Words and Intelligence II

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Words and Intelligence II
Essays in Honor of Yorick Wilks

Edited by

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Springer

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Biographies of the Editors

Khurshid Ahmad holds the Chair of Computer Science at Trinity College, Dublin, Ireland; he was the founding Head of the Department of Computing, University of Surrey, England and held the Chair of Artificial Intelligence. He is interested in cross-modal interaction in human cognition and the simulation of such interaction in information systems. His research interests are in the areas of information extraction, neural networks, ontology and terminology systems, knowledge management and financial engineering. He has been working with major EU IT organizations and universities on problems related to terminology of specialist domains and the ontological commitment of the domain. His current projects include automatic summarisation of video streams for surveillance which involves studies of attention and distraction amongst humans; he has been working on the automatic identification of 'sentiments' in financial news reports that influence the behaviour of financial markets; and he published on multi-modal information fusion in child language and numerosity development, and on the simulation linguistic deficit amongst aphasic patients, using multi-net neural computing systems. In knowledge management he has been dealing with the diffusion of knowledge from research laboratories onto the first stage of industrialisation, patents, using a corpus based study of lexical preferences amongst scientists. He has published over 150 papers in various topics, edited two books and written one. He obtained his doctorate in theoretical nuclear physics in 1975 and has enjoyed being curious about complex systems, language and the evolution of ideas ever since. His work has been supported by the EU programmes of R&D in IT and by the UK Research Councils including the EPSRC, ESRC and AHRC. He is the Fellow of the British Computer Society.

Christopher Brewster is a Research Fellow in the Department of Computer Science at the University of Sheffield. He has worked in a number of language technology projects, having had experience especially in computational corpus linguistics and lexicography. He worked on the problem of knowledge acquisition and maintenance in the EPSRC Advanced Knowledge Technologies (www.aktors.org) contributing especially to research on ontology learning, the appropriacy of ontologies for knowledge representation, and ontology evaluation. He was lead scientist on the Abraxas project (http://nlp.shef.ac.uk/abraxas/) which focussed on ontology learning techniques. He is currently Project Manager of the Companions Project (www.companions- project.org). He has published a number of papers on the subject of ontologies, and organised several workshops.

Mark Stevenson is a lecturer and EPSRC Advanced Research Fellow at Sheffield University, where he is a member of the Natural Language Processing group. He has previously worked for Reuters Ltd. In London where he led projects on the application of language technology to business problems and also acted as the industrial contact on European projects. In 2001/2002 he was an inaugural Reuters Foundation visiting Fellow at the Center for the Study of Language and Information (CSLI), Stanford University. His research interests include word sense disambiguation, semantic similarity and information extraction and retrieval. His PhD was supervised by Yorick Wilks and explored the application of a diverse set of knowledge sources to the word sense disambiguation problem. His thesis was published by CSLI Publications. In addition, he has published around 50 papers in journals, collected volumes and international conferences.

List of Contributors

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Introduction

It has been said of the brothers Wilhelm and Alexander von Humboldt that between them they were the last people to have known all that there was to know, to have had a mastery of the best that contemporary science knew and to have made significant contributions, to be that rare thing Renaissance men. In a world of ever-greater specialisation, especially in academia, the ability to cross intellectual boundaries, bring together ideas beyond the confines of one's narrow discipline and yet make significant intellectual contributions has become ever rarer. In bringing together this celebration of Professor Yorick Wilks, it has been the ambition of the editors to provide the reader with a taste, an inkling of that which cannot be conveyed on the written page but only in the person of Yorick. He is a renaissance man in an age where such concepts have been forgotten. He is a bridge between a bewildering variety of contemporary research, and simultaneously a link between some of the most advanced thought in the broadly interpreted field of Artificial Intelligence (AI) and the long tradition of philosophy, literature, and general intellectual creativity that have fundamentally informed his academic research. This comes across in part when one considers his career, more so when one reads his writings but is most apparent in person.

Modern scientists have become specialised, experts in only one specific domain. In contrast, Yorick Wilks has remained a universalist, actively contributing to a wide range of topics, from the details of machine translation or information extraction to the philosophical implications of certain AI positions or the current political situation in the world. A long history of widely cited publications in a great variety of academic organs bear testament to a highly productive and influential career which is honoured in this Festschrift and manifested in the accompanying volume of selected papers by Yorick Wilks.

Artificial Intelligence and Natural Language Processing (NLP) have been the primary areas of concern for Yorick over the years of his career and yet this has not detracted from Yorick's capacity to have competence and make contributions across a large range of topics. His academic passions have included AI, its philosophical foundations, architectures for NLP, computational syntax and semantics, lexica and lexical resources, word sense disambiguation, machine translation, knowledge representation and acquisition, belief systems and agents, human-computer dialogue and information extraction. Some, but not all of his passions, are conveyed and celebrated in the contributions contained in this volume.

During his career Yorick has led a succession of successful research groups (detailed in Mark Maybury's biographical paper). In this capacity he has a particular talent for obtaining research grants and has successfully funded large research groups in the UK and USA. At the University of Sheffield he built one of the most successful research groups in the world in the field of NLP. However, there is much more to leading such a group than writing good grant proposals. Yorick has always had a vision for his groups, a broad concept of what it was trying to achieve while concurrently allowing individual researchers freedom to pursue their own interests, to be creative. He always has confidence that if you put good people together, give them an appropriate degree of freedom, academic creativity and innovation will thrive.

