Interview with Dugald Cameron. Interviewed 28 May 2014, Glasgow Art Club

01 Reaction to Glasgow School of Art fire. History of Glasgow School of Art.

Well, as you've said, Tilli, it was a very sad day last Friday when the one thing I dreaded in all my time there, particularly in my years as director of the School, was the call in the night that would tell me that the Mackintosh building was on fire. It was not a building that was designed to be fire suppressant in any way, or to be resistant to fire. However, the better news is that so much of it has been saved. But more important I think than the building, more important than any building, even Mackintosh's very lovely and useable and practical building, is the School of Art as an institution of learning where people will teach, they will learn, they will engage in scholarship, and they will make work. And that, that wonderful engagement between two people is called teaching, and it happens in the School of Art and of course elsewhere. That can be done actually anywhere. And I think I could do it in the middle of Sauchiehall Street in the rain. The other point to me is the School was established as one of a number of schools of design which were instituted in the 1840s. The School of Art opened its doors in January 1845. The building that did it is down there in Wilson Street, and it came up to Sauchiehall Street here, and then the great Mackintosh building built in two parts. Maybe that's one of the things that saved it because the original part is almost undamaged. However, leaving that, a school of design, a government school of design to assist local industry in the design of its products, that's what it was for. The fine arts came later, and in some ways, in the popular imagination, have subsumed it but people will ask, "How come the School of Art in its way contributed to the development of medical ultrasound? What's that got to do with the School of Art?" Well, the thing is, you could go around all sorts of things and people, what people have done because it's nonspecific, they really do have transferable skills, the creative skills in which the school excels, has done so over, well since 1845 in fact. A home for lost dogs, people who wouldn't fit in anywhere else, like me! And who had a wonderful life there. I was in it from a junior non-Dip student until I became the director 42 and a bit years. I met my wife in the library that sadly has gone. But it will re-arise, and its spirit will never be undimmed [dimmed], I'm sure of that. Industrial design was really invented, I suppose, in the United States, in the late 1920s. People like Harold van Doren, whose book inspired me. Henry Dreyfuss, 'Design This Day' [by Walter Dorwin Teague] who brought ergonomics and anthropometrics into the whole business, and his book The Measure of Man was a bible for most industrial designers, probably still is. Raymond Loewy, a showman but a great man in his way. Walter Dorwin Teague, they came from the advertising industry or from, like Norman Bel Geddes, from film and television. And the Depression of the 1930s gave it a spur, perhaps a different attitude they had in the States to maybe here where it would close things down. They wanted to use all the techniques they could to re-energise the economy. Industrial design was one of them. It came to Britain I suppose after the war. One of the first industrial designers was Douglas Scott, the man that designed the Route Master bus. And he taught in the Central School and he taught the man who I was immensely grateful to have as my teacher, Jimmy Goodchild, who came to the school after the War when the then director, Douglas Percy Bliss, an Italianophile, a scholar, a great wit, but not you would have thought someone too interested in industrial design, yet he saw the need to do it and he was determined that the school would develop and respond to the needs of industry and he brought Jimmy Goodchild and Joe McCrum in a different way, to Glasgow to do it, and I was fortunate to be taught by both of them and to succeed Joe McCrum as head of industrial design.

02 Educational background. Early years at Glasgow School of Art.

I've always been fascinated by drawing. I've drawn most days of my life but I never really thought of the art school. I wanted to be a fighter pilot in the Royal Air Force but my eyes wouldn't let me do it, and although I learned to fly subsequently, the RAF wouldn't have had me. So I left school in the

