Michael Baraitser

Michael Baraitser (right), with colleague Robin Winter (1950-2004)
Photo courtesy of London Medical Databases

Personal Details

Name	Michael Baraitser
Dates	Born 1937
Place of Birth	South Africa (Cape Town)
Main work places	London
Principal field of work	Neurogenetics, dysmorphology
Short biography	See below

Interview

Recorded interview made	Yes
Interviewer	Peter Harper
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Personal Scientific Records

Significant Record set exists	No
Records catalogued	
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Biography

Michael Baraitser was born in Cape Town in 1937. He studied Medicine and Agriculture at the University of Stellenbosch before he and his family emigrated to the UK in the early 1970's. He studied genetics under Prof Cedric Carter and was appointed consultant at the Kennedy Galton Centre, London, before moving back to the Hospital for Sick Children, Great Ormond Street. He wrote about 200 clinical papers, and several books with Robin Winter; he also founded the London Dysmorphology Club, and with Robin Winter, the London Database series. He has been married for 50 years to Marion, playwright and publisher, has 4 children and 9 grandchildren.

INTERVIEW WITH PROFESSOR MICHAEL BARAITSER, 1ST MARCH 2005

PSH. I am interviewing Dr Michael Baraitser at the Institute of Child Health and it's Tuesday 1st March 2005. Michael, can I start right at the beginning and ask, am I right that you were born and brought up in South Africa?

MB. Yes, I spent the first 35 years of my life there and came to Britain when I was 35. I think that must have been early 1970s.

PSH. Which part of South Africa?

MB. I was born and bred in Cape Town. Later my wife and I moved onto a farm in Stellenbosch. I first did agriculture at Stellenbosch University and then went on to do medicine. Later I went as a neurology registrar to Cape Town, to Groote Schuur Hospital

PSH. Was there anything in your family background that directed you towards medicine?

MB. No none at all. There are no medics in the family. I actually started out doing agriculture. I was interested in plant pathology and then became interested in human pathology, and did medicine, actually to do human pathology, but then enjoyed the clinical work and so never did that.

PSH. How far on did you start to gravitate towards neurology?

MB. Oh very early on, soon after my house jobs and a year in general practice I went on to become a registrar, and then senior registrar in neurology at Groote Schuur.

PSH. And then when you came to this country, was that to a neurology post initially?

MB. No, we took great chances. My wife woke up one day and she said we just cannot stay in this country any longer. We had four young kids to educate and so we decided on the spur of the moment to emigrate. My wife's father was a well-known psychiatrist in Johannesburg and he knew Sir Martin Roth, the psychiatrist in the UK, and Martin Roth knew Roger Gilliat, the neurologist, and so it was arranged for me to go for 6 months to Queen's Square and see if I could find my feet. I came basically to knock on Roger Gilliat's door, who kindly got Brain Research Trust money for me. I spent 6 months in baboon cages because he was doing experiments on baboons, tying off their peripheral nerves and measuring the slowing down of conduction across the compression. It was really the most dreadful 6 months I have ever spent. But after the six months, he said to me that I had to make a choice. I could either do geriatrics or rheumatology. I actually applied for a rheumatology job, but didn't get it. I had to start all over again. I could have got a job in neurology in Southend on Sea and other peripheral places, but we wanted to stay in London. The first thing he said, I don't know much about genetics, but there might be an opening. He was a very strange man. He knew of course that my name was Baraitser. He loved to call me *Barrister* and the same reason,

he knew Cedric was called Cedric Carter but he would insist on calling him *Ceedric.* So he said, go across to the Institute of Child Health and have a chat to *Ceedric.* Gilliat was a wonderful neurologist and his Wednesday afternoon teaching meetings were absolutely brilliant. You had to know your place, which in my case was the back row and if you said something without being asked, he could be very acerbic, He was a superb neurologist. So I came across to *Ceedric*.

PSH. What year was that?

MB. Gosh.

PSH. Roughly.

MB. It must have been about '74. No it must have been earlier. I came perhaps in '72 . It was after 6 months being here that I came here to Cedric.

PSH. What happened?