What cannot be conveyed by the written word, and which we can only convey superficially in this introduction are the human qualities that have accompanied the research and learning. Yorick has a breadth both in his humanity and in his culture, a tolerance and understanding of fellow human beings, a good humour and generosity of spirit. This is apparent in the freedom he has given his students and his ability to create a fertile productive environment in order to allow research to flower. Furthermore, he embodies a sense of vision and a depth of knowledge, a deep insight into human qualities and a tolerance for human frailties, all of which are combinations both unusual and refreshing. Yorick has always conveyed passion in both his work and leisure. He has a natural ability to make people feel at ease and is a famed raconteur. Part of this comes out of Yorick's immense breadth of interests. He has always led a double life, having over the years a very successful amateur acting career (which nearly became professional according to some anecdotes). Furthermore, he is someone who in a previous generation would have been approvingly described as "well-read" and this broad culture informs both his scientific output and interests and the daily interaction he has with his colleagues. Life in AI and NLP would have been the poorer without the person of Yorick to bring his *joie de vivre*.

It has always been a privilege to be a research student supervised by Professor Wilks. Yorick is both visionary and practical, encouraging the student to read a text, whether from last year's conference or a hundred years ago, and place it in the context of their current concerns. It is the content of the ideas that interest him in a student's work without any concern for formality or procedure. And this is another area where Yorick's capacity for seeing the potential of people is most apparent, a potential which they will usually not be aware of themselves. Above all Yorick has been able to create an environment in which one is encouraged to publish, attend conferences and carve out an independent research career. As much as he can Yorick has always sought to support students through their studies, financially and intellectually. It was in this spirit of developing students that Yorick was instrumental in founding the CLUK (Computational Linguistics UK) series of conferences focussed on the needs of graduate students in the UK.

One of Yorick's strength is his ability to collaborate with academics and end-users with different interests, in synthesising complex ideas across different disciplines, and finally in articulating such ideas. There are many instances of such

collaborations across the world, many reflected in the contributions in this Festschrift. Collaborating with Yorick has always been an extremely stimulating experience right from the start of the conception of the project, through the writing of proposal texts (in which Yorick excels), to the realisation of the project and its outcomes in collaboratively written papers or software. His capacity to bring together collaborators from different countries, different cultures, let alone entirely different academic communities is one much celebrated and recognised.

The collection begins with a biographical essay on Yorick written by Mark Maybury. Maybury has collected details and anecdotes from a wide circle of Yorick's friends and acquaintances to present an amusing and insightful account of a life full of meaning in all senses. In his paper entitled "Metaphor, Semantic Preferences and Context-Sensitivity," John Barnden discussed Yorick's work on metaphor which he interprets as being "utterance-based" while arguing for a context-based approach. Nicoletta Calzolari, in her paper "Towards a new generation of Language Resources in the Semantic Web vision", notes Yorick's early and prophetic understanding of the importance of natural language corpora, and while reviewing a number of language resources related projects in which Yorick has been involved, makes the case for a continuing need for infrastructure focussed HLT research.

Robert Gaizauskas, a long time colleague of Yorick's at the University of Sheffield, has contributed a paper co-authored with Emma Barker and Horacio Saggion on "Information Access and Natural Language Processing: A Stimulating Dialogue." This considers the role of NLP in relation to IR and information access in general with specific reference to a project "Cub Reporter" undertaken at the Sheffield NLP group. Gregory Grefenstette's paper on "Three steps in Wilks work: From theory to resources to practice" is a celebration of what the author sees as three important components in Yorick's work viz. his "flight's of brilliance," "his reasoned response to difficulties" and his unrelenting engineering effort and serious science. Grefenstette considers in detail three papers of Yorick's from what could be called the early, middle and late work, placing the work in the context of contemporary research.

In a paper entitled "Preference Syntagmatics" Patrick Hanks discusses an ongoing project of his to create a "Pattern Dictionary" which is fundamentally influenced by Yorick's early work on Preference Semantics. A central claim is that the problem of word sense disambiguation needs to be reformulated before it can successfully be resolved. On a somewhat different tack "Historical Ontologies", a paper by Nancy Ide in collaboration with David Woolner, discusses the challenge of creating knowledge representations that can handle diachronic events.

A major interest of Yorick has been machine translation and Makoto Nagao in his paper "An Amorphous Object Must Be Cut By A Blunt Tool" gives an account of the creation of example based machine translation, an approach he claims is typically Japanese. Addressing another ongoing concern of Yorick's is Sergei Nirenburg's paper "Homer, the Author of The Iliad and the Computational-Linguistic Turn." He sets out in detail the disagreement, first, between Yorick's views on knowledge representation and the tradition of Fodor, and then Yorick's views on knowledge representation resources such as ontologies and the views of the Guarino.

Reflecting the wider impact Yorick has had as a philosopher concerned with AI and computer science, Nigel Shadbolt's paper "Philosophical Engineering" discusses the fundamental philosophical issues which arise in undertaking modern computer engineering. He notes that while formal models have immense power in a continuously changing world our capacity to construct models is under constant challenge. Returning to machine translation, Harold Somers gives a brief account of Yorick's long term involvement and impact on the field, and goes on to consider current machine translation freely available on the web, and its success and impact.

Yorick's near contemporary at Cambridge, Karen Spärck Jones has contributed a paper on "Semantic primitives: The tip of the iceberg" which discusses how semantic primitives, a long time concern of Yorick's, are considered today. The collection concludes with a paper by John Tait in collaboration with Michael Oakes "Molecules, Meaning and Post-Modernist Semantics" which again return to preference semantics but from the perspective of the need for machine learning of lexical resources.

The editors have put together this Festschrift, and the accompanying volume of Selected Papers, in order to celebrate him as an individual and bring into focus his work and its impact across a range of research topics. We would like to thank all the contributors to this volume for taking time out of their schedules to write these papers and thus make the Festschrift possible. We have known Yorick in various capacities, as students, colleagues, collaborators and friends, and we sincerely hope that these volumes will bring pleasure to him, his colleagues and friends.