autumn of 1956 having got whatever you needed to get. The High School of Glasgow is just along there. And I got various jobs lasting almost a week in some of them, and ended up as an apprentice in Rolls Royce. It's interesting that the new director of the School, just been in post for 9 months, has an almost similar background. He was a Rolls Royce apprentice in Bristol, Tom Inns, a very good guy, of course. Well, I was bored out of my mind in Rolls Royce. I also started at half past seven in the morning and I discovered the art school started at half past nine. So I went, I arranged to go and see it on some wet, miserable December evening in 1956. I trudged up the hill and was interviewed by Harry Jefferson Barnes, later Sir Harry Barnes, and an absolute dead ringer for Blunt, Anthony Blunt, in a curious way. Harry was, came from Sheffield. His father was a surgeon, Professor Roland Barnes, I think it was. He was a very distinguished man. Anyway, he was a gentleman and he looked at my stuff and said, "Why don't you think about industrial design?" I said, "Tell me what it is." And he did and I said, "I think that's for me." "Well," he said, "You can't join the course now because it's started but there's a junior non-Dip class, which really is a precursor to the diploma course, the four year diploma course." So I found myself on a January morning in 1957, up in Room 52A, I hope it's still there. It's off the Henman so I doubt it. Sixteen girls and me, an educational experience, coming from an all-boys school. Anyway that gave me an introduction to the school and I can't say I warmed to it much at that time. It seemed a kind of alien environment to me in many ways. It wasn't I got in, the following autumn, to the diploma course and met some great characters and people like Big Bob Bushnell, the retired chairman of the Heckmondwike Carpet Company, that I began to see life in a different perspective and the student dances, and the various other things, and the introduction to the secondary effects of alcohol were well exemplified by what we did. Anyhow, it was a great time and I really fell to the whole thing and suddenly the School of Art just went like that with me and I went like that with it. And we would have worked all the hours that we could get. We'd a marvellous teacher in the first and second year, W. Drummond Bone from Ayr draughtsman, Steven Bone, Muirhead Bone the etcher, the same family. Anyway he taught drawing as a discipline and wanted no nonsense about it. And perspective and all the things that actually are good for industrial designers. And when I draw, and I try to do this or paint every day, sometimes even just for a bit, and I'll go home tonight and go at the thing I'm doing at the moment. I'm thinking of the things that Willy Bone taught me. Two years of that and into industrial design with Jimmy Goodchild. And again, an eye-opener, "Do not design a refrigerator, design a method of keeping food cool." Profound. You know you go below what it seems, and that's the way creative thinking is encouraged and engendered. I tried to put that over to the students that I taught because I actually liked the business of teaching. And we were actually as students largely oblivious of the Mackintosh building. There were people like Bliss, like Barnes, who recognised and got going. The city would have burnt these buildings perfectly happily. That's probably a wee bit unfair at that time but they weren't too interested. They weren't too interested. And we were interested in what we were doing more than anything.

03 Meeting Tom Brown. Beginnings of the Lund machine.

Well, in my final year we all became aware of a very vivacious young first year student, Elsa Stevens. Sunshine, we knew her as. And in talking to us, Sunshine said to me that her brother in law, Tom Brown, Graham Brown, as we knew him, and as I knew him until recently. He's always been Graham, Thomas Graham Brown, to me. Anyway he was involved in the development of these new medical ultrasound machines and he didn't think much of industrial designers. Well, you couldn't have had a better invitation and I arranged to see Tom. And I went around one evening to his flat in Mount Florida and he said, "Well, we're about to get involved in building a commercial machine for Bertil Sundén in Lund. And this is what we're proposing to make." And he had these big drawings, prints, showing the machine and I've shown you the things. Here, you've got them. And I said, "Well, I don't think really this is very good." I was a very cheeky, young, industrial designer. "It's not very good." And I then began to fill out why I didn't think it was very good and it was because, I think, the