MB. Well, it was fascinating. I was a South African coming to this very English situation, Queen's Square then to Cedric an ex-Oxfordian, scholarly man, actually a very clever man. He would say about Robin Winter and John Burn, that their intelligence was "not quite in the first rank". He was an extremely bright man, and so it was a very strange situation for me, a rather open South African to come, into: this very closed, esoteric, very strange situation. He used to sit in his office The door would be open but he rarely came out of the office except on a Tuesday morning when we went through the patients of the week. I remember Michael Partington coming and spending 6 months with us, absolutely amazed that Cedric was so quiet. Mike Partington used to draw cartoons depicting the workings of the department some quite funny. But everything Cedric did was good, even though his great interest was only, as you say, normal variation; he would like to have spent his whole life with his gaussian curves and his multifactorial rules. But we went onto the ward and he was extraordinarily good. If I look back now at misdiagnoses, he made very few. He really was a superb clinician, although it wasn't his great love. So I learnt an awful lot from Cedric, and because that wasn't his interest he more and more let me see the patients. Occasionally he would get nervous and come running up to the ward to see that I had got it right, whatever it was, but he was a very, very clever man.

PSH. But coming back to what you did, what was your first work when you converted over from the Institute of Neurology to here?

MB. Well, I knew no genetics whatsoever, and I had to start at the age of 35 from scratch. I was fascinated by the clinical material that I was seeing at this hospital, which as you know is extraordinary, so I quickly moved away from basically adult neurology to syndromology and so became totally clinically involved and spent then, I can't actually remember how long I stayed here initially, a very fruitful period. Then a job came up at the Kennedy Galton Centre in Harperbury Hospital and Cedric said 'go for it', which I did. What he kindly allowed me to do was for the next X number of years, 5 years or more,

to come back for his Thursday clinics. They were busy clinics and he was managing, but he liked a bit of help, and so I came and did the clinics with him for a number of years, and learnt hugely from him.

PSH. There are a couple of things I saw in early publications Michael. There was a family study of Moebius and one of narcolepsy. Were these done in your early time here?

MB. Yes, they were indeed. Narcolepsy. Cedric I think was approached by, I've forgotten his name now, a neurologist at the Maudsley, who said that would be a nice thing to do and he provided me with his cohort of patients. I did home visits and saw a lot of the UK. The Moebius study I think, I did off my own bat, but you know, Cedric helped me a lot with the narcolepsy study in terms of understanding the statistics. I still don't have any clue about simple statistics, but yes, those were the two early things that I did.

PSH. I'm interested in terms of not just the statistics, but what you might call the study design.

MB. Yes exactly.

PSH. Cedric's studies were meticulously designed and so did he teach you how you ought to go about it?

MB. He tried to! He tried to and he would make suggestions in the kindest and most polite way, which is the sort of man he was, and I of course would just follow those suggestions. How many patients were needed, which patients I had to exclude and, then what to do with the results. So, as you know he and Cath [Evans] were experts on family studies and the collection of data .

PSH. One thing that has often struck me is that really since him nobody has done proper family studies. People just put together a bunch of material, usually with some mutations and say this is a family study, but you go back to Cedric's records and they are so well designed and documented.

MB. I asked him once, I don't know why I asked him, how he would like to be remembered. We were talking about various things and he said he would like to be remembered for formulating some of the laws of multifactorial inheritance. I think he did formulate the rule which said, the risk to the unusual sex, in a multifactorial scenario was greater to offspring. And it has become known as the Carter law. He was very shrewd and I'm pleased he will be remembered for that.

PSH. Did you see a great deal at that time of Cath Evans?

MB. Oh yes, she was the spokesperson for Cedric. Anything that we all had to know came via Cath and she took on that role well. She never pushed herself but was always in the background. For instance, Cedric would ask patients whether they were Church of England. The reason why he asked was that if you were Catholic then he wouldn't discuss prenatal diagnosis with you. No matter whether you were a liberal Catholic, or a lapsed Catholic.

Cath would be there and she would listen in to all of this. No prenatal discussion would take place but as soon as the patient was outside she took the patient into the room next door, and so many of those who Cedric wrongly judged as not wanting that discussion, she counselled, and very, very effectively. I don't know whether he knew that was happening but it happened for many years. So she was his spokeswoman. They were very close.

