Interview with David Gow (GD1/150/2)

Summary:

David Gow discusses his involvement in developing the REACH Hand in the 1980s, his time working as Director of Rehabilitation Engineering Services (RES), in the 1990s, and the creation and development of his private bioengineering company, Touch Bionics, in the 2000s. He also describes the difficulties in trying to find funding to manufacture his designs for upper limb prostheses, the relationship between the Bioengineering Centre and NHS Lothian bodies, and the experiences of patients who received treatment from the Bioengineering Centre.

David Gow began to work at the Bioengineering Centre at the Princess Margaret Rose Hospital (PMR) as a Research Associate in 1981, and became a licensed bioengineer for the Lothian Health Board in 1984. He is best known for inventing the Edinburgh Modular Arm System (EMAS) in 1998, the world's first myoelectrically controlled arm with a powered shoulder, elbow, wrist and fingers; and inventing the i-Limb, the first ever artificial hand with independently powered digits, in 2007. He stepped down as Director from Touch Bionics in 2009 and retired from his role as Director of the Southeastern Mobility and Rehabilitation Technology (SMART) Centre at Astley Ainslie Hospital in 2015.

This interview was conducted by Carmen Hesketh (CH) Employ.ed on Campus Bioengineering Archive Intern, LHSA.

Detailed timings:

0:01 – Date and time of interview stated. CH gives summary of DG's occupation, and mentions his previous oral history interview conducted by Louise Williams, LHSA Archivist. CH includes what themes will be discussed in the interview.

1:14 – DG explains how he began to collaborate with the REACH Charity.

2:33 – DG describes the first development of the REACH Hand.

3:22 – DG discusses the publicity surrounding the REACH Hand after he presented it at the International Society of Prosthetics and Orthotics Symposium in Heidelberg, Germany, in 1988.

3:52 – DG mentions the interest in the REACH Hand from bioengineers from Orebro, Sweden.

4:45 – DG Mentions the first patients to be fitted with the REACH Hand. A team of bioengineers, occupational therapists and rehabilitation doctors from Oreobro, Sweden visited Edinburgh in 1990, and Gow and other Edinburgh bioengineers visited them to supply the hand in 1991.

6:31 – DG explains the difficulties in trying to maintain artificial limb fittings of Edinburgh designs in Sweden.

6:45 – DG discusses the prostheses centres in Orebro and Gothenburg and explains the connection between Edinburgh and Sweden.

8:10 – DG describes the evaluation process and how patients are found to be eligible for certain prostheses.

8:29 – DG explains why the Swedish Hand[1] was a success.

[1] The "Swedish Hand" is also known as the Swedish Teknik Hand.

9:17 – DG discusses the Swedish healthcare system.

10:10 – DG mentions that the Bioengineering Centre team visited Gothenburg and the friendships between the centres in Edinburgh and Sweden that remain.

10:43 – DG discusses whether the REACH Hand was available on prescription in Sweden and the UK.

12:18 – DG discusses the relationship between external contractors and the NHS. Mentions that there was no centre like the Bioengineering Centre in England where prostheses were actually being made.

13:45 – DG states that although many contractors offered to manufacture from the Bioengineering Centre, no contractors offered to manufacture the REACH Hand.

14:43 – DG describes why the Bioengineering Centre never worked with Ottobock.[2] Explains the process in fitting an Ottobock prosthesis onto a patient.

16:58 – DG explains what he likes most about the work of Touch Bionics.

17:24 – DG talks about Kerry Emsley and why she was chosen to be fitted with the adult REACH Hand (Kerry was subsequently involved in newspaper publicity for the hand).

20:16 – DG discusses the importance of fitting a patient that can handle publicity.

21:05 – DG describes his motivation for making an artificial hand for smaller children, and his "lightbulb moment" when he discovered it was possible.

22:03 – DG states that he was only able to create the i-Limb hand with its powered digits was because he was trying to make smaller hands for younger children and invented PRODIGITS.

22:50 – DG describes what the difference between the i-Limb and PRODIGITS is. Explains how he was able to make sense of his concept towards the PRODIGITS componentry when he saw a "worm and wheel" system on his exercise bike, which was his "lightbulb moment".