ergonomics of it were wrong. Ergonomics is something people could relate to even if the aesthetics questions were not. And he actually agreed. And on his floor we put down… that was the design as… I had drawn this perspective, because they no perspectives of it, a Willy Bone technique, of the gun turret. And I said, "It's no good." And there were sketched out the configuration I thought would be so much better, of a central stem with things growing out of it, including a desk for the operator, doctor typically, and a place for them to keep all their bits and pieces. And be level with the patient, so not looking down on the patient, be level with their patient. And he accepted that. I then had to go and draw the thing out and this is the engineering drawing, the GA drawing that I did. This may feature as one of the great oddities in the history of engineering design because it was drawn to a scale that hitherto and before then unknown, and since unknown, 1:6 because it was the biggest bit of tracing paper I had. And that, it was largely built to that spec. That was one of the scans that came out of it. That's a multiple time-lapse shot of the Lund machine. And it was build. In fact the column was slightly too big to get out of the place where it was built and had to be reduced in height. You can see from the drawing where it's sawed off a bit to make it fit. And that I got to know the people at Kelvin Hughes. One of the unsung heroes of course was the deputy managing director who gave Tom the money to allow him to do it, about £500 I suppose, not more than that, and the permission to engage with Ian Donald who had been doing, and started off the business of medical ultrasound with an old flaw detector. And he got a new one from Kelvin Hughes. But Ian Donald tended to overwhelm other people and sadly, he did this a bit with Tom. Donald and MacVicar did great work in using the techniques of ultrasound but Tom Brown gave them the tools of it. And I was privileged to just be a hanger-on as it were. But I was learning to be an industrial designer at that time and Kelvin Hughes and the guys in Kelvin Hughes, wonderful people, smashing people, taught me so much. I really enjoyed it and learned a great deal. This was the actual presentation drawing of the Lund machine I had done, because I had always specialised in doing fancy drawings. That's not a fancy drawing, it's a very ordinary drawing of it but that was again before it was made. And it got over to Tom an interesting point that I've subsequently used a great deal: I could draw something that wasn't there and therefore I could draw what they were proposing and if you did it in an attractive way, it was used as a sales aid. And that got home to people because I certainly remember in other cases where I was trying to sell my services, one managing director said to me, "Well, I don't know if you're a good designer or a bad designer but I like your drawings."

04 Working at Kelvin Hughes. Development of the Lund machine.

But I then started doing other work for Kelvins. Jimmy Goodchild had been working for them previously, he was now down at the Royal College. So I did the development of the Lund machine, if you like, the true commercial machine, was the Diasonograph. And I drew it in different ways. That was my airbrushed drawing of what I wanted the Diasonograph to look like. And it was done on a modular system, with the mechanics in here, the electronics in the base of the thing here, and originally the idea was to have the patient on a moveable trolley. That didn't carry forward and this is the way it was ultimately made. But the wee electronics unit could be used on its own. And I devised with them a means of controlling it. There were three levels of control. The primary control. You only needed to expose a couple of buttons here. The secondary control, which somewhat of a skilled operator could use, and the tertiary control, you pulled forward the panel in the front and you had access to all the adjustments and controls. But you didn't need, all you needed to use the machine, once it was set up, were the controls here. And so there was a bit of ergonomics involved in that but it could be used on its own, and was indeed used on its own. And it was in white and pale grey, fashionable colours of the time. So that went on but very shortly after, that was about 1965, Smiths, the parent company, lost the patent action, which was raised on the flaw detection stuff by Automation Industries in the States, who were originally Sperry, who had the Firestone patents. And

they lost that and then pulled out of the whole business. Now whether they might have argued a bit more I don't know but they lost and came out of it. And so it finished in Glasgow and it was saved then, if you like, by Nuclear Enterprises in Edinburgh, taking it on. But then they were taken over by EMI who had their own imaging systems. I think it was the magnetic resonance imaging. And so you know it left. And another invention, if you like, in Britain, bit the dust. And now we buy in some amazing machines they are, that you now see, from things which were hardly pictorial, that was a scan from an open Polaroid camera to actual almost completely pictorial images in fact. Astonishing to see. I would hope though that the real development might be in therapeutic, high intensity focussed ultrasound. We can kill tumours and other things. I believe this is being developed…

05 Practicalities of being an industrial designer. Invoicing & payment.

Well, I was learning how to be an industrial designer professionally which included sending bills to people and Kelvin Hughes had an interesting system, which I found out later. That engineers could sign off bills up to £50 so one had to sometimes use multiples of fifty to get paid. Other than fifty, you know, had to be formally done. But anyway I arranged to send my bill in and this was, this came back with the cheque, a confirmation as it were of the order, which was done informally, and it's for £21 you would see. But that helped me on my way, as an addition to my scholarship, which I'd won from the Trades House of Glasgow, it took me around Scandinavia, so hence you know Tom's remarks in this letter.

