**Yaeesh Sardiwalla:** Dr. Bell I would like to start the interview is talking about your life before medicine. Can you tell me about your family and your background in general?

Dr. Michael Bell: Well I was born in Kingston, Ontario. My father was a family doctor who eventually went to Columbia after the war and in public health and industrial medicine. We then moved to Oshawa and that is where I was brought up. I subsequently went to University of Toronto, did my MD and stayed on to do - well I started in General Surgery and then saw the light and became a plastic surgeon. I did a short traveling fellowship in hand surgery and I worked for six months with Jim Murray at the East General Hospital doing hand surgery and subsequently moved to Ottawa because they needed a microsurgeon and so I sort of started that in Eastern Ontario and started up a microsurgery lab to teach other people and to hone my skills and so that was really my main focus in work was hand surgery and microsurgery and then it all kind of evolved into trying to do things more efficiently because I met a wonderful man named John Fielding who I don't think is appreciated by anyone except his close colleagues who knew him but John was a very innovative person and I learnt so much in less time from him about doing everything in an efficient manner and so patient surgery that evolved to doing hand surgery under local anesthesia. I had not seen that as a resident and pretty soon I was doing everything including flexor tendon repairs in the emergency department the way John taught me and he had also started using adrenaline which of course was verboten and of course it was wonderful, it made all the difference in the world, there was no bleeding, you just had to be a bit patient but it worked for 15 or 20 minutes and you didn't need a tourniquet and so all the problems that we have had doing hand surgery with the patient asleep and tourniquet control because tourniquets are painful and so the patient had to be asleep so that was all changed and the whole concept of outpatient hand surgery and doing as much as you couldn't emerge all developed gradually and then I met a very smart guy named Don LaLonde and so we started to collaborate and he did a lot of basic research about the problems in the myth of adrenaline and ischemia in the hand and I think everybody else is now on board and is doing complex hand surgery under local anesthesia with wonderful cost benefits and wonderful benefits to the patient so I think that is one of the most exciting developments in our specialty at least as for as hand surgery is concerned and of course neuroleptanesthesia, office-based surgery is now possible. I was doing my breast augmentations under neurolept and local anesthesia, and facelifts so it's a matter of progressively learning how to do things and dilute anesthesia works incredibly well and the fact I remember my father telling me an interesting story when he was in World War II they had no local anesthesia and so what were they going to do to debride wounds in the field, well they injected large volumes of, they started off with using saline but then they didn't have saline so they used large volumes of distilled water and it worked even better and lasted even longer and now I don't know that he was ever able to assess or determine whether injecting large volumes of distilled water into wounds was harmful, I don't know that anyone knows that but it worked. The patients didn't have pain, they were able to debride bad war wounds in the field and so that sort of gave me the idea that large volumes of dilute anesthetic might work and of course it did and I started doing it with burns with donor sites and putting large volumes in as you would with liposuction the same solution and it worked, you could take large skin grafts with local anesthesia using that technique so very effective and there are a lot of work in the developing world using this technique on people that weren't healthy I mean they were mostly children and they had big burns, they were not nutritionally healthy at all. Now we did give them general anesthetics but a very light anesthetic that plus a large volume of tumescent anesthesia and especially with a little kid that has thin skin you could pump it up and

make it firm so you could harvest this skin with a Humby knife quite effectively so not only did I give you good anesthesia I gave them a bit of hydration as well and allowed to take a good quality even skin graft with a simple Humby knife.

**Yaeesh Sardiwalla:** I would like to just go back a little bit Dr. Bell to your motivation is going into Medicine initially, what drove you to the field, what made you want to become a doctor?

**Dr. Michael Bell:** Well I suppose my father, that was easy, he was well-respected by his patients and I understood that and he cared for his patients well and I think admired that as a feature that would be useful to have in life, a good goal. I was really attracted to engineering I must say, I always sort of liked to build things and experiment with things sometimes not so well like a few of my rockets exploded rather than actually flew but nothing bad happened on that account but no I think the reason I went into Medicine was more because I had a good role model. He was a family doctor. He started out trying to do pediatrics and got drafted so he ended up going overseas and when he came back he really couldn't go back to being a resident, that was just too much so he went in the Family Medicine in Merrickville a small town and did that for six years but it was really tough with three little boys and being the only person on-call and so he then went to Columbia and did public health and industrial medicine and found a much more same lifestyle working in Oshawa.