PSH. I get the feeling and I think she mentioned it also, that he found actually communicating with patients and families not terribly easy.

MB. No he didn't. He didn't spend long with patients. He got to the point very quickly. He believed that his most important function was to counsel correct recurrence risks, and once that had been given, patients would be asked whether they had anything further to say. For some patients it could be quite a formidable session. Cath then took over the role of re-discussing it with them, and so at the end of the day it worked very well, but he needed her. He didn't communicate easily with patients or with colleagues.

PSH. Yes.

MB. He was a quiet man, a small man. Did you know he was a boxer?

PSH. I didn't know that.

MB. Oh he was, I think, an Oxford boxing blue, and he played tennis until late in life. The other thing he did that used to drive Cath, and all of us almost around the bend, was his bicycling. He lived out somewhere in the country, I think it was near Bexley, and he used to ride his bicycle between the station and his house. There were a number of times that he came to work having, fallen off. A couple of times, he had to go to hospital. He was physically a small man and so he overcame this in a way, by being a tough sportsman. Once or twice we got a phone call from the hospital to say that he wouldn't be in today because he had been admitted with concussion. And of course when he retired he did the same sort of thing. He took to marathon running.

PSH. Yes.

MB. Of course in a scientific way. He would chart his pulse beat during and after the run, and heaven only knows what else. And then I think he ran his first half marathon and died very shortly afterwards.

PSH. Yes, I remember that.

MB. You remember that?

PSH. I do indeed.

MB. So it fits very well that Cath was his spokesperson, his pathway into other people.

PSH. Who else was here at the Institute and the Genetics Unit at that early time?

MB. Well Joan Slack was a major part of the department. She was a sensitive counsellor and she was doing research on cholesterol metabolism. It was for her not always easy to get on with Cedric as he tended to want to use her data

PSH. But her studies were really landmark studies, those family studies of coronary heart disease.

MB. Absolutely.

PSH. I still quote the figures in my genetic counselling book, because nothing better has come along ever since.

MB. Indeed yes.

PSH. Was John Fraser Roberts still around at that time or had he moved over to Guys?

MB. Oh, I think he had moved over to Guys by then. I don't think Cedric saw much of him, I don't know why. When I came here, the person who was the research registrar was Sarah Bundey, who I think I'm right in saying, started the first neurogenetics clinic at Queen's Square. Later, I took over from her. She left after that, and then Nick Dennis came and Anne Child was around and of course Anita [Harding] came at some stage during that period.

PSH. Tell me one thing. You started off in neurology, then your first studies were kind of neurogenetic, but at what point did you broaden what you were doing to become more generally clinical genetic and dysmorphologic?

MB. Because that was what I was asked to do every day. So I swopped my interest in the diagnosis of neurological disease, for an interest in syndrome diagnosis (a lot of which is neurological). And thank God for that. It was pushed on me, basically, by circumstance. At that stage we were still reliant on Smith's book and we had an old version of Gorlin's. We were still at a stage when we had to page through these books and see whether we could find a match, and that of course became increasingly difficult to do..

PSH. I never think of Cedric as being in any way a dysmorphologist.

MB. No.

PSH. So was there anybody else at that early point who got you interested, or were you just thrown into it because all these patients happened to be at Great Ormond Street Hospital?

MB. Yes, I think Cedric was the only person who influenced me in my interest in dysmorphology, plus the patients. The number of patients with complex malformations that we would see was extraordinary. I wasn't aware that other people were seeing the volume of complex cases that we saw. They were seeing more straightforward clinical genetics, but Great Ormond Street

Hospital was drawing in all those complicated patients and that stimulated my interest in dysmorphology.

PSH. Can I ask, up until you arrived in the Institute you hadn't published much?

MB. No.

PSH. But then I noticed looking through the list, that about 1980 you suddenly started publishing huge amounts and did Cedric encourage you to publish, or was this just something that you did?