Khurshid Ahmad
Christopher Brewster
Mark Stevenson

Acknowledgements

1

Yorick Alexander Wilks: A Meaningful Journey

Mark Maybury

MITRE Corp., Bedford, MA, United States of America

> *Outgoing, happy, generous to a fault and always fun to be with. As soon as he joins a conversation it lightens.*
>
> - Prof. Derek Partridge, University of Essex

Abstract: This chapter attempts to summarize Yorick's long and rich professional career and introduce some of his main areas of contribution which are elaborated in other chapters. Teacher, researcher, mentor, and actor, this chapter pays tribute to his many contributions, professional service and honors

1.1 Time Line

Yorick Wilks' career, still very much in full force, already spans nearly four decades. Figure 1.1 is a very brief time line of some of Yorick's significant life events sampling his many roles as scientific author, editor, researcher, professor, department chair, director, and fellow. Only a professional actor could have played so many roles so effectively. But then again the timeline and this history fails to capture his important roles as actor, fiction writer, chef, movie critic, social observer, successful business man, globe trotter, and of course husband and father. Certainly this brief history chapter can in no way hope to capture such diversity. Accordingly we have prepared a complementary video festschrift to accompany this volume wherein Yorick's contemporaries reminisce about what it was like to learn from, work with, and simply enjoy life with this passionate Renaissance man. Finally, the chapter will point to other chapters in this collection which dive more deeply into technical topics which Yorick contributed to if not in some cases invented.
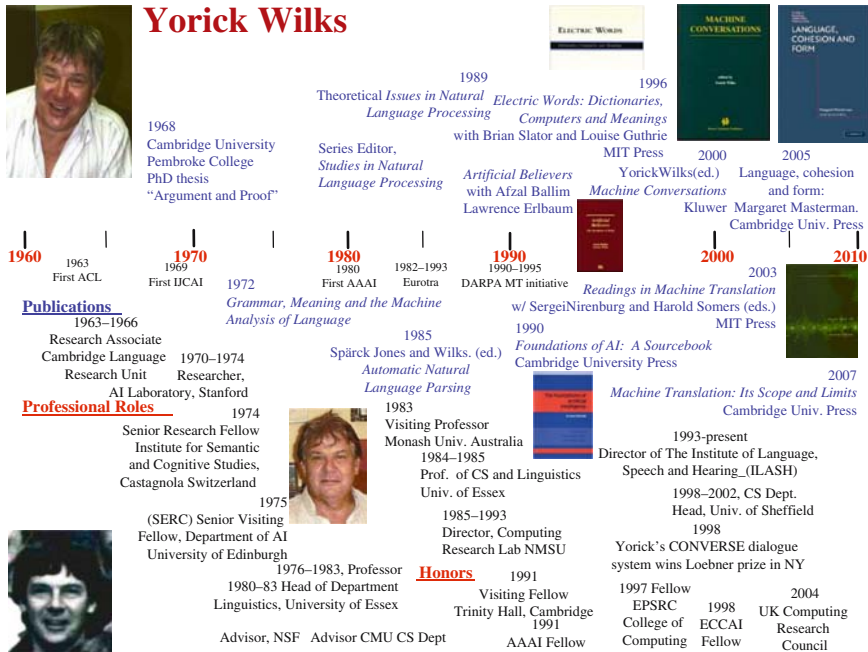
Yorick Wilks

1968
Cambridge University
Pembroke College
PhD thesis
"Argument and Proof"

1989
Theoretical *Issues in Natural Language Processing*

Series Editor,
Studies in Natural Language Processing

Electric Words: Dictionaries, Computers and Meanings
with Brian Slator and Louise Guthrie
MIT Press

Artificial Believers
with Afzal Ballim
Lawrence Erlbaum

1996
YorickWilks(ed.)
Machine Conversations
Kluwer

2000

2005
Language, cohesion and form:
Margaret Masterman.
Cambridge Univ. Press

1960	1970	1980	1990	2000	2010

1963
First ACL

1969
First IJCAI

1972
Grammar, Meaning and the Machine Analysis of Language

1980
Eurotra

1982–1993

1990–1995
DARPA MT initiative

2003
Readings in Machine Translation
w/ SergeiNirenburg and Harold Somers (eds.)
MIT Press

Publications
1963–1966
Research Associate
Cambridge Language
Research Unit

1970–1974
Researcher,
AI Laboratory, Stanford

1985
Spärck Jones and Wilks. (ed.)
Automatic Natural Language Parsing

1990
Foundations of AI: A Sourcebook
Cambridge University Press

Professional Roles
1974
Senior Research Fellow
Institute for Semantic
and Cognitive Studies,
Castagnola Switzerland

1983
Visiting Professor
Monash Univ. Australia

1984–1985
Prof. of CS and Linguistics
Univ. of Essex

2007
Machine Translation: Its Scope and Limits
Cambridge Univ. Press

1993-present
Director of The Institute of Language,
Speech and Hearing_(ILASH)

1998–2002, CS Dept.
Head, Univ. of Sheffield

1975
(SERC) Senior Visiting
Fellow, Department of AI
University of Edinburgh

1985–1993
Director, Computing
Research Lab NMSU

1998
Yorick's CONVERSE dialogue
system wins Loebner prize in NY

1976–1983, Professor
1980–83 Head of Department
Linguistics, University of Essex

Honors
1991
Visiting Fellow
Trinity Hall, Cambridge

Advisor, NSF   Advisor CMU CS Dept

1991
AAAI Fellow

1997 Fellow
EPSRC
College of
Computing

1998
ECCAI
Fellow

2004
UK Computing
Research
Council

Fig. 1.1. Yorick Wilks time line

1.2 In the Beginning

Yorick was born in London and first attended Latymer school in Edmonton, London. He moved to Torquay when he was a boy and attended Torquay Grammar School until 18 where he was a prefect and eventually headboy for some of his time there. Yorick then went to Pembroke College, Cambridge to study Philosophy and Mathematics.

