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AICSCSHistory_Interview003_RolandIbbett

SPEAKERS
Roland Ibbett, Vassilis Galanos

Vassilis Galanos 00:02
Okay, so my name is Vassilis Galanos. This is the 17th of April 2024. And I have the pleasure to sit here with Professor Emeritus Roland Ibbett. And this is part of the project I co-research with Professor Chris Williams and Ms Xiao Yang on the history of Computer Science, Artificial Intelligence and Cognitive Science at the University of Edinburgh. So Roland, I just hand it over to you to share.

Roland Ibbett 00:37
Okay. I was appointed professor of computer science in the Department of Computer Science at Edinburgh in 1985. Prior to that, I was a Reader in the Computer Science Department at the University of Manchester, where my interests in both research and teaching were in computer architecture. I was encouraged to apply for the Edinburgh chair by Sidney Michaelson. So I'd like to start by talking about Sidney. Sidney was the first professor of computer science and the founding father of computing at the University of Edinburgh. He was initially appointed director of the newly established Computer Unit, starting on the first of April 1963, not as inauspicious a date as it might seem. In 1949, he had been appointed to a lectureship in mathematics at Imperial College London, where his research on numerical analysis led him to work with colleagues on the design and construction of a computing machine. Although the only technology available to them was very elementary, post office relays and uniselectors, they were able to build a working system, the Imperial College Computing Engine. As part of the design, they invented a technique subsequently known as microprogramming that has become a cornerstone of the design of almost all modern digital computers.

When he came to Edinburgh there was no equipment here on which to run the computing service. Instead, he started a pioneering service based on the use of a landline to the Manchester University Atlas computer. At Manchester he had a reputation for fiery outbursts in the face of the many difficulties which beset this venture. But ultimately, both sides developed a mutual and lasting respect, so much so that Sid was one of the first external examiners for the Manchester Computer Science degree, which is how I first met him. In the 1970s and 80s, he and I met quite regularly through involvement with the educational work of the British Computer Society, first through the BCS professional examinations, and later through work with the BCS degree accreditation process. In fact, it was at the first meeting of the accreditors that Sidney was talking to somebody and said “We can't get people to apply for our chair. This man hasn't applied, for example”. “You didn't ask me”, I said. “I'm asking you now”. That was it. Going back to Sid's early days in Edinburgh, he initiated a stream of new activities for the growing Computer Unit. Research students were recruited from 1963, a postgraduate diploma course was started in 1964 and undergraduate classes began in 1965. Attention then turned to the development of system software for computers. Sid obtained funds for a major cooperative research project with English Electric computers, to be led by Harry Whitfield of the Computer Unit. This was to design and implement a multi-user operating system, a common enough concept now, but breaking new ground at the time. The result was the Edinburgh Multi-Access Service (EMAS) on which Edinburgh University

central computing services were to run for many years. Even though slowly superseded by Unix in the late 1980s, as long as it was available, EMAS remained the preferred operating system for a significant number of Edinburgh users, including Sidney himself. The last machine running EMAS was finally switched off in 1992, the year after Sidney's death, which was very sad.

In 1966 the rapidly expanding activities of the Computer Unit were divided into teaching and research, and the computing service. Sidney was appointed professor and head of the Department of Computer Science, while Dr. G. E (Tommy) Thomas, an early Manchester computing pioneer, was recruited to be director of the Edinburgh Regional Computing Centre. From relatively small beginnings, both organizations grew vastly in size and significance.

In the 1980s, students in the Honours years had access to a laboratory of homegrown networked APMs, Advanced Personal Machines, affectionately known as Fred machines in honour of Fred King, the computing officer responsible for their design and production. By the end of the decade, the APMs were becoming unreliable, and Fred himself left, so the Department invested heavily in Sun workstations.

By 1985, Sidney had given up the headship of the department in favour of Peter Schofield, a Senior Lecturer in the Department who Sid had recruited to come here with him from Imperial. Non-professorial heads were unusual in those days but Peter commanded the respect not only of his professorial colleagues, but also other Heads of Departments and the staff in the Faculty office. The other Professors in the department held personal chairs in theoretical topics, and none had any desire to succeed Peter as head. One of the reasons for creating a second established chair was to be able to appoint someone to succeed Peter as head, so I was under no illusions as to the nature of my own appointment, and I became head in 1987.

