still better performanc

Name: D. F. McCarthy BSc MSc

Subject Group: CSAI

Email address: dianam@cogs.susx.ac.uk

Position: Research Fellow

Research Interests:

My main research interest is the automatic acquisition of lexical information. I am specifically interested in acquisition of verbal argument structure and preferences, and also relationships at the syntax-lexical semantics interface.

I am currently working with John Carroll on the EU funded project SPARKLE (Shallow PARsing and Knowledge extraction for Language Engineering). The starting point for my work uses the shallow parses and subcategorization frames produced by my colleagues. My work concerns modelling semantic type and acquisition of selectional preferences for the lexicon.

In order to provide a lexical semantic representation for argument heads I am looking into use of man-made resources such as WordNet. Alternatively, I am considering class hierarchies that can be derived

Name: C. A. Morris BA MBA MSc MSc

Subject Group: CSAI

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Position: Research Fellow

Recent Publications:

1. The Brunswick System: A Town Architectural Record. IT Journal, International Systems Research Institute 1996 RMG Publishing. ISSN 1364-7598.

Research Interests:

My interest lies in the development of systems that could assist, or perhaps mimic, the work of designers and material specifiers working in the building materials supply and construction industries. In particular, I am interested in the use of hypermedia to locate and incorporate objects into designs as is currently being undertaken using catalogues containing thousands of such materials as produced by numerous suppliers. As an example, one answer might be to show design precedents showing the use of such materials in-situ, perhaps allowing the designer to browse around inside office blocks or other constructions. Finding objects in this way might call for new ways of searching and browsing through semi-formal data structures with hybrid search tools.

Having located an objects of interest, or at least something close, it has to be incorporated into a part-completed, still fluid design. Design is an iterative process, with each new object added forcing a reappraisal of much that has already been incorporated into the design. Here I am particularly interested in ways in which the design itself might be modelled, how the objects might interact with each other and .7610Td[(e)5.64311(c)-289.056(w)6.93125(s)-5.5218(t)-6.93181(c)5.643966(o)39.7403id ant5.64311(t)-6.93966(o)-2

Name: Nicolas Nicolov BSc MSc
Subject Group: Linguistics
Email address: nicolas@cogs.susx.ac.uk
Position: Research Fellow

Recent Publications:

1. Nicolov, N., Mellish, C., & Ritchie, G. (1996). Approximate generation from non-hierarchical representations. *Proceedings of the 8th International Workshop on Natural La*

In a project with Narcís Bassols and Chris Mellish I have also looked at the problem of assigning stress patterns to Catalan words. Unlike most systems which are rule-based, we have investigated a nearest-neighbour algorithm which computes a similarity measure between an input word and words from a training set. The words of the training set that are closest to the input word suggest the stress pattern for it. The main methodology is similar to that employed by case-based reasononing (CBR) systems.

I am also interested in:

- conceptual graphs and how they can be used to represent natural language semantics; also their use in applied systems;
- grammar formalisms and representations;
- multilingual aspects of NLP (in particular Slavic languages);
- frameworks, programming languages, tools and teaching aids for computational linguistics and integrated NLP applications.

Name: Andy Ormsby BSc PhD

Subject Group: CSAI

Email address: andyo@cogs.susx.ac.uk

Position: Lecturer in Software Systems

Recent Publications:

1. Nakata, K., & Ormsby, A. (1996). Principles of model reuse: a case study in the electromechanical domain. *Sixth European-Japanese Seminar on Information Modelling and Knowledge Bases*, Copenhagen, May.

2. Olivier, P., Ormsby, A., & Nakata, K. Occupancy array-based kinematic reasoning. *International Workshop on Qualitative Reasoning About Physical Systems*, Amsterdam, The Netherlands.

3. Nakata, K., Lee, M., Ormsby, A., & Olivier, P. (1995). Modelling electromechanical systems from multiple perspectives. *Tenth International Conference on Applications of Artificial Intelligence in Engineering*, Italy.

Research Grants Currently Held:

- EPSRC Multimedia and Network Applications Programme £170,729 “Lowband” (with Ian Wakeman)

Research Interests:

I have a long standing interest in object-oriented systems and the wide applicability of object-oriented modelling approaches has been a recurrent theme in my work, originally as a result of my involvement in a research project which developed object-oriented development methods to promote software reuse.