While at Cambridge, he was very active in the Pembroke Players drama group where he acted as well as directed. Professor Michael Rowan-Robinson, now Head of the Astrophysics Group at Blackett Laboratory in Imperial College in London, recalls "We acted in plays together while he was an undergraduate. Later we shared a houseboat together when he was a postgraduate." Yorick also did quite a bit of singing in Cambridge choirs. Yorick's friend Hugh Brogan remembers how impressive Yorick was as an actor:

> I'm not a colleague or a linguist or a computer person, but we were both members of the Labour party at Cambridge. He is a remarkable person. Yorick was the Labour party agent in Cambridge and my most vivid memory of him was around 1964 or 1965 when the Cambridge Labour Party put on a pantomime of Labour/Tory politicians. Written by

the theologian Phillips Abrams the story centered around Dick Whittington, the Lord Mayor of London who traveled to China with his cat to eradicate rats. Yorick played the Emperor of China and never turned up until the dress rehearsal where he simply dominated the proceedings. He was a born performer. Years later I can recall driving from Colchester to Cambridge with Yorick and having such an intense argument that we missed our cutoff. He was great company.

1.3 Cambridge: Dissertation and Career Foundations

After Yorick took his BA from the University of Cambridge in 1962, he joined the Cambridge Language Research Unit (CLRU) as a research associate (assistant in British parlance) and worked from 1963–1966 on natural language processing projects focused on semantics and machine translation. Yorick recalls "doing parsing with Hollerith card sorting machines" at the CLRU. Professor Karen Sparck Jones reminisces about the CLRU as "originally a lively discussion group interested in language and translation, subsequently funded to do research on automatic translation." CLRU was a freestanding unit, not part of University, although individuals in it had university connections. CLRU founder Margaret Masterman was influential in many ways in Yorick's professional career. Karen reflects:

> Yorick almost certainly became connected with the CLRU through the fact that his BA was in Philosophy (I assume following earlier part on Maths), that he was in Pembroke College and that Margaret directed studies in Philosophy for the college. There is no doubt that the CLRU was the foundation of Yorick's work in NLP and indeed the line that Yorick started with was very directly a development and outgrowth of what the CLRU was doing. Margaret also had a connection with Stanford which I am sure also accounts for Yorick's initial involvement there (the CLRU had some US funding for quite a long period from the mid fifties).

Karen's chapter "Semantic primitives: the tip of the iceberg", in this collection, begins with Yorick's CLRU work. At the same time he joined CLRU Yorick began work for his PhD. Yorick's PhD advisor at Cambridge was Richard Brathwaite,[1] husband of CLRU head Margaret Masterman. Yorick was named by Margaret in her will to be her literary executor. His edited collection of selected papers she wrote (Wilks, 2005) capture her belief that "meaning, not grammar, was the key to understanding languages, and that machines could determine the meaning of sentences" and her early sophisticated experiments in machine translation and use of semantic codings and thesauri to determine the meaning structure of texts even on simple card sorting machines.

Yorick's doctoral thesis (Wilks, 1968) "Argument and Proof" investigated automated sense selection. It formed the basis of his first book, *Grammar, Meaning*

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[1] http://www.britannica.com/eb/article-9016188

and the Machine Analysis of Language (Wilks, 1972). In a reflective passage years later, Yorick (2000, p. 1) articulates the essence of his contributions:

> I want to make clear right away that I am not writing as a sceptic about word-sense disambiguation (WSD) let alone as a recent convert: on the contrary, since my PhD thesis was on the topic thirty years ago. That (Wilks, 1968) was what we would now call a classic AI toy system approach, one that used techniques later called Preference Semantics, but applied to real newspaper texts, as controls on the philosophical texts that were my real interest at the time. But it did attach single sense representations to words drawn from a polysemous lexicon of 800 or so. If Boguraev was right, in his informal survey twelve years ago, that the average NLP lexicon was under fifty words, then that work was ahead of its time and I do therefore have a longer commitment to, and perspective on, the topic than most, for whatever that may be worth!

Karen Sparck Jones notes that "in his thesis, as generally in his publications, Yorick always sought to contextualise his work on automated word sense disambiguation by reference to theories of meaning in linguistics and philosophy." Gregory Grefenstette's chapter in this collection considers Yorick's work related to linguistic resources and linguistic theory. Birmingham Professor John Barnden's chapter in this collection considers Yorick's idea that preference-violation is common in metaphor, and that it can often be used as a hint that the utterance is metaphorical (e.g., "a car drinks gasoline" even though the subject is inanimate and the liquid is non potable).

A scientist as well as social observer, Yorick writes in one of his many word sense disambiguation papers "None of this is a surprise to those with AI memories more than a few weeks long: in our field people read little outside their own notational clique, and constantly 'rediscover' old work with a new notation." In a discussion on vagueness he similarly notes "This issue owes something to the systematic ignorance of its own history so often noted in AI."

1.4 California Dreaming (1966–1974)

Following his work at CLRU, Yorick joined the System Development Corporation from 1966–1967 in Santa Monica, then was a Lecturer at the University of Nairobi in Kenya in 1969, and then a consultant on an ONR contract at Stanford University from 1969–1971. For a 2-year period he actually lived in Hollywood and moonlighted for the Hugh Heffner TV show in Los Angeles hoping to get a break as an actor (a friend of his was the scriptwriter). But this was not to be. Given the strong Masterman connections to Stanford, it was perhaps natural for Yorick to subsequently became a Research Associate and Lecturer at the Artificial Intelligence Laboratory, Stanford University, California from 1970–1974. When Yorick arrived at Stanford, he took up an office next to Roger Schank, then Associate Professor of Linguistics and Computer Science at Stanford (When he went to Yale

Schank went entirely into CS). Roger had come to Stanford because of psychiatrist Ken Colby's research with Parry, a conversational computer simulator of paranoid process. Roger recalls:

> Yorick arrived at Stanford about two years after me. We had offices next to one another, and found we had much in common. We had a similar point of view and position, arguing against the then dominant Chomskian view of the world. At that time we felt like we were two voices in the wind. We were rabble rousing for years and years in many countries. We both had developed semantic representation systems. Mine had fewer semantic primitives than his had but we both believed that creating an interlingua was the key to the computer processing of natural language. We were fighting a difficult battle against formalists and the Chomskians but eventually the Chomskians stopped caring about computers as AI became a more dominant field. We could have wound up as competitors but instead became good friends.