I had made a good start before that, by sorting out some irksome timetabling issues. At least one of the three weekly CS1 lectures had to be given twice, one of these times being in an afternoon. The problem was the apparent intransigence of the Physics department over the use of a morning slot for their tutorials, I was delegated to go and negotiate with Dr. Norman Fancey. He and I got on well together, perhaps because my first degree at Manchester had been in Physics, and the problem was resolved.

A different issue had arisen in the case of third year students. Despite his background in mathematics, Sid was an engineer at heart, so the CS BSc degree at Edinburgh included a lot of practical work. The third-year students undertook two major projects, one of which was, appropriately, a microprogramming exercise on specially developed hardware. By the mid-1980s, not only was this hardware becoming unreliable, but the computing officer responsible for the project left for a job in industry. At about that time, I'd organised a national industry-academia joint seminar on the quality and content of CS degrees, from which the most significant takeaway message was that students needed to learn how to work in teams. So at Edinburgh, the microprogramming project was abandoned, and I persuaded at least some of my colleagues to help run a System Design project. I'm delighted, of course, that it's still running.

In the 1990s, the University started to rationalize its management structure by combining smaller departments into larger planning units. Combining CS and AI and some of the other relatively small research units seemed like a good idea. CS and AI had been running a joint honours degree for many

years and there were one or two joint appointments. Finding a name for the combined planning unit was a contentious issue, however. Jim Howe, Professor of Artificial Intelligence, was adamant that this merger should not be seen as a takeover of AI by CS, so that the name was not to include computer or computing. The then Dean of Science and Engineering, Professor John Mavor, an electrical engineer, asked me for advice. I suggested informatics. Linguistic variations of this word were being used in many mainland European countries for what were essentially computer science departments. The name stuck. It had some provenance in Edinburgh, having been chosen by Robin Milner as a way of defining what computer scientists do, analogous to mathematics.

Having been personally regarded with some suspicion by colleagues in AI, I think I redeemed myself eventually by proposing that we offer a single honours degree in AI. Having continued my involvement in accreditation with the BCS, I was aware that some other universities were offering degrees in AI that involved more CS, and less AI than our joint degree. It seems to have become fashionable to call any large program AI these days, but I think it just a marketing bandwagon. So far as I can tell, LLM based programs show no sign of any actual intelligence whatsoever.

I also found common ground with members of the Physics department, whose research was starting to be centred on the use of high-speed parallel computers. As part of the process by which I was appointed, I had given a lecture entitled “The Gigaflop Quest”. Among those attending were several physicists, Professor David Wallace being particularly prominent among them. Some of his colleagues were already using various DAP computers and in the late 1980s, David's group acquired a Meiko Computing Surface, a transputer-based machine. But they were struggling with the task of managing it. I met in my office with Peter Williams, then the deputy director of the University computing service and suggested that what we needed was a unit dedicated to parallel computing, to be organized as a joint venture between the Departments of Physics and Computer Science and the Computing Service. David's office was immediately above mine in the James Clerk Maxwell building. So we went upstairs, told David of our plans for an Edinburgh Parallel Computing Centre and persuaded him that he should be its Director. EPCC now runs the UK's major academic high-performance computing service. I'm very proud of that.

My own research has mainly involved the creation and use of a computer architecture simulation environment, called HASE, that allows for the visualization of activities in a computing system during program execution. HASE has been used for undergraduate, Master's and PhD projects, and for some joint research projects with industry. It's also given me a nice hobby in retirement, building models of historical interesting computers, such as the Manchester Baby, Atlas, MU5, the CDC 6600, and the Cray-1. That's my history of my time at Edinburgh, I think.

Vassilis Galanos 12:20
Would you like to expand a bit more on those computers, about what makes them special?