MB. Well it's interesting. I hadn't published anything much medical up to the time I came here. There was a study on Kwashiorkor and a few other things. One of the reasons was that I and a fellow psychiatrist got hooked on the publication of, what is now a standard book, on Cape antique furniture. So we were doing that to the exclusion of everything else. What we did at that time in terms of antique furniture is exactly the same as I subsequently did in dysmorphology. We were interested in differences, in that case, geographical differences. You could go up the West Coast of South Africa and find furniture that, if you picked it up in Sotheby's in London, you could tell exactly where that piece of furniture came from, even the village where it was made, and the same up the East coast and the Karoo. So I spent a lot of time, too much time, writing this book on Cape Country Furniture and then after this we wrote our second book on Town Furniture of the Cape and then we wrote a third book on the Interior of the Cape House, and I have actually just finished a final book on an amalgamation of all Cape antique furniture. So I was publishing, but not the right things. So, coming back to dysmorphology. The process was similar. It was the putting together of many features and trying to decide what to call the new syndromes we were seeing. This wasn't really genetics. This was clinical description and every time I applied for jobs, those on the selection committee would look and see how many publications I had in the Lancet or wherever it was, and of course I never had any. So it was purely a clinical descriptive exercise, but to me a fascinating exercise.

PSH. One of the troubles is that books don't come up on publication indices so I didn't know you had written these books, whereas papers, they all come up

MB. And so I went to interviews here for the rheumatology job, which I never got, and they said "what have you published?" I said I've published a couple of books on antique furniture. Boom. Finished. I was out like a shot!

PSH. So what year was it you went to Northwick Park, because that was a consultant post wasn't it?

MB. Yes. I went actually to the Kennedy Galton Centre at Harperbury Hospital. It was a split appointment with Martin Crawfurd, who was appointed at Northwick Park. I went to Northwick Park once every month to talk to Dickie Watts. His interest in Harperbury Hospital centered around the 1200 mentally handicapped patients, and he obtained urine specimens from all of those patients. He was interested in whether he could pick up anything metabolic

and my function was to go round the 1200 patients, a lot of them would have Down's syndrome, but the rest, and see whether I could identify any syndromes.

PSH. Were you in some sense following on from Penrose?

MB. I don't ...

PSH. There was quite a gap between Penrose dying and you starting there.

MB. His secretary was still there, whom I got to know quite well. She had a reputation of ...., and I didn't see it .....of looking after Penrose in quite a, possessive way. Did you know her at all?

PSH. I didn't, but was this the same secretary he had at the Galton do you think?

MB. Yes. I think she was with him for many years.

PSH. Yes, because I've heard about her from all kinds of people. She was a real terror.

MB. She was a terror but underneath she wasn't a terror. Her terror came in the way she protected Penrose, and so she was still there and in fact she gave me, and it's gone to my children, a wonderful red motor car that Penrose used to use, to amuse the children at the hospital. I think he did all his PKU work in his office and there were hairs from patients showing the depigmentation, objects like that. There was a wonderful portrait of him on the walls of the Kennedy-Galton. Before me there had been Joe Berg. He's still alive, I think, and lives in Canada, and Renata Laxova.

PSH. Yes.

MB. I think she has retired, also I think in the States somewhere and so I took her post when it came up. I didn't think anyone else wanted her post, as the Kennedy Galton was situated in a difficult to get to, mental institution. We then worked hard to try and move the Kennedy Galton to Northwick Park en bloc, which we eventually succeeded to do.

PSH. So would I be right that that resulted in the North West Thames Genetic Service?

MB. Yes it did. We looked at the Hammersmith and St Mary's and all over the place, but in the end that's where it went.

PSH. What year was it you first got to know Robin Winter?

MB. Robin. When I was at the Kennedy Galton, I think he was doing a house job at Northwick Park and he was writing his membership and he used to come over to talk to me at Harperbury Hospital and I used to give him a few tutorials – I used to tease him about this, but he liked to deny this - in neurology about the ritual of the neurological examination.. So I got to know

him then. Then my mind is very hazy. I can't even remember whether he had already gone to, what's his name?

PSH. Walter Nance?