The majority of work in software reuse has tended to concentrate on two main themes: technical issues in software reuse, such as software tools, programming languages, libraries and component technologies

Name: D. Pavlovic BA BSc MSc PhD
Subject Group: CSAI
Email address: duskop@cogs.susx.ac.uk
Position: Lecturer in Computer Science

Name: D. Peerbhoy
Subject Group: Psychology
Email address: dawnp@cogs.susx.ac.uk
Position: Research Fellow

Research Grants Currently Held:

- (Held with Professor Graham Davey). Wellcome Trust research grant, The role of rumination and rehearsal in the enhancement of phobic responding.

Research Interests:

Previous research has found that a prevalent feature of anxiety disorders is that individuals tend to experience repetitive and uncontrollable ruminations about the consequences of the source of their anxiety, and this can often lead to the disorder being maintained and intensified (Marks, 1987, Mathews, 1990). Focusing on and constantly rehearsing critical features of a problem or an aversive outcome of a phobic

Name: Lydia Plowman BA PhD

Subject Group: CSAI

Email address: lydiap@cogs.susx.ac.uk

Position: Research Fellow

Recent Publications:

1. Plowman, L. (forthcoming). Designing interactive media for schools: a review based on contextual observation. *Information Design Journal*, 8(3).

2. Plowman, L. (1996). Narrative, linearity and interactivity: making sense of interactive multimedia. *British Journal of Educational Technology*, 27(2), 92–105.

3. Plowman, L. (1995). The interfunctionality of talk and text. *Journal of Computer Supported Cooperative Work*, 3(3/4), 229-246.

Research Grants Currently Held:

- ESRC Cognitive Engineering Programme, 3 years from Oct.1995. 'Narrative construction and the comprehension of interactive multimedia.'

Research Interests:

I am interested in the role of the computer in mediating how people think and interact and how this impacts on teaching and learning processes. This has been central to my research into computer support for collaborative writing, the process of requirements capture for complex electronic technology in industry, and computers in education. Parallel with this, I am interested in how research methods - particularly the use of ethnographc methods - can access useful and illuminating data which can be used to inform human-centred design of computer systems. This entails observing, describing, identifying and analysing existing communication, coordination, and collaboration processes in the workplace and the classroom. In addition, I am developing methods for capturing and analysing on-screen and off-screen events for users of interactive multimedia and using this information to provide guidelines for designers of multimedia products and teachers who want to integrate these materials into the curriculum.

My current research is concerned with the role of narrative in the design of educational multimedia and how it can provide a more coherent and motivating framework. This has led to an interest in the concept of 'multimedia literacy' and the extent to which traditional literacies interact with and inform the specific skills needed for understanding or 'reading' multimedia. I favour sociocultural approaches to analysis which emphasise the relationships between the cultural (narrative), the social (the classroom context), and the cognitive (children thinking and learning).

Name: Murali Ramachandran
Subject Group: Philosophy
Email address: muralir@cogs.susx.ac.uk
Position: Lecturer in Philosophy

Recent Publications:

1. Ramachandran, M. (1993). A Strawsonian objection to Russell's theory of descriptions. *Analysis*, 595Tf37.4[(,)8.905]TJ-423534(()4.9SuaP

Name: James Riely
Subject Group: CSAI
Email address: jamesri@cogs.susx.ac.uk
Position: Research Fellow

Recent Publications:

also carried out a number of field studies in engineering, pub

Name: Julie Rutkowska BA MSc DPhil

Subject Group: Psychology

Email address: julier@cogs.susx.ac.uk

Position: Lecturer in Psychology

Recent Publications:

1. Rutkowska, J.C. (1995). Can development be designed? What we may learn from the Cog project. In Moran, F., Moreno, A., Chacon, P. & Merelo, J.J. (eds.), *Advances in Artificial Life: Proceedings of the Third European Conference on Artificial Life*, 383-395. LNAI/LNCS Series Number 696. Berlin: Springer-Verlag.

2. Rutkowska, J.C. (1994). Scaling up sensorimotor systems: constraints from human infancy. *Adaptive Behavior*, 2, 349–373.

3. Rutkowska, J.C. (1993). *The Computational Infant: Looking for Developmental Cognitive Science.* Hemel Hempstead: Harvester Wheatsheaf.