**Yaeesh Sardiwalla:** What prompted you to pursue surgery and what drew you toward plastic surgery?

**Dr. Michael Bell:** I guess it was the precision, the challenge and Joe Starr and Chosen Lau who were the senior residents at Toronto General Hospital and got to know them quite well and they sort of mentored me so it's their fault I guess in many ways but I think it doesn't really matter what you do in terms of looking after patients, you are still looking after patients but if you have a choice between doing something that's perhaps more precise and certainly plastic surgery holds that attraction and hand surgery I was always interested in trying to reconstruct hands because without properly functioning hands people are so limited in terms of things that they might like to do.

Yaeesh Sardiwalla: Are any characteristics that you have that a plastic surgeon needs to have in order to be successful?

**Dr. Michael Bell:** Well you have to be an obsessive personality. There aren't half measures and you can't be rough and ready about what you do, you need to concentrate on what you are doing, you need to develop a good technique and sadly there are surgeons and we all know who really didn't ever learn how to operate and that's why I think skills labs are so important because if you learned bad habits early on you may carry on doing them and if you have someone who is a coach who teaches you how to do something properly like an athlete yes you might be able to run fast but you will not be as good as you could be without a coach and so hence I think surgical skills labs have a really important feature to try to get people to do properly, they develop a poverty of emotion so that their hands look as if you were doing finger ballet and you watch a master surgeon work, there is no waste of time, everything is totally efficient, it looks as if the clock is turning so fast because they are fast and they are not hurrying, they never hurry, and they are atraumatic and so learning those skills is a great feat in itself and plastic surgery tends to emphasize the necessity of that because so many things that we do

depend on the skill of the operator and how atraumatic the operator is, the incidence of sepsis is way higher if a person is not a deft operator because the more crush injury you produce the more ischemia occurs the greater incidence of sepsis and people that are rough surgeons don't appreciate or care about that I think but you will not find rough plastic surgeons who are doing precision work and I think there is now a great emphasis on that and of course the ultimate training is to be a microsurgeon because you are really constrained by the magnification and you by necessity will have to become that type of surgeon so I think although microsurgery is not for everyone the training that it imparts to you is invaluable and it carries over into everything you do, it's a hand-eye specialty with a big academic component of course in addition and that's what makes it challenging but I think it all basically comes down to the fact that you are looking after people, you are helping them with their problems, you are doing good, there is a big immediate feedback, mean psychiatry is probably the worst specialty in the sense that it takes so long to see the benefits of what you are doing in terms of trying to help people with their problems, surgeons have a great benefit because you get this immediate gratification from what you have done, of course sometimes things don't work so well but in general it is a very positive specialty.

**Yaeesh Sardiwalla:** Who are some of your biggest mentors as a young plastic surgeon, as a resident and in what way did they impact you?

Dr. Michael Bell: Well at Sick Children's Hospital I met a wonderful man named John Birch and John had just started after doing a fellowship in Sweden, he actually went off and worked in Zaire for a while, a very bright and dedicated person and a good sense of humor, he certainly inspired me as a good person to emulate as well Jim Murray. Jim Murray was certainly one of Canada's best-known hand surgeons when I was there. He was the most self-critical person I have ever met and he would he would always look for improving what he was doing and sort of inspired me in that way that he was always learning, he was always pushing himself, of course he would push other people too and that is why some people didn't get along with him but he pushed himself more than anybody else and he was a very academic person as well so I remember going off to the anatomy lab because he had to give a talk at the American Hand Society Meeting and so I did all his photography and he did all the dissection and I got to know him quite well because we went through several sessions like that because the talk that he was going to give was going to be perfect and it was so I had a lot of stimulation from him and then when I started in Ottawa I shared an office with John Fielding for 17 years and I learnt more from John in terms of efficiency, patient care, technique. John was a fabulous technician and is unappreciated by probably anyone that didn't work closely with him, he kept a very low profile, looked after his patients well and I was really privileged to work with him.

**Yaeesh Sardiwalla:** You mentioned Dr. Fielding's work with doing more and more operations outside of the main operating room, using local anesthesia to make operations more efficient. Why was it important to you?