Roland Ibbett 12:25
Okay, the Baby was the first computer to run a program on a stored program digital computer. It used cathode ray tubes as the store. It first ran on the 21st of June 1948. Two years ago, we got a milestone plaque put up in Manchester by the Institution of Electrical and Electronic Engineers to commemorate that event. Atlas was a later Manchester machine, the first machine with virtual memory, we got a plaque for that as well. Atlas was a fabulous machine. It inspired lots of people, including me to, pursue careers in computing. They said that if it was switched off, that halved the nation's computing power. I

think the Government chief scientist said that six would be enough for the nation's computing for the foreseeable future. Gosh! MU5 was the successor to Atlas, a machine I helped to design and build and also co-wrote the book. I guess it made me sufficiently well known that other people wanted me to come and work for them. The CDC 6600 was designed by a man called Seymour Cray, who later formed his own computer company, Cray Research. It used parallel arithmetic units for the first time. CDC claimed it was a lot faster than Atlas. It wasn't, but Ferranti weren't able to sell any Atlas computers in America as a consequence of this. CERN bought a 6600 and then thought it wasn't running very fast. So they took a 100-hour workload to the Rutherford labs and ran it on their Atlas. And of course, CDC thought it would take 500 hours. Actually, 30. So CDC learned something about optimizing compilers, because if you don't optimize the code on the 6600, it will not run fast, and it's quite bad. Having built a simulation model of it, I realize it is a bit of a pig to program. The Cray-1 came out in 1976. That was the first vector machine. It really was another fabulous system. The first one they built ended up at Daresbury labs in Cheshire for a while. The last time I saw it was in the Science Museum, not plugged in. Well, it consumed 113 kilowatts. So there we are, these have all been very significant computers. So my idea for the models I build is for students to be able to understand their principles of operation. You couldn't run real code on them, they would run very slowly, but the idea is that you can run small demonstration programs. You used to be able to take students and show them a physical computer with flashing lights. You could say that's this bit, and that's the other. Now, you can't see anything. So my models are to allow people to see what's happening inside the computer.

Vassilis Galanos 16:07
So yes, yes. Do you think this creates a negative effect in our perception of computers today? Sort of lack of or too much interface for instance?

Roland Ibbett 16:19
Yes, well, there are a number of issues. There have been articles recently in the IEEE Spectrum magazine bemoaning the fact that software has become incredibly bloated, with millions of lines of code used to open a garage door. I mean, you would want that to take at most a few 1000 lines. But the way people write software nowadays, oh, I need this button, I need that, I need that, I need that. And it becomes unsafe, because there are too many vulnerabilities, and too many places where people can get in and act maliciously. So I think we really need to go back to some proper engineering of software to make sure it's safe. But of course that takes time and effort. People think they're doing a good job by writing more software. We need to persuade them, you're doing a good job by writing less, just to make sure it does the job.

Vassilis Galanos 17:22
That's a great message for future generations to be very honest. So you've mentioned engineering a couple of times. You mentioned before we started the interview that you're an engineer at heart and you use the same phrase for Sidney.

Roland Ibbett 17:34
Yes.

Vassilis Galanos 17:35
Would all like to elaborate a bit on that, the influence of engineering in the development of computer science?

Roland Ibbett 17:42
Well, my first degree was in physics at Manchester. But in the third year, students had the option to take courses in electrical engineering instead of some other physics courses, and I chose that path. It was mostly Computer Engineering lectures given, in particular, by Tom Kilburn, who designed the first machine and Atlas and various others, and was boss of the MU5 project that I worked on later. He was originally a mathematician but he also became an engineer. So I regard myself more of being an engineer than I am a physicist. I have no regrets about having done the physics degree. I think it gives a valuable view of the way in which you should set about designing an engineering artifact. Because physicists are looking for the underlying principles, minimizing what you need to know specifically about something, reducing things to equations in many cases. But it means that you don't have lots of extraneous stuff. You design for elegance, elegance is the word I would use about why computers, some of them, are better designed than others, because there's an elegance about them. If you look at the detail you find there's often horrible kluges that you know the designers would rather not tell you about. But the principles of some of the designs of the significant machines, in my view, have been elegance. Seymour Cray was asked what was the most important aspect of it and he said cooling. Gene Amdahl, who set up a company to build IBM-like machines, said it was connectors. But I think elegance is the bottom line of a computing system.

Vassilis Galanos 19:57
Occam's Razor.