Research Interests:

My theoretical and empirical research interests lie in developmental cognitive science. They are concerned with trying to understand the nature of human abilities by looking at their origins, in particular with seeing what mutual benefits may be gained by bringing together computational work from artificial intelligence with study of the human infant, an especially relevant naturally intelligent system that is designed to function and develop in our physical and social environment.

On the theoretical side, my research has concentrated on developing the view that infant abilities (and also those of adults) are best understood in terms of action, and on exploring how computational concepts might help to clarify the organization and operation of action systems and the pragmatic knowledge that they support. This approach diverges from the new nativism that features in many current cognitive accounts of infancy, which attribute concepts and (evocational) representations to ever younger infants, and from ecological psychology, whose commitment to direct realism is incompatible with a truly mutual and co-relative perspective on the relationship between subject and environment in knowing activity.

This work has involved looking at a range of issues revolving around the notions of ‘perception’, ‘action’ and ‘representation’, such as: What mappings exist between computational models of low-level vision and early infant vision? What kind of functional organization underlies perception’s role in action? What implications does viewing the infant as a situated agent have for the nature and role of behaviour; issues of representation and meaning; and mechanisms of adaptive change? Development is often viewed as a transition from sensorimotor to conceptual and representational mechanisms, but my analysis has focussed on the way that perceptual-behavioural action shares properties of functioning (e.g. representation through selective correspondence with the world) and of change (e.g. successful functioning in a domain preceding explicit representation of how and why behaviour ‘works’) with other naturalistic representational systems.

Name: Geoffrey Sampson MA PhD (Cantab.)

Returning to the concept of stochastic optimization: this is by its nature a processing-intensive technique,

Name: Michael Scaife DPhil

Subject Group: Psychology

Email address: mikesc@cogs.susx.ac.uk

Position: Lecturer in Psychology

Recent Publications:

1. Scaife, M. & Van Duuren, M. (1995). Do computers have brains? What children believe about intelligent artefacts. *British Journal of Developmental Psychology*, 13, 365–376.

2. Scaife, M. & Rogers, Y. (1996). External cognition: how do graphical representations work? *International Journal of Human-Computer Studies*, 45, 185–213.

3. Rogers, Y. & Scaife, M. (in press). How can interactive multimedia facilitate learning? In *Proceedings of First International Workshop on Intelligence and Multimodality in Multimedia Interfaces*.

Research Grants Currently Held:

- 1995-1997 ESRC Cognitive Engineering Programme into: Explaining External Cognition for Designing and Engineering Interactivity (ECO-i). £140000 (with Y. Rogers)
- 1996-1998 EU TMR Network Grant for Cooperative Technologies in Complex Work Settings (COTCOS) ECU 221,000 (with Y. Rogers)

Research Interests:

One major interest is an analysis of the cognitive basis of external representations, focussing on graphical and diagrammatic forms. The research involves developing a theoretical account of external representation, particularly in relation to the potential of multimedia for new representational types. One project, funded by the ESRC Cognitive Engineering Programme, is to build software multimedia prototypes to test some of the ideas for dynamic linking of representations. Another project, funded by the EU, is about coordination of representations using technologies for collaborative work. A second research interest is investigating the mental models children and adults have of ecosystems. This research is cross-cultural—with collaborators in several countries—and feeds in to the multimedia project, where ecological understanding is the chosen domain.

Name: Mike Sharples BSc PhD
Subject Group: CSAI
Email address: mike@cogs.susx.ac.uk
Position: Senior Lecturer in Artificial Intelligence

Recent Publications:

1. Sharples, M. & Bruce, B. C. (1996). Collaborative writing and technological change: implications

Centre. One aim is to develop low-cost multimedia packages to support teaching and learning in the University.

I am grant holder of the CORECT project, funded by the DTI/EPSRC Computer Supported Cooperative Work initiative. Involving Racal, Intelligent Applications, and Edinburgh University it is developing a computer system to support the collaborative design of electronic test equipment.

Name: Yoshindo Suzuki MsA PhD

Subject Group: CSAI

Email address: yoshindo@cogs.susx.ac.uk

Position: Lecturer in Computer Science

Recent Publications:

1. Suzuki, Y. (1991). Coding systems and recursive manifolds. Report No. 10/91, CS Division, University of Sussex.

2. Suzuki, Y. (1985). The transfer principle. ***Brit. J. Philo. Sci.***, 36, 61–66.

Research Interests:

1. Geometry of computation studies geometric aspects of computation, hence the study of objects which are similar to differential manifolds. As a typical example:

   > If a group is finitely presentable, then the solvability of the word problems for it does not depend on a specific word problem.