MB. Yes, Walter Nance, or was he back from Canada, from Walter Nance by then, I can't remember actually, and then I moved down to Great Ormond Street when a job came up there, I was lucky enough to get that job, Robin then took over my job at Northwick Park. I knew all along of his excellence and I, along with Marcus Pembrey, encouraged him to come down to Cedric's clinic, I said "come down every Thursday". I needed him because he was so good. He used to come down and I used to keep all the ward patients waiting for him, and we used to do clinics in the morning and ward patients in the afternoon. That went on for many years while he was still at the Kennedy Galton. So it was at that stage I really got to know him.

PSH. What sort of year would that be very roughly? Mid eighties?

MB. I suppose so.

PSH. When did you move back here? I know it's difficult to answer these things exactly.

MB. I should have looked at my CV because I have no idea. It must have been late eighties? I actually don't know.

PSH. Probably mid to late eighties.

MB. Oh it must have been mid eighties, yes. I was here for 20 years, mid eighties yes.

PSH. So I mean, this very productive time with the two of you here together; as somebody outside London, I always associate this with beginnings of the Dysmorphology Club and the beginnings of the database. Tell me how did the databases start to get formed?

MB. Well again the early history is quite difficult for me, but both Robin and I knew that it was an absolute ridiculous waste of time for one to turn pages of a book, to find the right diagnosis. What bothered me also, I remember, was that as soon as Cedric retired, then the new generation of dysmorphologists would have to start right from the beginning. You get experience and then it dies with you. Then new life starts and one starts from the beginning. So I thought there should be some way of carrying things on and Robin at the same time was obviously thinking of the same thing. And then he, being so very bright with computers, probably said to me, let's start computerising this. And that's how we started it. There was a main frame computer based at Northwick Park and you had to throw punched cards into the computer. We basically sat down with early volumes of all the genetics journals, mostly from volume 1 and we paged through these and put the data into the computer. We concocted our list our features and it took off from there.

PSH. Did computers come naturally to you as well as Robin?

MB. No it didn't! He was mercilessly hard on me for my ignorance.

PSH. That was what you might call a leading question!

MB. No, it's absolutely true. I knew what I wanted the computer to do but I needed a lot of help before I understood what it could and couldn't do. We called in a computer expert called John Douglas early on to help us because we didn't think Robin could quite cope with the volume of work. He had so much to do. He probably could have coped with the programming, but we had help from the programmer. I'm sure Robin could have done it, but there is no way that I could ever have done anything like that.

PSH. I get the feeling, again almost as an outsider, that the two of you kind of bounced things backwards and forwards off each other, and that it evolved in a way that wouldn't have happened if it had been just Robin or just you.

MB. I don't think it would have happened if it had been just me, to be fair. I'm sure, it's very difficult to say if Robin could have done it all himself, but it never worked out that way. We worked as a pair right from the word go. Right from when we started to create our feature listing. A three level feature code. He was keen for it and I was very keen for it to be a dual project and it was like that at the beginning and it remained like that to the very end. So we did bounce things off each other.

PSH. And at what point did your neurogenetics database emerge from the broader one?

MB. Oh I guess after about 10 years after we had started on the dysmorphology. There was a Japanese student who had nothing to do. He was here for a year. Nice chap. Paediatric neurologist, Tomiwa, and he wanted something to do so I said OK lets sit down and we will create a separate database. So we created our codes and added electrophysiology, and neuroradiology and things like that and we started the same processes all over again. Must have been mad. So he helped me. He was here for a year. Then he went to Japan. So I said let's do this together, in the same spirit that Robin and I did things together, and in the first year he sent me some four references and I did a thing that he, being Japanese, has never forgiven me for. I said "Kio, this is not working, I think I will go it alone" and I think he felt that I had insulted him by saying that this simply wasn't good enough, and although we met and sent Christmas cards and he came over to visit and his wife came with him, it was never the same again. So after that I just went and did it alone.

PSH. What year was it the Dysmorphology Club actually started?

MB. That started when I first came here, when Cedric was here. You know Di Donnai had been with Robin, I think they were the first registrars in genetics.

PSH. But where?

MB. At Northwick Park.

PSH. Do you know I had forgotten that completely.