Roland Ibbett 20:00
Yes, do it as simply as you can. The other thing about engineers, I think, is that you take the view that you may not be able to achieve perfection. So the question is, do you want it perfect, or do you want it Friday? So I've lived by those sorts of principles.

Vassilis Galanos 20:27
Yes. It's very interesting, again, a very important message for future generations.

Roland Ibbett 20:35
I think the other message I would give to anybody setting out is, think about 10 years from now. Look back, did you make the right decision? I had the opportunity to do a PhD and I thought, in 10 years time, will I look back and regret it if I don't? So that answered my question for me.

Vassilis Galanos 21:08
So when you came to Edinburgh, you were already aware of many things that were taking place here. But when you arrived, what kind of research culture did you encounter? What made Edinburgh significant to you at that time?

Roland Ibbett 21:27
It was very well known for theoretical work. Robin Milner was the most significant theoretical computer scientist around, and a lovely man. I got on well with him. The architecture side of computing was a bit in the doldrums here. I felt I could do something about it, thought I could reorganize things a bit, and then show that they were forward looking in terms of aspirations. To build the best computers, or to have the best computers available. The Manchester influence, I guess, we felt we were the best. I wanted Edinburgh to be the best. I think with the Parallel Computing Centre, actually in that sense it is.

That's run separately from computer science. But I think without the computer science input into the idea, it wouldn't have happened.

Vassilis Galanos 22:52
Have you got any stories or anecdotes to share about Robin Milner or Sidney?

Roland Ibbett 23:00
Oh, well, there were lots of things one could say about Sid because he could be quite forceful at times with people. I think he was asked how the University could best harness the energies of Donald Michie. He suggested building a treadmill. I think certainly he was rather sceptical of AI.

Vassilis Galanos 23:36
Yes. You mentioned 1963 being a key date at Edinburgh, would you like to tell us more?

Roland Ibbett 23:50
Well, at the time, I was a research assistant in a university on the east coast of England working with astronomers. So my first area of activity was computerizing spectrophotometers. Accepted wisdom was that if you were recording a spectrum, you used a chart recorder and measured the points on the chart and I thought, but the light signal is photons, we should count them. No, they said no, no. Yes, I said, and we bought some counters from a firm based in Edinburgh, in fact, in Sighthill, Nuclear Enterprises, and you could buy logic gates and put them together from a company called Elliott Automation. So I designed and built the logic that would control the counters and drive a stepper motor inside the spectrometer and produce outputs on paper tape. That was quite pioneering in those days. But I kept in touch with the people at Manchester and eventually they said, would you like to apply for a job? So I applied for a job and I forget how many people were interviewed, but they were keen to offer employment to three people, though there were only two lecturing posts. So I was asked, would I come as a research assistant? Yes. The condition was that when a vacancy arose on the lecturing staff, because they were very fixed appointments in those days, I would get that appointment. So after a year, a guy named Eric Dunston went off to the States to set up a company making floppy disks. And so I got his job.

Vassilis Galanos 26:23
Have you met him?

Roland Ibbett 26:24
Oh, yes. Well, I worked with him for the first year or so. Yes, we did things together. Yes, he was an interesting character. He liked to hum the well-known Mozart horn concerto. So you always knew where Eric was, because you could hear him walking down the corridor, humming loudly. Yes, that was interesting. When we came to Edinburgh my wife said we aspired to the level of eccentricity of the Michaelsons, both Sid and his wife Kitty. I'm not sure we achieved it. But there don't seem to be eccentrics in universities in the way there used to be. I think there isn't time to be eccentric anymore.

Vassilis Galanos 27:14
Yes, that's true. And that's a reputation academics had in the past for being eccentric. Would like to share some stories about people's eccentricities? At the time that you've encountered?

Roland Ibbett 27:27

We had a Reader in Physics lecture to us, name of Jimmy Braddick. He was writing equations on the board and somebody said, shouldn't there be a factor of two in that. Oh, probably, he said, I'm inclined to be a bit blasé about constants. Another man said, everything I say is right. Well, I could empathise with that when I became a lecturer. And Tom Kilburn, who was fairly taciturn, said to us, “if you've got a problem with the lectures, go and speak to whoever's giving the lectures. He'll tell you to go away. Don't”. I did that, finding Tom in the Atlas computer room, which was hallowed ground. Later in the final year, we all did a project, in pairs, and our supervisor was working in that room. So my partner and I got to go into the Atlas room quite often, which was quite an experience.