2. Computational Information Theory has a different name: Kolmogoroff complexity.

Name: Stephanie Thornton BA PhD
Subject Group: Psychology
Email address: thorn@cogs.susx.ac.uk
Position: Lecturer in Psychology

Recent Publications:

1. Thornton, S. (1995). *Children Solving Problems*, Harvard University Press.
2. Thornton, S. & Thornton, D. (1996). Empathy and the recognition of abuse. *Legal and Criminological Psychology*, 1, 147–153.
3. Thornton, S. (1996). Developmental change in the use of relevant recall as a basis for judgments. *British Journal of Psychology*, 87, 417–429.

Research Grants Currently Held:

- "Becoming a responsible pedestrian," Department of Transport, 2 years.

Research Interests:

Research interests include: the origins of beliefs and behavioural strategies, and the processes which foster or hinder change in beliefs or strategies, in a range of contexts including: children's discovery of new strategies in problem-solving; conceptual understanding and the adoption of appropriate road safety behaviour in children and adults; how representations of the situation impact on openness / hostility to changing one's practices, in normal and deviant adult populations.

Name: Larry Trask PhD
Subject Group: Linguistics
Email address: larryt@cogs.susx.ac.uk
Position: Lecturer in Linguistics

Recent Publications:

1. Trask, L. (1995). *A Dictionary of Phonetics and Phonology*. Routledge.
2. Trask, L. (1996). *Historical Linguistics*. Edward Arnold.
3. Trask, L. (1996). *The History of Basque*. Routledge.

Research Interests:

I'm interested in Basque language, particularly in its history and prehistory, and my major book on this topic will be out in November 1996. I also work on other aspects of the language, chiefly morphology and syntax.

I'm also interested in theoretical and descriptive syntax, including context-free grammars, typology and universals, and diachronic syntax, with particular interests in ergativity, non-configurationality and diachronic syntax.

I have an abiding interest in linguistic terminology; I have published two dictionaries of linguistic terminology, and I have a third in press.

I also work in historical linguistics, and I've recently published a textbook of this subject.

Finally, I have an interest in educational linguistics; I am a member, and was until recently the secretary, of the Committee for Linguistics in Education (CLIE), an organization which concerns itself with the teaching of linguistics and related topics in schools and universities.

Name: Carol A. Varey BA MA PhD
Subject Group: Psychology
Email address: carolv@cogs.susx.ac.uk
Position: Lecturer in Psychology

Recent Publications:

Name: Ian Wakeman MA (Cantab) MS (Stanford) PhD (London)
Subject Group: CSAI
Email address: ianw@cogs.susx.ac.uk
Position: Lecturer in Computer Science

Recent Publications:

1. Handley, M., Wakeman, I., & Crowcroft, J. (1995). The conference control channel protocol (cccp): a scalable base for building conference control applications. *Sigcomm95*, August.
2. Wakeman, I., Bolot, J., Turletti, T., & Crowcroft, J. (1994). Multicast congestion control in the distribution of variable bit rate video in the internet. *Sigcomm94*, London, August.
3. Wakeman, I., & Crowcroft, J. (1994). A combined admission and congestion control scheme for variable bit rate video. *J9rt rt 883181(e)-2322(r)47igo m8Θ(,)-47igoe-4.1113ΘΣs*

Several current collaborative research projects concern t

Name: David J. Weir BSc MSc PhD

Subject Group: CSAI

Email address: davidw@cogs.susx.ac.uk

Position: Lecturer in Computer Science and Artificial Intelligence

Recent publications:

1. Rambow, O., Vijay-Shanker, K. & Weir, D. (1995). D-tree grammars. In *Proceedings of the 33rd Annual Meeting of the Association of Computational Linguistics*, 151–158.

2. Evans, R., Gazdar, G. & Weir, D. (1995). Encoding lexicalized tree adjoining grammars with a nonmonotonic inheritance hierarchy. In *Proceedings of the 33rd Annual Meeting of the Association of Computational Linguistics*, 77–84.