26:38 – DG discusses when he stopped collaborating with REACH.

32:49 – DG describes the last time that the REACH Hand was fitted at the Nottingham trial.

34:48 – DG explains why RSL Steeper, the private company that made the REACH Hand to be trialled by patients in Nottingham, chose not to keep manufacturing the hand.

35:07 – DG discusses how RSL Steeper could not market the REACH Hand, despite the fact that DG believes it had the ability to transform the prostheses market. Believes that this has happened because RSL Steeper no longer has much power as a private manufacture and research company.

36:21 – DG outlines how the Scottish Government began to stop contracting prosthetists out to private companies and use them solely for the NHS.

39:28 – DG explains why there was no market for artificial limbs for children. Believed that the PRODIGITS was the first instance where this was possible.

41:15 – DG discusses how the bioengineering field faces challenges when trying to advance artificial limbs for child patients before they grow up.

[2] Ottobock is a German prosthetics company with an international reputation.

41:59 – DG explains how Touch Bionics changed the field of bioengineering.

42:26 – DG describes the process for patenting inventions made at the Bioengineering Centre, such as the partial hand prosthesis and silicone gloves. Explains how the patenting process is different when you have financial backing from a private company.

49:15 – DG discusses how the Bioengineering Centre became to be controlled by Lothian Health Board. Explains how Hospital Trusts are were founded, and the transfer of the Bioengineering Centre from the Royal Infirmary Trust to the Edinburgh Healthcare Trust.

53:03 – DG explains how rehabilitation medicine is seen as different to acute medicine, and the importance of offering rehabilitation medicine services.

54:14 – DG gives further information about how the Bioengineering Centre was eventually not given premises in the Edinburgh Royal Infirmary, and was eventually removed from the rehabilitation sector altogether.

55:30 – DG describes the rationale for creating Rehabilitation Engineering Services for the Lothian Area (RESLA).

56:36 – DG talks about how the Bioengineering Centre's heating and water facilities were turned off and they had no cleaning services after The PMR was in the process of being shut down. Discusses how this impacted the staff and their campaign to receive funding to have the facilities returned.

58:18 – DG describes fitting Campbell Aird (CA) with the EMAS at the PMR in 1998. The Bioengineering Centre did not give any publicity to the Royal Infirmary of Edinburgh (RIE).

1:00:01 – DG discusses how the academic backgrounds of hospital trust managers could influence the support that the Bioengineering Centre received.

1:01:03 – DG discusses how he came to the role of Director of RES in 1993. Also mentions that he was Director of the Bioengineering Centre which he did at the same time.

1:04:11 – DG outlines why RESLA dropped the Lothian Area remit from its title, then becoming RES. Also discusses the making of SMART.

1:06:04 – DG describes his experience studying for an MSc in Healthcare Management at Queen Margaret University and how it impacted his work as Director.

1:07:35 – DG talks about the work of the Bioengineering Centre on wheelchair modifications and adaptations to seating. Discusses the high demand for this service.

1:11:38 – DG discusses how the Wheelchair Service was funded.

1:14:05 – CH mentions that at the time of interview, the SMART Centre website states that the Wheelchair Service caters to over 20,000 patients annually. DG explains that this is the number of patients on record and they see around 5,000 per year.

1:14:53 – DG discusses the often inadequate wheelchair services offered to children on the NHS.

1:15:41 – DG explains how the way the Wheelchair Service was financed changed after the formation of the NHS Trusts.

1:17:02 – DG describes the origins of the Environmental Controls Service and what patients were eligible.

1:19:22 – DG discusses the experience of patients at the Bioengineering Centre who decided not to use their artificial limb.

1:20:22 – DG talks about the decreasing number of patients who were fitted with myoelectric prostheses at the Bioengineering Centre. Discusses the overall number of patients who could be fitted with prostheses and why the number of upper limb amputees in Scotland has not been accurately recorded since WW2.

1:22:41 – DG explains that medical professionals previously involved in bioengineering did not receive counselling or other services.

1:23:35 – DG discusses the lack of training given to prosthetists that is useful when communicating with patients.