Vassilis Galanos 28:58
You talked about the very important decision to name the School "Informatics".

Language is extremely important. You've mentioned marketing, you've mentioned hype, if I may, would you like to elaborate more on linguistic choices at that era, and what their significance and impact was, and what did they represent even?

Roland Ibbett 29:28
Well, in fact, Informatics was meant as an umbrella term really. That got over any linguistic battles that there might have been between CS and AI. So from that point of view, I think it was a good decision. I sometimes regret it, but then, pretty much the same word is used in many other countries - in Italy and in Spain it's informatica, informatik in Germany, informatique in French, and in various other places. So yes I think it's important. But informatics in some other universities puts together a different collection of subjects. One of the accreditation visits I did was to Bangor and there informatics was computer science, maths and electronic engineering, which struggles a bit, I think. I think the totality of what takes place in Informatics in Edinburgh is probably more representative of the broad area.

Vassilis Galanos 30:44
And at the time, when you took that decision, did you also monitor how other schools and other universities built up their curricula around the term?

Roland Ibbett 30:57
Not specially. Most universities stuck with computer science or computing, still do. Glasgow always called it computing science rather than computer science. St Andrews, I think, used to call it computational science. The name computer science was chosen at Manchester, really, against the wishes of Tom Kilburn, who wanted it to be computer engineering. The Vice-Chancellor told him: well, you won't get many students because numbers choosing to do engineering are relatively low. I think that was because it's not understood in schools. And so computer science was chosen, and then in a few other places. Some of the polytechnics got into computing very early, and some of them, as polytechnics, they did a very good job in my view. The ones I knew best were North Staffs, Teesside, Leicester, Hatfield. They spring to mind. I knew them through the British Computer Society, which decided to run professional examinations for the benefit of people who were working in the computing industry but hadn't had the opportunity to study at university, because there weren't departments. I was asked to be examiner for the computer architecture and computer hardware modules of the exams, which I did, and eventually I became chair of the exams board where Sidney was one of the examiners. Again, how I got to know Sidney. So we were both very much involved with BCS activities, including when it came to persuading the Engineering Council that BCS should be a member institution, which

was, I think, a very valuable exercise. So, I have CEng after my name via the British Computer Society. Most professional members of BCS have CITP, and I said, no, I am not an IT professional. So I was also sent off to be on the Engineering Council Registration Standards Board by the BCS, where I was involved in revamping their syllabuses, having done it for the BCS - I chaired a working group looking at BCS syllabuses - so I was then a member of a working group at the Engineering Council. And then a number of people in BCS were asked, would they be interested in joining an organization called EQANIE, the European Quality Assurance Network for Informatics Education. So I said yes, and then heard nothing else, they just said they'd got plenty of people. Then I had a phone call from a German lady saying, would I go on a trial accreditation visit to Bozen? Where's Bozen? Well it's also called Bolzano because it's in Italy, but used to be part of the Austro-Hungarian empire. So off I went to Bolzano or Bozen, where most people actually speak German. We did a trial visit and then the decision was to take that forward. A German accreditation agency ASIIN had got money from the European Union to set EQANIE up. The first meeting of the Accreditation Committee was in Berlin at the Technical University and I was again asked by BCS, would I like to be on that committee? I said yes. and the committee members said, would you be the chairman? Yes. So I chaired that for seven years. The terms are supposed to be three years, once renewable, but because it was new, everybody started at the same time. So in fact, I did seven years, but decided after that, I'd had enough. Fortunately there are other people from the UK who are part of EQANIE.

Vassilis Galanos 35:58
What period was that?

Roland Ibbett 36:04
About 2010 it started, after I retired.

Vassilis Galanos 36:08
Okay, okay. Yes. Interesting. You mentioned that the decision to call it computer science was taken in Manchester. Do you remember the date? Year?

Roland Ibbett 36:27
I think in 1964. The first intake was in 1965, because I moved there in 1966 and there was already a second year cohort. One of the things I did was demonstrating in the first year hardware laboratory to the new first years.