Sergei Nirenburg recalls this relationship:

> [I recall] A couple of rounds of playing Diplomacy at the Guthries' in El Paso, TX. During one of our negotiations, Yorick told me about another Diplomacy game where Roger Schank and his wife were among the participants. Apparently, after the game Professor Schank became very upset and chastised his wife for not having shown (real-world) loyalty in her (in-game) actions... With his next move, Yorick promptly proceeded to occupy Belgium and leaving my forces in France in a lurch. To borrow Yorick's typical comment in similar situations: "Brilliant!"

Yorick collaborated with Roger Schank to capture their views in their joint article "The Goals of Linguistic Theory Revisited". In *Lingua* (34) in 1974. From the beginning Yorick's interests bridged the disciplines of artificial intelligence and language. During this period Yorick published in philosophy of science as well as theoretical linguistics. Roger recalls:

> We had this funny moment when Yorick, Winograd, and I were all together at the Stanford AI lab. We had the nucleus of what could have been the most powerful and influential group but John McCarthy, the head of the lab and a strong believer in the powers of predicate calculus, said he wished none of us were there.

Roger recalls how at that time as a young post graduate Yorick didn't have lots of funding (ironic years later) and didn't yet have a regular faculty position:

> So by 1971 at IJCAI in London we were pretty good friends. Yorick was always trying to get away with something. He didn't like playing the game as it was written. He hadn't bought a registration for IJCAI but found a way to sneak in. Yorick and I were sitting together when my turn to give

my talk came up. I wasn't wearing a badge because I don't like badges and of course, Yorick didn't have one. As I was announced as the next speaker, one of the security guards who had been alerted that Yorick had snuck in tried to prevent me from going to the podium. The head of the conference who was someone who should have known what we both looked like, had thought that I was Yorick. I told the guard he would have to arrest me on the podium.

Throughout the years Roger and Yorick maintained a friendship, getting together at meetings all across the world in places such as Sweden, Hungary, and France. Roger recalls one such conference in France years later:

We got bored so we left the meeting and walked up to the top of the Alps and were exhausted as we reached the snow line. We found some bed-like platform on skis with two controls … we found we could ski down but we went extremely fast and nearly killed ourselves by going off cliff! We were sure we would be dead soon, but we got down the mountain real fast.

Roger Schank moved on to Lugano where Yorick would later transfer into his position.

1.5 Lugano (1974–1975)

Yorick became a Senior Research Fellow, Institute for Semantic and Cognitive Studies (ISSCO) in Lugano Castagnola, Switzerland from 1974–1975. He came to ISSCO to continue to explore his semantics preferences theory on a MT system, working to extend the inferencing component. Yorick brought along Margaret King from UMIST in Manchester, England on a year's leave of absence as his programmer. She eventually became the director of the institute. Margaret King recalls that during this period one of the most significant things Yorick did was to organize a tutorial:

There was a small group of 8 of us in ISSCO, and I think pretty well everybody was involved. The tutorial itself was a roaring success. Taking place in March of 1975, this was the first in Europe and was quite daring really. About 100 people came to it, mostly post graduates. It made a significant impact on getting CL and AI started in Europe. It was a full week long and helped build a community.

Yorick co-edited a resulting book with Professor Eugene Charniak on *Computational Semantics: an Introduction to Artificial Intelligence and Natural Language Understanding* published in 1976 by North-Holland in Amsterdam. Gene recalls:

The original idea of the book was we were each going to pick an area and give lectures on it. After we did it we decided we would put our notes together in this book.

Professor Margaret King remembers:

> We met once every week every couple of weeks and tore each other's manuscripts up. It certainly sold rather well.

Five years later in 1981 the book was reprinted in Russian in Moscow, in the series Progress in Linguistics.

Gene Charniak had come to Lugano the year prior to Yorick and recalls his first interaction with Yorick:

> I received a letter about some of my graduate work when I was still at MIT and he questioned some of my deductions. I realized I had simply used the word "deduce" when I meant to use "infer". I of course at the time ignored this as simply semantics. Looking back he was completely right.

In spite of his academic successes, however, the mischievous and human side of Yorick was ever present. For example, Margaret King recalls Yorick's influence on her kids:

> Yorick lived in one of the villages near Lugano surrounded by vineyards. He played this great adventure game with my kids. He used to dress up with a hood over his face and take my two 9 year old daughters to the vineyards to learn to "steal grapes". My forty year old daughters still tell stories of this wonderful experience. Yorick's daughter Octavia was born in Geneva and the fact that my grand child is named Octavia is not coincidence. Our families have stayed in close contact over the years.

Yorick selflessly invested himself in teaching the next generation. Nicoletta Calzolari (CNR, Italy) recalls "extraordinary" summer schools on computational linguistics that the late Antonio Zampoli organized in Pisa in the early seventies:

> They were extraordinary events, where Antonio was able to gather really the most prominent people of the time. I still remember [Yorick's] appearance at the first lecture. He impressed us (or me at least) because he appeared with a very elegant suit, very formal (probably also a hat, Borsalino style) and in particular … all completely white! It was rather strange among students, but also other teachers, all very casual. And as soon as he started to speak, he shocked us with the speed with which he spoke, all of us (students) most of the time unable to follow…. I discovered only later that he could speak rather good Italian. Years later it was Yorick who made me discover a wonderful piece of Italy. He loves all that is beautiful … and he told me about Gargonza, a very special medieval village, really just a little more than a castle, completely surrounded by walls, circular on top of a hill, completely restored and transformed almost all of it in a very nice hotel, and … here in Tuscany (neither Antonio nor I knew it before!).