MB. She mentions it in an obituary she wrote about Robin, and I have forgotten who was here. John Burn might have been here and I like to think that I decided, in the Library, here, to get the people, who were interested in syndromes, to come together, and to teach and learn from each other. And so Di came in very early and Robin came in very early and John Burn came in very early and we had this meeting, which I'm reminded by Di was just a sort of an hour meeting. They came all the way, she came all the way from Manchester. They all came, then the meeting just got bigger and bigger over the years.

PSH. Do you think that the early records of the club are safe somewhere?

MB. They are around and someone showed me jottings of the early meetings I think, an invite to Robin and I think to Di to join us at our Wednesday meeting to discuss cases. They are around but I have no access to them.

PSH. These are the scrappy informal records which are actually terribly valuable.

MB. They are.

PSH. One of the things I am trying to badger people to preserve.

MB. I'm not sure whether Di has got anything. Someone showed me something a couple of years ago, that they had found somewhere, but I don't really know. Cedric used to come to the meetings, but didn't say much.

PSH. So this was before Cedric retired?

MB. Oh yes, this was very early on, soon after I came across from Queen's Square. I started seeing patients, soon after. How soon I can't remember. You know Cedric's main interest of course was the bone dysplasias, and he and a radiologist called John Sutcliffe, used to have a meeting which I used to go to once a week or once every two weeks, to pore over X-rays; Cedric was particularly good with the skeletal dysplasias. He wanted you to succeed him you know.

PSH. Really. He never mentioned that.

MB. You can't remember that?

PSH. Never.

MB. Because you were still in the States

PSH. I was, that's true.

MB. And I thought that he'd actually written to you or approached you, and then he came and told me that "You know Peter, his roots are very much in Wales" and you weren't interested.

PSH. Isn't that interesting. No he . . .

MB. Didn't he?

PSH. He never did. That's interesting.

MB. Because after you it was David Siggers he was keen on.

PSH. David was at Johns Hopkins immediately after myself.

MB. You were the two people he had his eye on to come here.

PSH. It's interesting how people have these thoughts, which perhaps they never voice, but then think that they have.

MB. Indeed.

PSH. Well I've learnt something Michael, that's completely new to me.

MB. Would you have taken the job?

PSH. I think it's unlikely I would have worked in London, and it's difficult to know because I was certainly never asked, because when I was in America towards the end of the time, I came back to look at two possibilities. One was a lectureship in Glasgow with Malcolm Ferguson-Smith and the other was a new post in Cardiff to start off clinical genetics there and I thought, well you don't often get a chance to start at the ground and build it up, but there might have been times after that when I was moveable and I saw Cedric very often, but he never mentioned it, no.

MB. He definitely mentioned it to me.

PSH. That's interesting.

MB. I was surprised to hear that he didn't actually. I got the impression that he'd discussed the possibility with you, but I can well imagine that he thought about it and then couldn't bring himself or . . .

PSH. Yes, Cedric was that kind of person, he was so reserved that he might have never got round to doing it.

MB. Exactly. Not impossible.

PSH. One thing I was going to ask about the dysmorphology club is its international influence, because I've been very impressed by the fact that across different European countries there was very little sharing of information until yourself and Robin and Di started going to these other countries and suggesting comparable meetings.

MB. Absolutely. That's true. I spent a lot of time, as did Di, in Norway and Denmark, France, Italy encouraging people. It was quickly apparent how much people were learning from the interchange at these club meetings and in many instances other countries have taken this up. I think that in places like Spain, where clinical genetics is not particularly strong, this might be partially related to the fact that they have no club at all and I have watched in Norway, and Denmark, how the clinical diagnostic acumen has actually gone up, because of these informal meetings. Ask Di. Quite extraordinary, the learning curve that can taken place.

PSH. I think that's a big contribution and I think its not just a scientific contribution or a clinical contribution, but the concept that one should share one's material, which seems to have been quite alien to a lot of continental centres and countries.