Vassilis Galanos 36:57
Interesting. And do you think there is some kind of significance in calling it computation, or computers, or computing science, or computer science?

Roland Ibbett 37:10
Well, not a lot. Computation, I guess is more applied, the use of computers as opposed to studying computers themselves. And likewise, computing science, is more towards applications than to the actual machinery. So at Manchester, we were very much at the machine level and the software that came afterwards. Tom Kilburn once said of theoreticians, they are always somehow running along behind, trying to catch up, but I didn't mention that too often in Edinburgh, out of respect for my colleagues. I shocked them once. I nominated them for a BCS prize for the language ML. It has nothing to do with machine learning, it was a meta language which Robin had invented. I remember Robin, Rod Burstall and Gordon Plotkin coming into my office late one afternoon, saying “We've got bad news.

We've won". So despite my reservations about some of the things my colleagues do, I think I've actually supported them as best I could. The power of a head of department is to say no. It's a power you have to use sparingly, because you must encourage rather than discourage people where possible. You can't always, sometimes you can't find the resources to do things.

Vassilis Galanos 38:59
You mentioned the difference or nuance between applied and more theoretical, sort of, modes of science. Would you like to expand? How did you perceive throughout your historical career, the difference between theoretical computer science and applied computer science, and whether this also plays a role, you know, in the relationship with the AI components of informatics.

Roland Ibbett 39:29
Well, you could argue that AI is applied computer science, but you wouldn't be very popular with the AI people. Because I have some memory before I came here, I think it was Donald Michie who did computing with matchboxes. So you don't actually have to have a computer, I think it was him. But yes, building computers is what excited me and building models of computers now is what excites me. I find it very satisfying to do, having actually worked on building a big machine. That's my background, and this just colours my view of the world of computer science. I mean, we led the world at one point in this country, but we didn't have the resources to pursue it, nor the political will, I think, really or the commercial will. Now, because you need so much investment to design anything, and because Moore's law has let you put more and more transistors on a chip, people have thought, what shall we do them? what can we do with them? Well, they come up with all sorts of more and more clever things, more bells and whistles, but I'm not sure that's actually a good thing. Sometimes I think back to basics is a good thing, so in a sense I'm glad I'm retired. I don't have to worry about these things any more. I can watch from a distance.

Vassilis Galanos 41:23
Yeah, well, this is this is very interesting. I think many people that I've spoken to associate applications, and applied knowledge in machines with commercialization. What are your thoughts around that?

Roland Ibbett 41:46
Well, I was asked to go to Herriot's school, just along the road, as you probably know. I had some children there. I was on the Board of Trustees for several years, as a University appointment. I think the Secretary of the University wanted to keep me out of mischief after I stopped being a Vice-principal, which I was here for six years. So they said would I come and give a talk about computing and IT. Yes, I thought, I will explain the difference computing and IT. So, whether it's done any good or not I don't know. But I asked them how many had got a computer with them: "I've got two, I've got a mobile phone, I've got my son's iPod", whatever it was at the time, "that's a computer". And they're very small, but there still are big computers. So I showed them pictures of some of the machines that EPCC has, which still occupy huge rooms, and still consume vast amounts of power. And people are beginning to worry about the amount of power that computers are using. There's another reason why we need to reduce the size of software, because you're executing far more instructions than are necessary to do the job. And that's consuming power. Data centres are consuming, at the moment, about 2% of the world's electricity supply. If you're not careful, it will get worse. That's one of the things that worries me about things like large language models, training them is hugely expensive. And of course, they're not acknowledging the sources of any of the information they're using. So there's an intellectual issue with them, which I think is becoming increasingly questioned by people saying, hey, you're using my stuff,

you didn't ask permission. The trouble is, so much stuff is available now through the web that it's just assumed, oh well, you can just use it. I think that's going to be an increasing issue, as to what you do with it.

Vassilis Galanos 44:12
Yeah, it's great to hear these thoughts of concern from a person like you, your experience, because there are contemporary researchers who call for the same type of action, but because of their less seniority, people don't necessarily take them into serious consideration. So it's very interesting. Do you think there were similar questions about data, intellectual property, or even code, intellectual property in the past, so when you were designing computers in, even in the 60s or later throughout the 80s, were there conversations around that?

