

# SPEECH OPENING THE MAVERICK MACHINES EXHIBITION

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It is my great pleasure to launch an exhibition which revisits the work of Gordon Pask. Although Richard Brown will shortly be introducing you to some of the highlights you will encounter this evening, I would like to say that I think this exhibition would have been particularly pleasing to Gordon himself. As someone who began his career designing stage sets as a theatre producer and who grew to become an extraordinary and highly-respected scientist, Gordon constantly built bridges between science, the arts and humanities. It is fitting that in revisiting his life and his work, this exhibition touches upon the many spheres in which Gordon excelled.

Gordon Pask has been described as an original - eccentric, courtly, intense; and dazzling. Named variously as the 'Dandy of Cybernetics' and 'the Cambridge Scientist who never sleeps', Gordon was gifted as a scientist, an artist, and a lyricist. His prolific contributions are still being assimilated in psychology, educational technology, cybernetics and systems science today.

Gordon is probably best known as one of the founding fathers of 'cybernetics', the science of control and communication in the animal and the machine. Along with Gordon, the founders of cybernetics included world-leading biologists and neurologists, mathematicians and engineers, psychologists, sociologists, anthropologists and economists. This diverse group of people recognised that many problems could be resolved by interdisciplinary working and they therefore sought to establish a common language and shared set of principles for understanding the organisation of complex systems, such as cells, brains or societies. This collaborative approach to systems is the blueprint for some of today's most progressive research areas, such as systems biology or neuroinformatics, where applying a systems approach is bringing breakthroughs in drug discovery and understanding the way our brains work.

Gordon remained true to the unifying principle of cybernetics throughout his life. He developed *Conversation Theory* in which he conceived of human-machine interaction as a form of conversation, a dynamic process in which the participants learn about each other. Gordon believed that the key to intelligence lay in interaction, and that it is through interaction that we understand each other.

Gordon was also very concerned with the role that computers and new information technologies could play, in making a positive contribution to our lives. He was decades ahead of his time, looking forward to the day when human knowledge would be located in self organising interactive multimedia archives with intelligent agents to support learning and access. He built electro-chemical computers, self-organising systems that grew their own sensors. These ideas are now being revisited by those at the cutting edge of both microelectronics and robotics today.

I had the pleasure of meeting Gordon Pask at a fairly early stage in my career. As a newly appointed research fellow in Edinburgh in the mid 1970s I was inspired by the main ideas in Gordon's articles on learning but frustrated by my inability to follow the detail of the texts or to convince sceptical colleagues in the Department of Artificial Intelligence that we should draw on his conversation theory when we designed computer based instruction.

Accordingly, despite clear advice against the proposal from the senior staff, I hosted a seminar. Gordon arrived off the sleeper from London wearing his black cloak with four Gladstone bags tied to it with pieces of string. Our entry into the North British Hotel for the proper Scottish breakfast of porridge and kippers, which he insisted be served simultaneously, dismayed the staff and guests there.

He was very excited, loudly explaining mathematical ideas and wildly gesticulating through that meal. He demanded a second bowl of porridge so as to secure an isomorphism between the porridge served and the pair of kippers.

His culinary requirements were very exact during his visit and we spent a considerable time at lunch in the University Staff Club negotiating for the removal of whipped cream from a brandy snap so that it could accompany a glass of madeira.

To my dismay and amazement he spoke even more quickly in front of the seminar audience and despite my background reading and hours of private explanation I could not subsequently explain with conviction any of the many topics he touched on to my colleagues. His visit greatly reduced my credibility in the department and to this day I have not had the courage to revisit Edinburgh's grandest Hotel.

However, our encounter had great value for me. Part of the visit was spent on his inspection of my work and I have never experienced more insightful critical commentary. He was a genuine polymath and in that first and subsequent conversations he was able to gently introduce me to valuable ideas from mathematics, psychology, philosophy and cybernetics that were quite new to me.

Visiting him in London and looking at the wonderful teaching machines he had designed it was possible to see and directly engage with his key ideas on learning sequences and style.

Gordon knew too much and his mind worked too fast. He needed to be slowed down by an individual he was trying to help rather than be faced with an audience to dazzle or by the construction of an intricate machine based on his theories. I learnt a great deal from him and still appreciate the kindness and friendliness with which he provided sound advice and donated ideas which helped me with my educational computing research.

It is particularly appropriate that we revisit Gordon's work now, as we look forward to the opening of the University's new Informatics Forum next year. This is a building which brings together researchers in artificial intelligence, computer science and cognitive science, working in areas ranging from machine learning to systems biology. It is purpose-built to encourage interaction and to broaden the horizons of our thinking, and it will include *InSpace*, a gallery which will use interactive artwork to explore the cultural impact of information-related science. It strikes me that this is a facility Gordon Pask would have welcomed, and I am delighted to herald its coming through the launch of this exhibition.