It says, "Dear Dugald, Please find enclosed an official order for the drawings which you have done." As you see, the order came after the job. "This is purely a confirmation order but no doubt in years to come it will acquire some sentimental value. I have pushed the machinery for getting payment to you as hard as I can but payment for all our orders is made from central accounts in London and beyond a certain point I cannot go. However I am assured that a cheque will be in your hands before the end of the week. Please remember the dignity of your calling and attempt to behave in an orderly fashion in Scandinavia. At any rate, enjoy yourself, Graham." Now Graham was what I knew him as, Thomas Graham Brown. [laughs]

06 Working in industry (Kelvin Hughes). W. T. Slater

I had, I might go back a stage actually because in my post-Dip I designed an operating theatre table, which is in the same vein of things. This was a hydraulic one instead of a mechanical one and it was done in conjunction with the late Dr Jim Patrick in the Royal Infirmary in Glasgow but it just was a student project, it wasn't in fact made. But it was in the medical field in fact. I didn't have much more to do with the medical stuff other than in the analytic stuff. I did a lot of work for Joyce-Loebl at Gatehead who did sort of blood analysis and things of that sort, machines for that. I did quite a lot of stuff for them in that. And for Flow Laboratories in Irvine, again on analysing bodily fluids and whatnot, automatic machines and quite some interesting stuff for them. They were very interesting to work with, as were Joyce-Loebl. I mean it was a great time in many ways because I was finding out about how to be an industrial designer [laughs] and I have to admit the guys at Kelvins educated me more than anybody. They were smashing people. Some of them died rather early on but the experimental part of Kelvins was great. One man has never been given the credit though, I mean apart from Tom, who was overshadowed I think rather disgracefully by Ian Donald. Tom is the hero in my view because he gave them the tools. But the man who allowed Tom to do that was W. T. Slater, the managing director, deputy managing director of Kelvin Hughes, who was up here, and he got the money going and kept the project going when there was all the reason, that you know if the moneymen had really been in charge it wouldn't have happened. And people like John Fleming were allowed, you know young engineers, to develop the whole thing and it was that atmosphere in

Kelvin Hughes. I'm sure Lord Kelvin would have been proud of it, and sad when it collapsed in 1966 and the whole thing was shut down. That was one sadness I began to realise that you know things were never forever. [laughs] I did end up working for about 42 different companies in the UK, both England and Scotland, and in America.