Roland Ibbett 44:56
Well, not so much. One of the things I remember, another thing that persuaded my colleagues at Edinburgh that we should have a course on professional issues, was a requirement of the BCS that you should teach things like codes of conduct, which people at least ought to know about, even if they're not going to join an organisation and signs up to them. And so I gave some professional issues lectures in the third year. They covered a number of topics, including how to write better English. What's wrong with the following statement: Why does Microsoft Word underline the word "which"? Putting a comma in front of it will not make it right, because it will change the meaning of a sentence entirely (“which” should be “that”). And I gave examples of that. I also said, I'd like you to think about the consequences of online shopping. Because if everybody's shopping online, they won't go to the shops. And they won't have the experience of interacting with other people. And they will become frightened. Discuss. I think that was an issue then and it's becoming more so. We're now seeing mental health issues among young people because of the mobile phone and their use in social media. I think it's very worrying. I refuse to have any sort of social media account, I don't need one. And I worry so many people seem to become addicted. There are organisations that spend their time trying to addict their fellow human beings to something that they can make money out of. We've had booze, and we've had tobacco. And now we've got social media. And I think we have to worry. I worry for people.

Vassilis Galanos 47:25
There's interesting research done around the pre-social media type of social media from time sharing, to modern kind of communications. At that time, say in the in the 80s, for example, would you foresee that environment emerging?

Roland Ibbett 47:54
No, no, I don't think so. See, I recently read a book called “The Web before the Web”. It's by an Edinburgh man, Ian Ritchie, who had a company called OWL, Office Workstations Limited, and they produced a hypertext system. They sold it to a number of big companies like Hewlett Packard and Ford, who had huge online documentation about their products and they needed some way of navigating it. Hypertext links seemed like a good idea and Ian said a young man approached him from CERN - Tim Berners-Lee. Would OWL like to write a browser for his idea for a web? Ian turned him down because he didn't see any commercial market. He was running a company, he couldn't devote resources to producing something that might never make any money. Isn't hindsight wonderful? So that was that and that would be in the early 90s. I remember the first time I came across Mosaic was in 1993. People used to say, ooh, do you have email? I said, I've had emails since 1976. I've had enough of it. I spent a semester at Carnegie Mellon University where they had email running on a PDP 10.

When I came back to Manchester, I had a student run a project on the ARPANET, which was the forerunner of the internet. We had a teletype and we had an acoustic coupler and the telephone line and he worked at night, so that the University wouldn't notice the phone bill running up too much. He ran his PhD on a PDP 10 at Pittsburgh. So it was a very early use of that. So I was using email by then already, as were a lot of people in universities in the States, but it was a while before people in this country were using it regularly. And now, it's almost passé to use email, isn't it?

Vassilis Galanos 50:33
Yeah, I have regrettably, I've got several social media accounts, socially forced to have them. And I bet nowadays, the last three or four years, I tried to encourage people to reach out over email, some more stable means of communication. Yeah. And when I arrived at Edinburgh, it was interesting, we still had this sort of legacy reminder that told us to discourage us from printing out our emails. I guess from the time when everyone would print their emails.

Roland Ibbett 51:16
Now you've hit another chord there. "Reach out". My mother warned me against reaching out in case I fell off the edge. And now nobody, nobody contacts anybody anymore. They reach out to them. I'm getting grumpy in my old age, about misuse of language.

Vassilis Galanos 51:43
I mean, there are people who claim that language is evolving. But this kind of evolution, what does it say for the state of our society? This is very important remark about the change of the meaning of the phrase to "reach out".

Roland Ibbett 51:56
Yes, well, we suffer a lot from American exaggeration in language. It's built into the American version of English. Starting with a billion. It's just a small number. It's a thousandth of a real billion. And the use of faculty to refer to an individual. No, sorry. And everybody who studies is a student. No, they're pupils when they're at school, and it's this need to use words with a significant meaning for something of lower significance. So they don't have graduation ceremonies at universities, because they've already graduated from kindergarten So now, it's a commencement ceremony.