MB. Yes I think that's true, and much more of that that happens now. Syndromes are rare. It's terrible for people to sit on the material or not to exchange ideas or pictures or to learn from each other. I mean you might go through a lifetime and not see another case. The most wonderful thing to me is when someone shows something at dysmorphology club, within the next month others say, "I have seen something like that. I have seen one." It's quite extraordinary and then it is written up, and before long someone finds the gene. I was not in agreement with Les Bieseker's letter in the American Journal of Medical Genetics suggesting that it's unnecessary to publish single case reports. He said they are of limited value. He thought that they should be put on a database until there were sufficient cases. It's amazing the power of single unusual cases, and of course Cedric didn't believe that, and lots of people don't believe that. You know simple descriptions are very important. So the Dysmorphology club was instrumental in trying to. . . It's a teaching, learning forum really. Very important.

PSH. Of the various things you have done over the years, Michael, does anything stand out to you as being something, if you had to choose one of the various things you've done and say, this is what I feel most proud of or feel most affection for. Does anything sort of stand out?

MB. Oh it's the database, the dysmorphology database. I feel you have to judge your life in a way, and I believe everyone should try and contribute something before they die. So what sort of contribution have I made? I suppose the only contribution I have made other than teaching, is the database. I think in the foreseeable future, technology is going to perhaps overtake clinical databases. Chips and array technology - things like that, and you won't need all these databases... I don't know about it. I don't know. You tell me whether you have a vision of diagnosis being all molecular and all something else, and that we won't need all these clinical tools. Is that how you see it?

PSH. No. I don't think either of us see it like that.

MB. I certainly might see it in a highly westernised society, but even there, I don't think so. I don't think the clinician is dead yet.

PSH. No. The other thing I have been asking everybody I have seen is, has there been any particular person who you would single out as having a specially great influence on, not just your career but your work generally?

MB. Other than my wife?

PSH. Yes.

MB. Yes. Professionally if I had to answer that one, I suppose Cedric for starting me off, in a way, in the right direction. And then Robin. Robin was a huge influence. He was the only other person I have found who was as fascinated as I think I was, in the diagnosis of syndromes. You know towards the end of his life he was starting, even before he knew he was ill, to give up research and teaching. He wanted to concentrate really on his best skill, and his best skill was as a clinician, strangely enough. As clever as he was with these other things, he was a superb clinician and he came to think that that was what he wanted to do with the rest of his life, and I suppose it's him, as a clinician that I feel most privileged to have been associated with over the years.

PSH. I mean, one of the things I found saddest is that, in this series of interviews I started with kind of older ones and then, you suddenly find you have lost somebody in their prime who you never thought of going and seeing.

MB. Yes. He was an exceptional person in many ways and he was an influence on many people, but if I had to single out other than early beginnings with Cedric, it has to be Robin over a long period of time.

PSH. Because this was 20 years or so at least you were together closely.

MB. Yes, and they were for me very productive years in my limited way, if you know what I mean, and I value those years. So I don't actually know where I would have been without Robin's influence.

PSH. I think a lot of people would say the same actually, but for you I can see it very specially. It's been, for both of us, it has been an incredible period to be in genetics hasn't it?

MB. Absolutely. I mean genetics was tossed out, as I told you. Geriatrics, rheumatology and genetics. No one wanted to go into genetics. I had no right to get any sort of job in genetics. I didn't have the qualifications. If I were around in 2005 with my experience I would have got practically nowhere. No one was interested and that is why I got a job in genetics, and it was a blessing really. But things change and you, how did you get into all of this at a time when, you know, it wasn't exactly on everyone's high list as being the sort of future for you?

PSH. That's quite a long story Michael. Maybe we should continue it over a cup of tea. But before we finish though, are there any things you want to bring up that I haven't touched on, that you think really you would just like to put down for the record?

MB. I don't think so Peter. I'm an old fashioned clinical geneticist, to be honest, and I'm not sure. . .

PSH. And proud of it.

MB. And proud of it! Indeed proud of it, and I don't think career wise it's the way forward and it never has been really, and yet I am pleased with what it has thrown up for me. And that is my sort of geneticist, but I needn't tell you, you know a hundred million times better than I, about the other things that happened along the way because they have been quite extraordinary if you look back.

PSH. They have.

MB. And totally, I suppose, unexpectedly for in my lifetime, that that actually happened.

PSH. Yes, it has been a privilege.

MB. Yes, it has been a privilege.

PSH. Michael, thank you very much. I am going to switch off the machine now.