**Dr. Michael Bell:** I think it was all necessity. When John came to Ottawa people didn't want him, they felt that they didn't need a plastic surgeon, the general surgeons were doing all the things that he did but not nearly so well of course and he couldn't get operating time. I don't know where he ever got the idea of doing a carpal tunnel release under local anesthesia, I certainly had not in my residency, even simple ganglia, trigger fingers were done in the main

operating room under general anesthesia so John I guess developed this technique by necessity and never looked back and once he taught me I never looked back either.

**Yaeesh Sardiwalla:** I would like to now spend a little time discussing your inventions and your relationship with Lee Valley Tools. What led you to this path of innovation?

Dr. Michael Bell: Oh dear, like I guess in some ways instruments that I was using didn't really do what I wanted and so I was always looking for ways to improve that. In terms of my relation with Lee Valley Tools I got my new catalog and in it was the woodcarvers knife that they were making, it was anodized aluminum, it was about 8 inches long, beautifully made, black anodized handle with a brass tip and I went in and bought one, took it out to my car, took it all apart, put it in my hand, rotated it and realized this was like a fine, fine Mont Blanc pen the way it rotated in your hand, it was the equivalent of the Barron scalpel which allows you to rotate and do precise things with this knife but the Lee Valley was better, it just fitted your hand perfectly so went back in and bought four more and I used it for about a month in my office doing a variety of procedures and I noticed that the collar was starting to rust a bit because it was made of stainless steel so I wrote Leonard Lee a letter and said that he probably thought he had invented the world's best carving knife which he had but he didn't realize that he had at the same time invented the world's best scalpel and I suggested that it would be the world's best scalpel if he changed the collar made it out of stainless steel. Well he wrote back in his letter and said well, thank you but are you really allowed to use this knife in the operating room and I said of course, it's no different from anything else we use but the rust doesn't look so good. So I said why don't you come around and I will show you the instruments that we are using and I will explain to you why inventions like this are needed so he came round to the office with Lloyd Sevack who was an engineer and ran Veritas which is their manufacturing arm and another industrial designer a young student. So we went through my cupboards and I opened all the packs, which my nurse wasn't too happy with, to show them all these instruments that didn't work so well and modifications I had made to them and self retractors that I had made and I was using magnets at that point in time for securing break so I could do surgery by myself and so he went away, called me about two days later and asked me if I would like a job developing instruments so of course I said yes and I was the world's greatest night job anybody ever had because I got to meet the smartest people you have ever met these designers I mean Leonard Lee is thought of as a businessman, a very successful businessman but he is also a mechanical genius and he had an amazing ability to pick products that would work or products that would not work and so he jumped in with both feet and as his retirement project he developed Canica instruments and our first instrument was a spinoff of his woodcarvers scalpel and we then went on to develop the chest system which is the Canica hand surgery system based around the rough prototypes that I made as using ordinary magnets in cups to let you do surgery by yourself and everything is a collaborative effort I mean you need to design group of people usually six or seven and Leonard Lee was a master at picking the combination of people with different backgrounds, you would have a couple of industrial designers, a production engineer, a materials engineer somebody who knew what type of material would fit best for the problem and of course you have to know how to manufacture things that are going to be cost-effective, I needed a good secretary but an idea would go around the table and there would be three or four different approaches as to how to solve it but then there would be two or three new ideas that popped up in the middle of all this conversation so by the end of about two hours everybody was just beat. It is the most amazing electric sort of situation I could ever imagine and this is what Leonard Lee loved to do and so Lee Valley has a number of design teams all based on that same sort of mechanism,

people with different strange backgrounds and it just becomes a way of thinking and people learn from each other and so that's what was so fun and as Leonard Lee said not only are we having fun we are doing good so that's what he really came to appreciate. He paid himself no salary, in fact he ended up losing a fair amount of money I think in all of this but it was always with the intent of helping other people.