07 Working in Europe, returning to Glasgow. The genius of Mackintosh

In 1969, I saw the post of the chair of industrial design being advertised in the University of Delft and I thought rather cheekily put in an application. I was 27, I think, at the time, and found myself going there and being interviewed. I'd been at Joyce-Loebl's the week before and had to make a call, a phone call, and I found out the telephonist was Dutch. So I got her to write me out what would be my opening statement and what I had to say, in Dutch, and tell me how to say it. And I did, and they were quite surprised. Anyway I got the, I was actually appointed to the chair by Queen Juliana, but I became uneasy because it was very bureaucratic. I was then age 28, wasn't interested too much in that, and at the same time Joe McCrum left to retire, he retired from the School of Art. He had been a student of Henry Moore at the Royal College, one of the very early Scottish, British industrial designer. But I was then offered the job of senior lecturer in charge of product design, which I did for about 10 years, and had a marvellous time. One of the happiest time in the School of Art because I could really do all sorts of different things. I brought industry into it in a big way, and we got some very, very good students, some of whom are professors of various things now. And then 10 years of that, about, I became Head of the School of Design. The GSA was comprised of three schools: the school of fine art, drawing and painting, sculpting etc.; the school of design and craft, graphic design, interior, industrial, silversmithing, ceramics, embroidered and woven textiles, printed textiles. I did that for about 10 years, and in rather sporting circumstances, the then director, having left after nine months, overnight I was appointed director of the school, which was difficult for about two or three weeks. But I mean no student of the school was going to refuse the chance to do something because the school was in difficulties. We had, it was treading water. We didn't know it at the time but it was clear. And with, you know, confidence in the Scottish office wasn't very, it was a difficult period that was about to come because we'd changed from a benevolent Scottish Office education department who liked the school and helped, to the Scottish Higher Education Funding Council, or the Forces of Darkness, as I got to know them, and they were uninterested. They were moneymen and couldn't give a damn. So we found ourself with a reducing unit of resource to do more things. The old treasury indemnity, and this is rather relevant to recent events, which supposedly insured the school but didn't cost us anything, because it was insured, as it were, by the Treasury, was abandoned. We had to buy insurance on the open market. Try insuring the Mackintosh building. And I actually said, "No, I'm not going to do it. If the public want this and you want this as a great building as a great building, the public purse has to pick it up. And to USHEF's credit, they did. Now we'll see sadly, tragically, if that's the case because it will have to be rebuilt, and as a working art school, not as some trophy building. Because actually what matters, I have never been a buildings man. I can teach art and design in the rain in the middle of Sauchiehall Street, and I've done so. It is that magic interaction between two people or one and a group of people that inspires other people to do things, not the building. Even Mackintosh's lovely, wonderful, human building, probably one of the finest art school buildings that have ever been designed. That is his actually greatest achievement. The aesthetics are lovely and interesting and intriguing but it worked as a school of art for over 100 years. It was designed as that and it was designed by Fra Newbery who laid down the brief, and there is an important bit for industrial designers, to get a brief from a knowledgeable client who knew what he wanted but more particularly what he wanted was what was needed, and he expressed that in the brief. And the genius of Mackintosh created that building. It's in that a lesson. In all the clever little bits of it, not expensive things, how he would take the ends of a steel beam, have them cut and bent round. How he would, in what was the store above the library sadly

destroyed last Friday, how he would suspend the ceiling of the library, the floor of the furniture gallery, with wrought iron twisted support. Lovely, clever idea. It's that totally missing in the new building.

08 Industrial design: brief and problem solving. The function of design.

Well, I think one of the problems, or one of the common features, of being an industrial designer around this part of the world in the sixties, and probably elsewhere, was always being called in too late. You know, we've made this, we don't like it, what can you do about it? Choose the paint, you know. The necessity is of course to get in at the beginning when the concept is being talked about because the important bit is to establish, "What problem are you trying to solve here?" And the important thing is not a refrigerator, a method of keeping food cool. And I used to insist in all of my jobs that the client writes to me as to what they think they want. Now that isn't to be taken just the way it is. That's to be debated and argued about and discussed and out of that comes the brief for the job. Now the brief again is not a prison that you work within but is the starting point for what one hopes would be a creative adventure. There shouldn't really be tension between aesthetics and function and ergonomics. I don't think there is. That's the different between styling and design. Styling is when you're imposing something on something without reference to it, whereas design, it actually arises out of an understanding of the function, just as Charles Rennie Mackintosh designed that art school. He designed it from a good brief by Newbery who understood what he wanted as director but also what was needed. He understood what was needed so a good brief, and it's essential that that happens. Now there are cases where styling is perfectly valid, I don't argue against that. But there ought to be some reason for most of it and I can, even in the paintings I'm trying to do, the photographs that were never taken, I can point and say why I'm choosing to do a particular thing. So it can't just be what comes 'up yir humph' as it were. I have a kind of, it's a kind of bogus theory really, that the opportunity for a designer to design something separately from the consideration of the function, is a function of the amount of power that is being put through the object. Now where a large amount of power is being put through a small amount of material or a relatively small amount of material, you have no great opportunities to design it in a purely whimsical aesthetic manner - jet engine: a vast amount of power, a small amount of material**.** Ladies dress you can design it any way you want because mechanical power doesn't come into it. Another sort of power almost certainly does. [laughs] So if you like there's a relationship in my view between, you know, function in that sense of what the thing does and the amount of power that is going through a piece of machinery and the ability of the designer to design it irrespective of its function. I mean I think there is a relationship in that way. You know whether, in the aviation industry things are designed to very complex mathematical formulas, although some, I mean some great aerodynamicists have said that they do much of it intuitively. Richard Whitcombe, the late Richard Whitcombe, of NASA, and you do feel about things. You can feel about aerodynamics and you can then reduce it to the complexities of the Navier–Stokes equations and whatnot, and they are beautiful things in their own right. I mean it is another view of mine that a country that is not good at mathematics collectively has had it, because much of the modern world stems from an understanding of it. And I find that with some of my students, that the foreign students have no problems, you know they just accept that, you know they know that and they come to you with it. Now I've come to it late in life but I think that's the case.