1.6 University of Edinburgh (1975–1976)

From 1975 to 1976 Yorick served as a Senior Visiting Fellow at the Department of Artificial Intelligence at the University of Edinburgh. Dr. Graeme Ritchie, now at Aberdeen, was then in his 3rd year of his PhD at Edinburgh. He recalls:

> Yorick's presence was felt in the department. I recall Martha Stone (Palmer) organized a reading group, and Yorick was a prominent participant – he would liven up the discussions. He also gave a series of public lectures on computational linguistics, natural language, and artificial intelligence which brought in other departments. The department had quite a thriving coffee room culture, where Yorick contributed his strong opinions to the debates.

In 1976 Yorick published the article "Frames, Scripts, Stories, and Fantasies" in the Proceedings of the International Conference on the Psychology of Language. Graeme Ritchie recalls that frames had been the hot topic of that period:

> Yorick was very much a strong proponent of semantically based approaches to NLP. The roles of syntax and semantics were hotly disputed – five years prior Terry Winograd had published his work on SHRDLU, Roger Schank had his Conceptual Dependency Theory and Yorick had his own preference semantics formalism. He was antagonistic to traditional (syntactic only) approaches.

During this same period, lexicographer Dr. Patrick Hanks, responsible for the first editions of *Collins English Dictionary, Cobuild*, and *the New Oxford Dictionary of English* recalls how Yorick changed his intellectual life:

> I first met Yorick in Edinburgh in about 1975. I was there for the Festival, and he was singing in the Mikado – was he Ko-ko (Lord High Executioner) or Pooh-Bah (Lord High Everything Else)? I forget. After the show, over the second or third bottle of wine, I found myself talking about words and meanings and confessing to intellectual bewilderment. An Eng. lit. graduate and a lexicographer, I would read the fashionable papers on linguistics and semantics of the time and wonder why they had so little to say to me – and that little so often implausible – even though my job involved describing central aspects of language and meaning. Yorick explained. "You've been reading the wrong sort of semantics – mere symbol pushing! And the wrong sort of linguistics!" He put things into a new perspective for me, expatiating on Wittgenstein, Grice, and other philosophers of language, and he subsequently sent me two of his own papers on Preference Semantics. I was hooked. When my Collins English Dictionary was published in 1979, I resigned from my job, put lexicography behind me for ever (as I thought), and registered for a Ph.D. with Yorick at Essex. The next two and a half years provided the best part of my real education. It is ironic, but true, that my best educational experience was never formally crowned with a

certificate. (After a couple of years, the Cobuild project at the University of Birmingham made me an offer I couldn't refuse. I became embroiled again and never submitted my dissertation in the Department of Language and Linguistics at Essex, which by this time was Yorick-less and overrun with Chomskyans.)

Also at University of Edinburgh at that time was Professor Alan Bundy who recalls three anecdotes from the year Yorick spent there:

1. He joined the local operatic society, who put on a show consisting of Gilbert and Sullivan highlights, which I attended. I forget now exactly which roles Yorick played, but he played a prominent part, and enthusiastically engaged in the spirit of the event.
2. During his time in Edinburgh, Yorick and his wife hosted several parties. These were pretty lavish affairs – orders of magnitude more grand than the usual student parties we were all used to. I recall strawberries in February, roasted turkeys, etc. As an example of the law of unintended consequences, these events discouraged others from holding parties for a while, since they felt they could not compete.
3. At that time there was a controversial modern sculpture erected in the middle of the roundabout at the head of Leith walk. It was a scaffolding-like structure with randomly flashing lights all over it – or at least, it was supposed to have randomly flashing lights – these never really worked. At a dinner party, Yorick very vocally slagged off this sculpture, only to discover that the artist was sitting next to him.

In addition to his impressive academic, acting, and social contributions, Yorick was blessed with the birth of his son Seth in Edinburgh.

1.7 University of Essex (1976–1985)

Yorick joined Essex as a Reader in Linguistics in 1976, 2 years later becoming Professor and two more years later Head of the Department of Linguistics. After serving in this role for three years he became Professor of Computer Science from 1984–1985. Professor Derek Partridge recalls:

He persuaded the vice chancellor to switch its chair from Linguistics to Computer Science. They thought they'd give him an easy ride by having him teach introduction to CS. Yorick responded "I couldn't possibly do that as I know nothing about the subject." How could he, he was a computational linguist.

Patrick Hanks recalls a related story:

Derek Partridge recalls Yorick claiming to know nothing about Computer Science. This can be matched by the linguists at Essex, at the time when

he was Professor of Linguistics, who claimed that he knew nothing about linguistics – by which they apparently meant that he was not an orthodox subscriber to their own received dogma. Yorick has always been very clear about what he is and what he does. He is an AIer, a Cambridge philosopher who became fascinated by AI. His range is considerable. Many of us have benefited, in many different ways, from his profound insights into the nature of language and meaning and the problems of making these machine-tractable.

While at Essex, Yorick lived in Clacton as Derek Partridge recalls:

> The other funny thing I recall is that at that time Yorick lived in Clacton, a cheap seaside resort close to university. He was an invited speaker at an international conference and a poster went up and listed him as coming from the non-existent University of Clacton. This oxymoron was enjoyed by the British attendees.

While Clacton may have been thought of as a cheap, Dr. Doug Arnold of University of Essex recalls Yorick's home as a palace: "a very fine and very beautiful old – maybe seventeenth century – black and white half-timbered, and the site of many legendary parties." Dr. Pat Hayes (Institute for Human and Machine Cognition, Florida) recalls "a lovely old place, converted from two cottages, with a splendid rear garden". He remembers the ice cream machine at one weekend party:

> The house that I recall was in the countryside near Clacton, not in the town itself. It was I vividly recall their wonderful dog, Hugo, who was about the size of a small horse, and the parties. One in particular was held on a Sunday afternoon, with many small children present, and the hosts had provided a ice-cream machine which delivered soft-cone ices free, to the kids' general delight (a typically splendid Wilksean gesture). At one point late in the afternoon one of my sons, aged perhaps five, came to me sadly and said that the dog wouldn't eat an ice-cream. We found Hugo in a far corner of the garden trying to hide himself in a hedge. Inquiries revealed that he had obediently eaten the first thirteen ice-cream cones quite happily.