As someone said at his funeral he was a mechanical genius. With a heart of gold, certainly one of my best friends. You know, I talked to his wife yesterday so a lot of things kind of came back, I will be okay, it's like there's a few songs that heard playing the bagpipes. First time I met Leonard Lee he was running his own little shop on Boyd Avenue all by himself, he hadn't hired his first employee yet to, actually he is still working for Lee Valley and running the Ottawa store and so I went in and asked him if he had by any chance 1 inch diameter Norton coarse abrasive rolls and he said oh yes I think so, so he brought out a package and I looked at it and I said what's the number on the inside, so he opened the package, looked at it and it was 1547Z and I said perfect. I said I would like five dozen. He said oh you don't need five dozen, he said these last forever. I said well no I can only use them once and he said well why is that and I said am I allowed to sell you this and I said well yes it is exactly the same serial numbers the ones I buy from the medical supply companies but you charge \$.50 and they charge \$9. He said I am in the wrong business. So that is how I first met him and of course he remembered me years later when we talked about his scalpel.

Yaeesh Sardiwalla: What was your first impression of Leanoard Lee?

**Dr. Michael Bell:** Well he was a very small businessman, he just started the business and nobody knew Leonard Lee, everybody thought he was going to lose his shirt when he quit his job from the government and start delivering his own little mail-order business so he proceeded from one employee in Boyd Avenue up to 700 now I believe. So he is a phenomenal success story but he was a very altruistic person in many many ways and not known I think to the public in general except as a successful businessman who tried to get the establishment to be more moral in the way that it ran things.

Yaeesh Sardiwalla: Did you ever encounter any challenges with your innovations and bringing them into practice?

**Dr. Michael Bell:** Well I tried to be very subtle about it, well for example in the heart institute I used to close all the open chests and they didn't really have any retractors that were the right size or shape and so I just made my own and so I learnt how to weld and finally managed to put a couple of retractors together bent and welded so that they were good enough that nobody ever asked but there were definitely difficulties because you weren't supposed to modify instruments and I remember one time I had a large malleable retractor that I had bent in my shop, had it all bent and designed so that I could use it for doing abdominoplasties and large flaps. I had considerable difficulty getting it approved because although it was a simple piece of steel made by medical company and all I did was bend it in my shop it had been manipulated. Fortunately the Chief of Neurosurgery was a great big strong fellow said this is absolutely ridiculous that Dr. Bell can't use this instrument, it is made by the same company that my brain retractors are made and all he has done is bending these. The head nurse said well but he bent it at home and his shop. The neurosurgeon replied that he was much bigger and stronger than

Dr. Bell. He said he could have bent that instrument with my bare hands and that is enough so that solved me a lot of problems.

**Yaeesh Sardiwalla:** What a fantastic story. So earlier Dr. Bell you mentioned the concepts of wide-awake surgery that Dr. Donald LaLonde popularized, could you just describe some of collaboration that the two of you have had.

Dr. Michael Bell: Well we talked about using adrenaline and I told him John Fielding had done it and I had it and that it really cut down on the bleeding and you didn't need a tourniquet, you don't need a tourniquet, you don't need any element of anesthesia except local and of course the beautiful thing about doing flexor tendon repairs is you can do your flexor tendon repair and so the patient is wide-awake and so you can have them look at their hand and say well now bend your fingers and of course they can bend their fingers and say well now that's what it does and that is what it will do, you just have to learn how to enjoy pain enough to get through the rehabilitation and it should work just like that. Well one of the things that we had both, Don and I had both noticed was when you have the patient flex their fingers on your repaired tendon there was some repairs that there was a little bit of gap developed. Well I have no idea, nobody else had any idea when you did it when the patient was asleep and you did a nice repair and you thought the tension was perfect but how did you really know and I was thoroughly embarrassed with a couple of repairs I did after I had the patient flex their fingers and checked the repair there is a gap of several millimeters, well that is going to likely lead to a rupture and so I am just started tightening up a little tiny bit more than I had before and Don did the same so I think that's one of the big benefits of doing extensor or flexor tendons under local anesthesia. The patient can demonstrate the quality of your repair for you and of course you can convince them right there while your fingers were bend like this you just have to do what the therapist tells you and you can get a good result.

**Yaeesh Sardiwalla:** Could you comment on the past 35 years in Canadian plastic surger and the important contributions that have been made? What do you think has been the single greatest contribution to the field of plastic surgery by a Canadian?