09 Industrial design heroes. Engineering and utility.

Well, I admire of course the work of Jonathan Ive in Apple although I have been, I've bought millions of pounds of Apple computers for the School of Art when we were told we should have, y'know, Microsoft etc. etc. etc. But Apple Macs were much better for the visual stuff. I have an Apple Mac, several, myself. So I admire him for what he's done there in a visual sense but also in a user sense.

Because the Mac's a much easier system to use than the others. But I also admired, and I don't see how any industrial designer can't admire, James Dyson, for what he's managing to do and the sheer determination that's allowed him to get the better of the ghastly financial services industry that you know didn't easily recognise what he was doing. And the fact that he has championed manufacturing, the making of things. That is one of the most honourable and satisfying things that human beings can do, is to make things. And engineering of course is expressed by the things that it makes. So whether it's you know a small thing made by hand or made by complex computer manufacturing, it doesn't matter. The making of things that are useful for human beings to live a fulfilled life, hence again engineering is the great art of our times and has been so. And so if you do as I, I like Victorian steam engines very much, you know as aesthetic and function. And aesthetic comes into it. It was very determinedly so. And now that is less so. But the idea that we should have a society ruled by money, you know, is the way to extinction.

10 Creativity legacy of the Glasgow School of Art.

I expect that if you were to say to people outside on Sauchiehall Street that the art school had a peripheral involvement in the development of medical ultrasound in Glasgow, they'd say, "What's the art school got to do with it?" Well I've answered that when I started off by saying it was to help local industries. But more particularly is the fact that in the art school it wasn't regarded as unusual or anything, nor anything else. Now, just some, one of the interviews in the wake of the tragic fire was with David Pratt, who's the foreign editor of The Herald who is a fine art student and lecturer in Glasgow School of Art and he said, "You know, people say, 'What is a foreign correspondent doing educated at the school of art?' Well, what were all the pop stars and all the rest of it?" Schools of art have this ability, it's a creative ability, and you can turn it to do other things that sort of, fashionable words were, you know, I've forgotten what the phrase is, it's one of these ghastly corporate phrases, the transferable skills. I remember being tried by one of the CNAA, people, no it wasn't, it was the post-CNAA people, dreadful people, about that. What about that? And factoring, and we knew nothing of it of course …

11 The art of engineering

It does occur to me that these days, and before, the greatest art of mankind is the art of engineering because it uses art, it uses science, and the derivative technologies. It uses technology itself in different ways to produce items of human use and delight. It is the greatest art of mankind because it does that. And it is sad that we have allowed engineers to remain too often in the shadows. It's a matter of some interest, I think, and relevant here, and I may be speaking slightly out of turn because it's not been announced yet. But Tom Brown has just been elected to the Engineering Hall of Fame of the Institution of Engineers and Shipbuilders in Scotland. And I'm very, very pleased about that. And partly to get the guy who made it possible, now in his eighties, not terribly well, awkward, difficult: an amazing guy.