Vassilis Galanos 52:58
Yeah, exaggeration can be thought of as another word for hyperbole. What is now in a similar fashion, shortened as hype. And back to our main topic, I think artificial intelligence as a term was coined in the United States.

Roland Ibbett 53:18
Yes.

Vassilis Galanos 53:19
And there was, I think, a controversy. So AI was meant to replace complex information processing, that was proposed by Alan Newell. And I wonder if that type of marketing is something you also want to raise awareness on. And now AI, I mean, linguistically, changes to becoming a singular or plural. You can put an AI into your system.

Roland Ibbett 53:49

Yes. It's become a noun. But it's not intelligence. It's just any big program. Oh, it's AI, it has become fashionable. Now, do you remember the Lighthill report? I remember when I went to the States, everybody was up in arms about the Lighthill report, particularly at CMU, because there was quite a lot of so-called artificial intelligence work going on there. And I think it largely arose because Donald Michie was hyping things up too much. I think he was the main cause of the Lighthill report. But then, it was somebody from Cambridge and I have suspicions about Cambridge, being at Manchester where we know we ran the first computer. For a long time, Cambridge would claim they were the first.

Vassilis Galanos 54:53
Well, it's very interesting that Cambridge, the Lucasian chairs, have always had something to do against AI. That was the concerns raised by James Airy I think against Babbage's Analytical Engine. That's interesting. Maybe geographically, I don't know. Manchester and Edinburgh. Other significant connections you'd like to draw upon, like the connection between the two institutions. Manchester is well known among contemporary people in AI. But Turing ...

Roland Ibbett 55:38
Well, yes, Turing of course was at Manchester. But he didn't design the computer there, he was, well, I think he was a bit odd. I think everybody would accept that Turing was an odd character. So he didn't really fit in well with a bunch of engineers who were fairly down to earth. Which, I suppose was a shame. But he did contribute some of the software for the first machine and he did use the first computer quite a lot for the sorts of things he was interested in. And there is a Turing Way I think, and there's a statue of him. But he wasn't regarded as being a significant contributor to the computing effort in what was in electrical engineering in Manchester.

Vassilis Galanos 56:52
He was actually very much helped by engineers to complete some of his tasks.

Roland Ibbett 56:57
Oh, yes. Well, yes.

Vassilis Galanos 57:01
But any further connections between Manchester and Edinburgh you can recall of?

Roland Ibbett 57:09
No more so than, between Edinburgh or Manchester and other institutions that I can think of.

Vassilis Galanos 57:18
Any notable linkages between Edinburgh and other institutions that perhaps are now a bit obscured as history passes?

Roland Ibbett 57:31
Well, there are some good people in Imperial College who started out in Edinburgh, or at least were here in Edinburgh before they went to Imperial.

Vassilis Galanos 57:43
Would you like to mention some names?

Roland Ibbett 57:46
Well, Philippa Gardner is one. She's quite serious. John Darlington was at Imperial, he was here before he was there. They're the two I can think of. And Sidney, of course, came from Imperial to Edinburgh. So Imperial's pretty good in computing. I was actually on the Imperial Court for three years, that is as the governing body of Imperial College, rather than an institution in China. Again, I was delegated by the BCS. I feel I have some kind of linkage with Imperial. So I'm pleased they won University Challenge if Edinburgh and Manchester weren't going to win it, quite pleased for Imperial to win it.

Vassilis Galanos 58:42
Would you like to elaborate a bit on John or Philippa's contributions?

Roland Ibbett 58:48
Well, I only knew Philippa socially. She was a PhD student of Gordon Plotkin, so Gordon can tell you about her. I just know her as a person I liked, and occasionally meet. She came and gave one of the 60 years celebration lectures.

Vassilis Galanos 59:17
Very interesting. We're nearing the hour of our interview. We're not restricted by any means. I don't have any particular questions to ask but if you have any additional remarks and insights you'd like to share, any stories you share with people that you'd like to put on record for further generations to ..

Roland Ibbett 59:40
I think I've probably told you all the stories I can think of. I'm sure there are other things in my memory bank, but I can't pull them out instantly.

Vassilis Galanos 59:58
Well, this is fantastic. Thank you very much for taking your time.