John Tait also recalls Yorick's dog:

> While living in Clacton Yorick acquired a large, highly intelligent, Newfoundland dog. This dog was beloved of everyone (it could be trusted to baby sit a group of children at the side of a busy road) except Karen [Sparck Jones]. Karen particularly disliked its tendency to slaver over everyone and everything: but the more she tried to avoid it, the more determined the dog became to win her around: by slavering over her!

Karen remembers Yorick's "tiresome dog":

> it was huge and when it waved its tail tended to sweep things off low tables, as I observed in Y's house when it broke an antique glass object

Fig. 1.2. Yorick at Eurotra Workshop, Bangor, 1980

During this time Yorick (see Figure 1.2) was one of the founding figures of the Eurotra Project (1982–1993), the European Community's Machine Translation program aimed at developing a machine translation prototype for the European Community languages (at that time Danish, Dutch, English, French, German, and Italian – Portuguese, Spanish and Greek were added later). While generally agreed to have been unsuccessful on a technical and scientific level, it achieved remarkable success in fostering computational linguistics research in the EC, and in restoring MT as a worthwhile and respectable area of computational linguistics research. A subsequent DARPA MT initiative (1990–1995) led to the demise of rule-based MT and ushered in the IBM statistical approaches to MT and, more generally, computational linguistics.

Dr. Doug Arnold came to the Department of Language and Linguistics at Essex in the late 1970s as a graduate student and recalls Yorick's presence:

> Yorick's dynamism and energy were impressive from the very first. He was a brilliant teacher – hugely entertaining and inspirational. Of course, he *looked* fantastic – he would come in to teach sometimes in jeans and a ratty tee-shirt, sometimes in a silk shirt and three piece suit, or a white linen jacket sometimes, spectacularly, in a lime green skiing dungarees.
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> Listening to Yorick you always knew you were in the presence of someone very very clever, razor sharp with huge knowledge and absolutely at the forefront of the field, but every now and then he would come out with something truly astonishing – some insight that would leave you almost gasping, and with a clear realization that he really did operate on another level to the rest of us. But maybe more impressive than this was his openness, and complete lack of condescension: you always had the sense that he was open to ideas from any source – and not only if you were going to agree with him. I seriously doubt whether Yorick and I have ever agreed about any theoretical issue, but this was never a problem. He was hugely generous in his support – fierce and profound disagreement did not stop him giving me enormous encouragement and professional support.
>
> He had a big impact on the department. At the time Essex was quite a good centre for AI, with people like Pat Hayes, and Mike Brady, as well as Yorick making it one of the best places in Europe, but the Department of Language and Linguistics did not have the same profile. It was moving

from a mainly language teaching department with a strong line in Applied Linguistics to having a having a full range of linguistics research and teaching. Yorick's appointment was part of this process, I suppose, but he really set about changing the whole culture of the Department from being somewhat insular and reserved to being more dynamic and outgoing, attracting grants (like the money from the Eurotra project, which really established Essex as a centre for Computational Linguistics) and organizing workshops and conferences which brought really international figures here.

Pat Hayes recalls the contribution Yorick made in very lean times:

There was no research funding available for AI after the disastrous 'Lighthill Report', and (to give an example of the flavor of the times) for three years running, only two or three senior lines were available for promotion over the entire university. Many younger faculty, including Mike Brady and me, decided to leave the country at that time. Yorick had only recently arrived and was then the Chair of the linguistics department: his staying, I think, is what kept Essex on the map.

Doug remarks that the transformation effect Yorick had at Essex was extraordinary:

But in some ways his main impact was outside the Department, on the University as a whole. In the early 80's the UK government decided to put some serious money into a broad programme of research called the "Alvey Programme" (it was some sort of response to the Japanese Fifth Generation Project). Yorick organized a joint, University wide, response involving people from Computer Science, Philosophy, Electronic Systems Engineering, and Language and Linguistics. This resulted in the setting up of the Cognitive Science Centre (and later the establishment of a Department of Psychology), the creation of several jobs (one of which I was lucky enough to get), and the arrival of the first Unix machines on campus.

Of course, it's won't be a surprise to anyone whose ever met him that Yorick is a hugely entertaining speaker, a great teacher, and a dynamic organizer and leader. What I think is less obvious is his modesty – there can be very few people of his standing who are so prone to downplaying the importance of their own work, right from his earliest work, which though nominally about MT is also a landmark in work on robustness in NLP, and an important precursor of much more recent work on lexical semantics, metaphor, and default reasoning.

In spite of all the individual attention and influence on his students, Yorick found time during this period to write and record two Open University television programs in Cognitive Psychology in 1977, together with a course book. He also co-edited the collection *Automatic Natural Language Processing* in 1983 with Karen Sparck-Jones. John Tait recalls:

The book edited with Karen Sparck Jones was the result of a workshop on Parsing sponsored by the British Science and Engineering Research Council. The list of speakers included many extremely famous and soon to be famous names, including Martin Kay, Chris Riesbeck, Gene Charniak, Ted Briscoe (then a humble Ph.D. student) and so on. The party from Cambridge arrived safely at Wivenhoe House[2] at Essex University largely because of my local knowledge and rather in spite of Yorick's wildly misleading directions. That wound Karen up no end. [Although Pat Hayes claims "Wivenhoe House is only a few miles from a major rail commuter station, less than an hour from London" Karen recalls the place as being "pretty deeply buried in the country"] Yorick's comment was "Don't worry they'll get here: they're all intelligent people: we wouldn't have invited them if they weren't."