**Dr. Michael Bell:** Hard to answer, I am certainly prejudiced in the sense that everything has changed from doing plastic surgery procedures with patients admitted the night before put to sleep in the operating room, discharged the next day. With new anesthetic techniques we can do for example breast reductions on a day to day basis, abdominoplasties on a day to day basis, all our cosmetics is basically done on a day-to-day basis whether it be in a surgical facility or in a hospital and the same with hand surgery so we become the masters of outpatient surgery without question more than any other field even ulnar nerve transfers at the elbow again all under local anesthesia unheard of 30 years ago, the tumescent technique for taking skin grafts for burns has evolved as a major useful technique to minimize blood loss so I think plastic surgery has totally changed from being an in-hospital specialty which it was 30 years ago and really we have very few patients in the hospital except for our trauma maxillofacial injuries and burns.

I think many people, we all kind of fed off each other, one thing about plastic surgery is we communicate well and that is not the case in many other fields. Plastic surgeons were always quite collaborative and in Toronto for example there was a close association where people would get together, I think it was even better in Ottawa but we sort of all had the same

problems and we discussed things in a very open basis in a noncompetitive way, certainly compared to the Americans the Canadian plastic surgeons are a totally different breed of people and so by communicating with each other I think we all kind of in a group evolved in the same way so I think the cooperative approach that plastic surgeons in Canada have had has been one of the big the big pluses. I mean the Americans are being dragged kicking and screaming by Don LaLonde in trying to do wide-awake hand surgery, unbelievable, but yet the Canadians are all doing it so there is your example.

**Yaeesh Sardiwalla:** What do you regard as being a big change in the way plastic surgery is practiced over the past 35 years?

**Dr. Michael Bell:** I think breast reduction is for one. There is always a lot of blood loss with breast reductions, people were even transfused and with the advent of tumescent anesthesia for liposuction people started injecting larger and larger volumes of local anesthesia and it was quite amazing what happened. I actually published a paper gosh in 1980s with Marcy Beverage we just measured the changes in hemoglobin and patients were injected with dilute saline solution versus dilute adrenaline solutions and the blood loss if I recall was about a third so huge difference so you would be sending your patients home with a much higher hemoglobin, their recovery rate was so much faster and of course because we were using dilute Xylocaine the amount of pain that they had after, we reduced the amount of postoperative analgesia by half just by the dilute local anesthetic so made the huge difference.

**Yaeesh Sardiwalla:** Amongst your contemporaries, are there are surgeons that come to mind when talking about influencers?

**Dr. Michael Bell:** Well I think people that are teachers, that have contributed a great deal, Ron Zuker certainly comes across as one or Ralph Manktelow of course as well and he has made contributions in many different areas of microsurgery so these are people that I know well. The other people I know from meetings and I enjoy the papers that they produced but I have no personal experience, you know, in seeing them work themselves.

Yaeesh Sardiwalla: Could you please share some interesting stories from your career?

**Dr. Michael Bell:** I was the intern at Sick Children's in Toronto on Plastics. At about 11 o'clock one night, was actually June 30th, the phone rang and it was Dr. Winston Parkhill who wanted to speak to me and I thought oh no, something bad has happened to somebody. Anyway this friendly voice in the end said, hi I am Winston Parkhill, I just got off the train which was so late getting here in the Union Station, he said, I am so sorry to call you this late but I wondered if you could tell me what time are we supposed to meet tomorrow because I am starting the plastic surgery program and I am supposed to meet Dr. Lindsay. He said, I have never seen anything like this city in my life after getting off in Union Station. He said there wasn't a pay phone, he said I have never seen so many people at one time in my life. So I said oh listen, no problem, I said well where are you right now Winston. He said not sure, he said actually I am on the corner of walk and don't walk. So that was Winston.

Oh yes. I got to tell you one other story about Hugh Thomson. Hugh is a very revered plastic surgeon at SickKids so in 2000 there is this plastic surgery meeting in Montreal where Canica first had their booth so I said to Hugh, Hugh you got to go down and check out the CHESS system

with all the magnetic retractors and, you know, let me know what you think about it. So on the bus that night going for dinner I said Hugh did you manage to see the chest system and Hugh said oh it was awful. And I said Hugh what are you talking about. He said well I went down and I sat there and he said I started playing with the system, he said I was having a great time. He said this distinguished looking gentleman came up and asked me if he could be of some assistance and so Hugh said I looked at him and sized him up. Hugh said he looked like the kind of guy who could take it and so he said to him you know I have got better magnets on my fridge at home. The gentleman frowned and said oh and where did you get them from. Hugh said Lee Valley Tools to which the gentleman reached into his pocket and came out with this card and stuck it in front of his nose. It said Leonard Lee, president. Hugh said he was so embarrassed. I said well that wasn't very nice of him. Hugh said well no it wasn't but I deserved it. And I said no, no Hugh, I said you were right, the magnets on your fridge at home are much stronger than ours because ours can't be magnetized in the autoclave so they are actually quite a bit weaker.