3. Vijay-Shanker, K., Weir, D. & Rambow, O. (1995). Parsing D-tree grammars. In *hrohirWW*

The three core modules of the system will be the word database, the tree database, and the parser. When using lexicalized grammar formalisms such as Lexicalized Tree Adjoining Grammar (LTAG), syntactic information (traditionally held in the grammar and encoded as a set of rules or productions) is considered to be part of the lexicon. Thus, we use the term word database to refer to that component of the lexicon that associates each lexical item with a set consisting of information specifying possible part-of-speech, syntactic environments (complement patterns) and simple selectional restrictions (such as subject/verb, verb/object, verb/prepositional object), each with associated probabilities. We use the term tree database to refer to the set of tree structures that correspond to the various syntactic environments referred to in the word database. In the completed system, both the word and tree databases will be encoded as nonmonotonic inheritance hierarchies.

Name: Max W. Wheeler MA DPhil

Subject Group: Linguistics

Email address: maxw@cogs.susx.ac.uk

Position: Reader in Linguistics

Recent Publications:

1. Wheeler, M. W. (1995). 'Politeness', sociolinguistic theory and language change. *Folia Linguistica Historica*, 15, 149–174.

2. Wheeler, M. W. (1996). La primera persona del present d'indicatiu, pot haver-hi me's a dir-ne? [The first person singular present indicative: can there be more to say?] In *Estudis de lingüística i filologia oferts a Antoni M. Badia i Margarit.* Barcelona: Publicacions de l'Abadia de Montserrat, 2, 411–425.

3. Wheeler, M. W. & Dols, N. (1996). El consonantisme final del mallorquí i el 'llicenciament d'obertures' [Majorcan word-final consonants and 'onset licensing']. *Caplletra*, 19, 51–63.

Research Interests:

My general field is that of Romance linguistics. My major interest is in Catalan language. I have published on the phonology of the contemporary language and on the historical development of verbal inflection in the various dialects. I am currently working, in collaboration, on a reference grammar of Catalan (in English), due out in 1997.

I am interested in sociolinguistic theory, especially as it relates to our understanding of language change.

I also work in the area of Natural Morphology, looking to refine the theory, in particular with respect to its predictions and explanations of historical change in inflectional morphology.

Name: Blay Whitby BA MA MSc
Subject Group: CSAI
Email address: blayw@cogs.susx.ac.uk
Position: Tutorial Fellow in Computer Science and Artificial Intelligence

Recent Publications:

1. Whitby, B. (1996). *Reflections on Artificial Intelligence.* Intellect Books.
2. Whitby, B. (1996). The Turing test: AI's biggest blind alley? In Clark, A. & Millikan, R. G. (eds.) *Machines and Thought*, 53–62. Oxford University Press.
3. Whitby, B. (1996). Multiple knowledge representations: maps and aeronautical navigation. In Peterson, D. (ed.) *Forms of Representation*, 67–78. Intellect Books.

Research Interests:

Name: Peter Williams MA MSc DPhil

Subject Group: CSAI

Email address: peterw@cogs.susx.ac.uk

Position: Lecturer in Computer Science

Recent Publications:

1. Williams, P. M. (1993). Aeromagnetic compensation using neural networks. *Neural Computing & Applications*, 1(3), 207–214.

2. Williams, P. M. (1995). Bayesian regularization and pruning using a Laplace prior. *Neural Computation*, 7(1), 117–143.

3. Williams, P. M. (1996). Using neural networks to model conditional multivariate densities. *Neural Computation*, 8(4), 843–854.

Research Interests:

Neural networks can be used for general engineering purposes as well as for modelling human cognitive and perceptual abilities. Research is currently focussed on theoretical issues relating to (i) general regularisation and pruning techniques (ii) accuracy, validation and reliability of neural network models (iii) data pre-processing techniques such as discrete polynomial and wavelet transforms. Specific application areas include mineral exploration and remote sensing, and applications to prediction in the capital markets.

Name: Sharon Wood BA DPhil

Subject Group: CSAI

Email address: sharonw@cogs.susx.ac.uk

Position: Lecturer in Computer Science and Artificial Intelligence

Recent Publications:

1. Wood, S. (1993). *Planning and Decision Making in Dynamic Domains*. Chichester: Ellis Horwood.

2. Wood, S. (1990). A model of classroom processes: towards the formalisation of experienced teachers' professional knowledge. In Goodyear, P. (ed.) *Teaching Knowledge and Intelligent Tutoring*, Norwood, NJ: Ablex Publishing Corporation, pp.295–313.