Patrick Hanks recalls Yorick's love of Socratic discourse and his deep reservoir of philosophy pouring into conversations:

Memories of studying with Yorick come flooding back. Conversations during "supervisions" ranged over everything and anything – the philosophy of language and lexical semantics, certainly, but also innumerable other aspects of philosophy, culture, life, religion, politics, … He took a particular delight in defending the supposedly indefensible – from Ian Paisley to Geoffrey Sampson. He demolished over-general and soggy-minded assertions with what he described as "the standard Cambridge philosophy question: Yes, but what would it be like for it to be otherwise?"

Patrick recalls that Yorick's dialectic challenges were not limited to conversations with students:

Visiting speakers were sometimes savaged, usually preceded by the electrifying signal "Forgive me, but…" On one occasion, the visiting speaker was Steve Pulman (now Professor of Linguistics at Oxford). Yorick laid into him as usual, all guns blazing. "But, Yorick," protested Steve mildly, "You supervised the dissertation in which these ideas were developed." Yorick shot back, "Yes, but that doesn't mean that I have to believe them."

Pat Hayes notes Yorick's treatment of visiting speakers was second to none:

This was, like [his house] parties, an Essex tradition. Mike Brady, Richard Bornat and myself would also challenge visiting speakers in this way, at times rather too harshly, as we discovered when we reduced one poor guy to a state where he was unable to speak. And of course we all would also

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[2] Pat Hayes notes "It is famous: There is a beautiful Constable painting of it in the National Gallery in Washington, DC. (Gallery 57, painted 1816, oil on canvas)"

do it to one another, mercilessly. But I think that it is fair to say that both in throwing splendid parties and in skill at skewering intellectual weaknesses (and still more, pretensions), Yorick had no equal.

Pat also recalls how he distinguished himself in the performing arts:

One fond memory is of a rare Yorickian stage performance, as Caliban in an Essex University amateur production of 'The Tempest'. Yorick's voice was several decibels more powerful than everyone else's and, perhaps because he was also a head taller, he spent all his time on stage scampering about bent over like a huge spider and roaring out his lines. The rest of the cast just stood around and looked at him, apparently paralyzed with fear. I will never forget this, and neither would Shakespeare if he could have seen it.

Finally, Pat Hayes recalls how the world almost lost this great scholar:

Yorick fell through a glass partition which sliced his Achilles tendon and almost killed him (from blood loss because of the time the ambulance took). It was a major trauma, he needed walking aids for several months; and I know that many years later, when I was visiting him in New Mexico, the old injury was still giving him some leg trouble. Of course it did not stop Yorick being Yorick.

1.8 New Mexico State University (1985–1993)

The transitions of a globe trotter are not always smooth, as Yorick experienced upon his arrival at NMSU. Professor Derek Partridge admits "I sent him the advert that got him to New Mexico and so I 'know' the early years of that saga well". Derek goes on:

The first year we had extraordinarily bad weather. Yorick went out in the snow and slush to buy wellies[3] but such things were not available in New Mexico as they never had weather like that! Then on lighting a fire in their rental house the chimney caught alight and they were living in the snow with a tarp draped over their roof.

Derek recalls when Yorick sold their house in Clacton to purchase and move to their new home in New Mexico that exchange rates were very poor at the time. To make matters worse, they put their home money in the local credit union and then because of some local rumor people rushed to withdraw their savings leaving all of Yorick's assets frozen. Fortunately the situation eventually was resolved and Yorick found a home.

  Yorick was hired by New Mexico as the first director of the Computing Research Laboratory (CRL). In 1985 New Mexico funded six state centers of excellence.

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[3] Wellington Boots – long rubber boots that come up below the knees.

NMSU was selected in computer science and provided funding for 4 years and then needed to become self supporting. Gene Charniak who served on the Board of Advisors while Yorick was director recalls "He was a very effective administrator. He also had exquisite taste in restaurants, and took us to an outstanding one just south of the boarder in Mexico." Dr. Louise Guthrie recalls:

> Yorick built up the lab well beyond the original robotics and vision sections to include a robust natural language program that included cognitive psychology, linguistics, and modern language with a self supporting budget of about $4M a year. Yorick built a staff of about 65 people. He put New Mexico on the map. He was able to get one of the few Tipster contracts, which was unusual since only BBN and UMass had a contract at that time. Yorick effectively negotiated with the Deans to ensure the lab was well supported. The administration was proud to have it and supported it financially.

If you were to take a most crude measure and covert to US dollars and sum up the grants and contracts awarded to Yorick and colleagues over his career it would amount to over $13 million in US, UK, and European investments. While this investment in Yorick was impressive, his intellectual contribution was priceless. What was priceless to Yorick, however, was his pink Cadillac. Ted Dunning recalls:

> When Yorick came to NMSU he bought this pink (inside and out) Cadillac for $800. It was old in the 80s and was a hideous machine, a great behemoth. One of Yorick's true regrets when he went back to England was giving up his pink Cadillac.

Ted also recalls Yorick's management style:

> He had an unusual management style. He would find good people. He would let them contradict what he thought. For example he brought Xiuming Huang and Dan Fass who were in logic programming. Yorick didn't initially think this was plausible but it led to new ideas. The same was true with me and my work in statistical NLP and genomics. The genomics area was set apart but Yorick was open to new ideas. He initially didn't think a statistical approach was the way to do things but he allowed me to pursue this and it became a major area of research. His ability to foster research he disagreed with was unusual. It was a very cooperative group. This is why he had such good students.

Ted recalls when his wife first met Yorick later in England:

> Ellen first met Yorick at the department. We walked to the parking garage to get into Yorick's monster Range Rover. My wife Ellen had just arrived for the first time in England and was still jet lagged. Being an American, she walked to the right side of the car [the drivers side in the UK].