1:26:29 – DG discusses the experiences of a patient, [redacted], who lost several limbs in a traumatic accident. Explains the different additions that he added to [redacted] artificial limbs depending on [redacted] activity. Also discusses the difficulty [redacted] faces when getting ready in the morning while wearing multiple prostheses.

1:30:41 – DG talks about the benefit of so-called "golden candidate" patients. However, DG also points out that "golden patients" could be given a platform due to their social background.

1:32:36 – DG discusses the last time he spoke to [redacted] and what [redacted] was involved in at the time of interview.

1:33:24 – DG describes the difficulty for patients who use prostheses to work in manual jobs. Mentions that prosthesis workers from America may be more likely to return to their job because they have self-funded their own artificial limb that is suited for their occupation.

1:35:16 – DG states that he believes there has been little work done on patient satisfaction. Discusses how patient satisfaction could be evaluated and improved. Expresses disbelief that "golden patients" from private companies use their prostheses for the activities that they say they do in marketing material.

1:37:45 – DG discusses a video from Bert Pot, a Touch Bionics ambassador, which depicts his daily activities using his i-Limb hand.[3] DG expresses hope that the latest development of the i-Limb at the time of interview will be more helpful to patients' lives.

1:39:08 – DG stresses the importance of considering what the patients want in their prosthesis, not what other people around them find desirable. Considers the importance of a therapist output in designing a prosthesis.

1:40:31 – DG describes how the i-Limb hand was used extensively when it was first launched, but patients began to become more aware of the device's limitations the more they wore it. Also discusses the difference of length of time wearing prosthesis can vary; for example, CA constantly wore his EMAS around news crew but in reality only wore it 2 hours daily.

1:41:35 – DG discusses whether CA was fitted with another prosthesis after he stopped wearing the EMAS. Uncertainty whether CA would have been fitted with an i-Limb hand because he required a full arm prosthesis.

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[3] The video that DG is referring to can be found at: https://www.youtube.com/watch?v=lhTSQgRE_zs [Last accessed 06/08/2019].

1:44:09 – DG talks about when he and other staff members of the Bioengineering Centre visited the homes of patients to refit them with a faulty limb. Explains why this is not suitable long-term.

1:45:46 – DG explains how the EMAS was the first prosthesis to have a powered shoulder. Describes how a powered shoulder was in development stage with Touch Bionics but it was too powerful, making it too dangerous to go to market.

1:48:52 – DG explains how CA was able to use prostheses without a powered shoulder before the EMAS. Discusses how he became a patient at the Bioengineering Centre.

1:50:31 – DG talks about why he made the decision to make his own private bioengineering company, initially called Touch. Describes how the company was then rebranded by receiving funding and investment.

1:56:19 – DG outlines Touch Bionics' initial business plan. States that their investment company believed that they were not going to be successful.

1:58:00 – DG explains how Touch Bionics acquired its premises in Livingston. Mentions where the company had been based prior to this location.

1:58:57 – DG talks about how a new premises impacted his creativity and innovation when creating bioengineering designs.

1:59:59 – DG discusses the differences between working in bioengineering in a private company compared to the NHS.

2:01:31 – DG describes his process in inventing the i-Limb hand. Explains that the PRODIGITS were the first step in this process, yet the i-Limb hand was launched first.

2:04:30 – DG explains the difficulties in making prostheses structurally neutral.

2:05:05 – DG discusses his role in the NHS before he retired and how the NHS was a good employer for him. Describes his time working in the Wheelchair Service and other services offered at SMART. Talks about his potential to manage other aspects of the NHS.

2:07:21 – CH and DG discuss the my i-Limb app, a mobile platform which controls the grips of the i-Limb. DG believes that developing new control systems is key to advancing prostheses.

2:09:13 – DG expresses admiration at the developments made on bionic arms and hands in the robotics sector, but notes that this would be too expensive for the NHS or private industry.

2:09:36 – DG speaks about what he expects for the future of Touch Bionics. Discusses conceptual ideas that he has for the development of prostheses.

Duration (h:mm:ss): 2:12:56

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Known links to other records: Bioengineering Collection - Acc10/001 / LHB71, GD1/150/1