Yaeesh Sardiwalla: When you look back on your career, what have been some of the biggest successes?

**Dr. Michael Bell:** Well I think I have done more good than harm. Some days I wasn't true an advocate for surgery because things don't always go well. I always tried to have the patient's interest as my first and foremost goal and I was taught that by many other people. I have tried to follow through with that and I have tried to teach it to other people and I think always trying to learn good technique that would allow you to do the best work you possibly could was so important and that's why I am such a big fan of surgical skills lab because you can blunder along and do things and never be efficient and never be deft at what you are doing. If you have somebody who teaches you how to do something particularly correct from the beginning it is very helpful. Ralph Manktelow taught me how to use my hands in a way that has benefited me in everything else I ever did. We were somewhat self-taught with embarrassingly bad instruments.

**Yaeesh Sardiwalla:** What do you think have been the biggest challenges or hurdles that you have faced in your career?

**Dr. Michael Bell:** Oh I suppose patient expectations with media the way it is these days, everybody thinks that everything is simple and it is all going to work out well in every circumstance and of course we know that there is quite a number of complications that can happen and we do push the envelope on doing a lot of cases and sometimes things don't work out to patient's expectations and doesn't matter how well you did something, if it doesn't meet the patient's expectations then there is a great deal of unhappiness and litigation that follows. I think it's something like one plastic surgeon in five they get sued every year, it's quite alarming and we all have to learn to stick together and understand that you can never achieve perfection and we need to be more supportive of each other and because it is a difficult circumstance and it's a matter of culture I guess that has evolved and things are very different now from when I began.

**Yaeesh Sardiwalla:** Dr. Bell how would you like to be remembered by the field of plastic surgery, what would you like your legacy to be?

**Dr. Michael Bell:** Oh, well, I guess that I was taught by some very generous people who taught me well and I would hope that I have taught other people to be good plastic surgeons who will provide good treatment for their patients as well so I think the other thing to is that I have had a great deal of fun along the way too. I had the world's best night job, there is no question so no I have been very happy with my career and I think the message to pass on to everybody is that they need a good hobby or two.

**Yaeesh Sardiwalla:** What do you see in store for the future of plastics surgery? Any further comments?

Dr. Michael Bell: Well, yeah, I think you have covered things very well. I see things getting more and more difficult for medical students and residents and I think a lot of the humanity has gone out of medical school, everything is so competitive now, everything is so over organized, people doing a great deal of research early on are being denied the opportunity to proceed in the field, you really don't know what you want to do so early on in your career, I didn't, I switched from general surgery into plastics, I didn't even know I wanted to be a surgeon until beginning of may be middle of fourth year, everything is pushed so, so far ahead and people have difficulty trying to reorganize their lives I mean they might start doing some field maybe even in Medicine rather than surgery and then as they had a little bit more exposure then they suddenly realize that they were in the wrong area and they can't switch. I think mentorships are so important to communicate with from older staff to students to try and give them a perspective of this broad palette of things you can do in the field of Medicine. I mean certainly at one point I was interested in cardiology and then psychiatry, well it depends on who you work with. So that this whole emphasis on rushing into making a final determination of what you want to do I think is not good and it's efficiency at the expense of mistakes mean a rotating internship well it had faults but yet it gave you a little bit more time to determine what you wanted to do and I am sure that is never going to change but I think if people do see the light that should be easier for them to change you know and having budget set up for certain specialties that won't allow people to transfer from one field to another is just tragic I mean you are still helping people that is the main reason to be in Medicine basically and patients still say thank you and we are pretty privileged that way I mean how many hospital administrators are ever thanked for something they have done or people and government you know it's, I mean I think that is the reward if people are grateful that for what you have done this is the only immediate positive feedback that a poor psychiatrist never gets.

**Yaeesh Sardiwalla:** Well thank you so much Dr. Bell, it has been incredible to hear your stories and I am fortunately to have being given this opportunity and it really is a privilege, thank you so much.