3. Wood, S. (1988). The trainee teacher support system: an expert system for advising trainee teachers on their classroom practice. *Expert Systems*, 5(4), pp.282–289.

Research Interests:

My first interest is in the area of applying traditional planning techniques to rapidly changing, uncertain multi-agent environments. My work has involved the specification and development of an agent architecture for addressing the requirements of planning and acting in such an environment — one of a driver. Rapidly changing environments, of which the driving domain is a good example, pose additional problems to those dealt with by existing planning systems. One of the main problems is that of uncertainty — one cannot assume that the changes which are to take place in the world and of which one must take account in one's planning are known about beforehand — in a real-time rapidly changing environment, such as that one confronts when driving down a busy road, this is simply not the case. This has implications both for how we reason about the world and for how we generate appropriate plan solutions.

I have developed a planning system, called Autodrive, which simulates the generation and execution of a driver's plan to reach a destination safely, taking account of other road users and obeying traffic signs and signals, in a simulated microworld. The behaviour of each vehicle in the microworld is generated by clones of the processes governing the behaviour of the driver. The problem confronting a driver emphasises the need to apprehend information about the world and to use this information in order to predict just how and when the world will change. When reasoning thus about the behaviour of other individuals, this would seem to require some ability to recognise the intentions of those individuals and to anticipate how they will interact with the changing world in order to realise their goals. The problem of plan specification would then be resolved by reasoning about this anticipated world.

The Autodrive system incorporates components additional to a traditional planning system architecture which enable the system to interact with a simulated rapidly changing environment. The architecture is based upon a re-appraisal of a planner's representational needs for interacting with suei an rnvironmentTJ-254.92013.6

Name: Nicola J. Woods BA (Roehampton) MPhil DPhil (Oxon)
Subject Group: Linguistics
Email address: nicolajw@cogs.susx.ac.uk

Human visuo-motor skills

I am studying the strategies humans use to control actions such as intercepting a moving object, running over uneven ground, or deciding when to cross the road, that involve precise timing. I am currently involved in collaboration with Professor D.N. Lee of the Department of Psychology, Edinburgh University, aimed at understanding visual information pickup and motor skills in such time-to-contact problems. My contribution to this work lies largely in computer modelling of the low-level visual processes that supply the timing information necessary for rapid control of action. The central assumption is that vision for the control of rapid actions depends less on the construction of an explicit 3-D model of the environment than it does on the pickup of the values of a few rapidly updated variables, such as τ, the estimated time to nearest approach of an object. It may be that sufficiently good information can be obtained directly from functions of the optic flow, using relatively straightforward mechanisms.

Artificial neural networks

I am interested in the use of artificial neural networks in low-level vision, in particular in the pick-up and analysis of optic flow information. I have also worked on the use of neural networks in the removal of noise from image sequences, using standard neural net architectures. I am interested in use and training of recurrent neural networks.

Software tools for computer visionctu(d(m)-2(t)-6(o)-4(l)-4(f)-8(c(i)-6(v.

linked to DPhil research by Eleni Kallis. The other project, linked to DPhil work by Robin Banerjee on the origins of self-presentation, addresses children's understanding of self-consciousness and how this relates to their understanding of 'impression-management'. Recent work suggests that the behavioural manifestations of shyness change developmentally: young children show fearful shyness while only older children show evidence of self-consciousness. We are investigating whether conceptions of shyness change in concert with this behavioural change. A linked project by Paula Cooper is investigating social cognition in deaf children.

My other main research interest is children's text comprehension. This work arises from previous work with Jane Oakhill (Experimental Psychology, Sussex), investigating a specific group of 7–8 year old children: those who are proficient at decoding words, but fail to understand what they read. Our studies examined their difficulties in memory, inferential skills (e.g. on-line pronoun assignment) and comprehension monitoring (e.g. noticing textual anomalies). A recent grant has enabled us to develop and test a training programme designed to address the particular problems that poor comprehenders have in being aware of linguistic inferences. The programme involves the use of riddles and jokes to develop inferential skills. I am now interested in the broader implications of how riddles may contribute to children's awareness of language and their ability to monitor their own comprehension. This forms part of a more general concern with the development of self-regulation of behaviour, in children and in university students. With colleagues in Experimental Psychology, I am also investigating the role of working memory in learning to read, and in particular, how processing limitations influence comprehension skill.