



*Dr. Chase Peterson received his A.B. and M.D. from Harvard University. He took his internal Medicine and Metabolism fellowship at Yale in New Haven, Conn. He entered private practice for five years in Internal Medicine and is Board Certified in Internal Medicine. He was Dean of Admissions and V.P. of Alumni Affairs & Development at Harvard University before returning to his home state of Utah. He was Vice President of the Health Sciences Center at the University of Utah for five years and then President of the University of Utah for eight years. For the last ten years Dr. Peterson has been Professor of Family Medicine and Internal Medicine and is currently the Co-Director of the Family Medicine 3rd year required clerkship. Dr. Peterson says that he has been challenged and feels very honored to be a part of the rediscovery of primary care and Family Medicine as one of the solutions in improving the health care system in the United States.*

DOUG FABRIZIO

Let me start with a general impression of the human body, as a form, you know as a design. How do you describe it? How do you talk about your appreciation for that form?

DR. CHASE PETERSON

First of all Doug, up until now the human body's been covered in a sheet called skin. Which has stopped us from really seeing how it's working. It's as if you were looking at the new Ford Motor cars for the year and they were all covered with ah, something else. And you saw them they could go fast and they could have brakes and all the rest. But you never really got inside it. And to have, so the skin is necessarily contained us but it's also concealed us. And this is the first time, I think in the history of man that we've ever had that skin stripped away and allowed us to see what are the elements of the, the body. How does it do what it does? It was just breathtaking. I was surprised ho, how impressive it was.

DOUG FABRIZIO

Why were you surprised do you think?

DR. CHASE PETERSON

05:04

Well, because I thought I knew it all ah, I had gross anatomy in medical school I've dissected a human body. Ah, therefore what's new? I knew what a muscle looked like, and nerves looks like and bones. But there was no sense of performance. We knew these bodies, the ones I dissected in medical school they were dead. And they were not in any way able to express the phenomenon of the life of the body. Down here at this exhibit you saw these, especially in the poses. They were soaring, they were running, they were reaching, they were all

these things. Which suddenly said wait a minutes these muscles, these bones, these nerves they're actually doing something. And you saw what they were doing. I think that was the difference.

DOUG FABRIZIO

Is, ah, as medical person are you...are you, is the body a brilliant design? How do you think about it as a design?

DR. CHASE PETERSON

Oh, it is enormously brilliant and so complicated and so simple. If I asked you as a medical student what's the normal excretion of sodium from the urine in front of the kidneys you know in 24 hours...you would sit there trying to remember what you'd read last night in the book and it was at, 125 milligrams or 452. The answer is what you took in yesterday, minus sweat. Those exquisite balances are there you increase the concentration in the blood, in the blood. Get a little thicker or a little thinner, the kidney will respond in microseconds, to hold onto water or to put out water. To reestablish there icon balance. The ph of the body is done the same way. Ah, breathing. You know please for my sake, don't breath for a couple of minutes. And I'll give you a million dollars and you can't do it. Ah, because the brain is saying the breathing is important and you're not breathing and that's raising the acid content of the carbonic acid in the brain, it's a little measurement up here. And it's telling you no matter what you want to do, you're going to breath. So, that's the complexity of it. Um, and we saw in this exhibit on the macro level these were things, images you could see without a microscope. And then progressively in the last fifty to one hundred years we've been going to the microscopic level and even the submicroscopic level now. And the complexity just grows and grows and grows. But at the same time the simplicity. Ah, you and I are probably developing cancer cells hourly. That is cells are multiplying and one of them mixes up the replication process and a little molecule gets out of place and so the normal control mechanisms for that cell type are lost. So, it's a, it becomes a rebel cell. Um, and it starts to reproduce itself without control and that's what we call cancer. The body is instantly blowing the whistle normally. To say wait a minute I just identified a cell in Peterson's big toe, that is not behaving the way it's suppose to behave. I will kill it. And it is killed. So, the miracle, the issue of cancer is not the miracle of a, curing it. It's the miracle of why don't we have it all the time? And the point is we do, except the body recognizes it in most cases and eliminates it itself. Those control mechanisms are unbelievable.

DOUG FABRIZIO

What did you see in the um, in the exhibit? Did you see art as well as anatomy?

DR. CHASE PETERSON

Yes, You asking what all was there and it was, it was anatomy. It was art. Um, you can ask me, what did you hear when you heard Beethoven's Ninth? You were talking about that a few minutes ago on one of your programs. What did you hear? What did you see when you saw David in ah, Florence and Michael Angelo? What did you remember about a Shakespearean play you saw? And you would I guess one of the things you'd say is, incredible inspiration. You saw things at a level of beauty or magnificence that doesn't happen day by day by day. And so it was special, made it special. Well to have this human body strip off of its cover, the skin. And to see.... you saw those muscles connecting in the upper arm and the lower arm and saw a little old statement saying that, those things contract and bring the arm up like that. Or the back side contracts and it straightens it out. Ah, to see that in, in, in such clarity, I think is equivalent to, to hearing Beethoven's Ninth. It's just ah, it's inspiring to think that that's going on in our body and it's inspired me to think that I have some capacity to appreciate something Shakespeare wrote that has meaning for me. Believe that's it.

DOUG FABRIZIO

There's such an interesting history about anatomy, I wanted to ask I'm not sure if you know much about the, this history of anatomy but when did we first start breaking down the body and studying it. It's so interesting that it was connected to people like da Vinci in the Middle Ages. That artists, but also scientists.

DR. CHASE PETERSON

Well, they also wanted to get under the skin. You see, ah, I don't know the names of all these people Vesalius and other names like that come to mind. But the point is that the early study of anatomy was a pretty risky business. You could be put in jail for it. And people became known as a, a thievery. You would go into catacombs and steal bodies so you could see what was in this, this ah, inside this thing. What was the heart really doing? What...How did the blood get around and so forth? That was, you did that at a great risk to your own life. So it was illegal put it that way to study the body for ah, for most of the history of man. And only in the last ah, what is it probably a thousand years, have we been able to study what was going on. But even then the study was, ah was reserved for those people who would do dissection and the surgeons that would do operations and so forth. And somehow cut through the skin, to see it. But you never, under those conditions you never saw it in its totality. And here with the skin stripped off you saw the whole thing working together. You saw those networks of blood vessels in the head. And then you saw um, nerves going out from the spine. And saw muscle and bone. And if anyone comes out of there smug, or not in awe or not with great appreciation for what they have, they were pretty blind.

DOUG FABRIZIO

Let me show you a photograph.

DR. CHASE PETERSON

Yes, ah ha...here's a you know, a ballet dancer ah, leaning over arching their body with their body supported by their feet and by hands. Their heads throw back, the body's thrown up and so forth. Um. I've seen a posi, posture like that probably in the theatre in the ballet before. But you never saw what made it possible. And ah, that's why this, this exhibit was so interesting because it... what am I trying to say? Its hard to know what all impressions it gives you except that...Well, I gues... I don't know what the word spiritual means really but i think it exists and I think there is things called spirituality and I believe in the those things. Um. That is spiritual impression. That is saying um, this bundle of nerves and muscles and bones and all the rest um, is actually capable of a creative process or a creative act. In this case it's an act of placing the body in an artistic pose if you will. Um, you can do it with the skin on but its eas, you say oh sure of course you take the skin off you say WOW! That's what's happening. And ah, mean wouldn't it be marvelous for instance if you could take the Utah Ballet company and go through a full ballet performance with everyone's skin off. Ah, just imagine how that would look. And ...PAUSE...and the exhibit was so...ah it made it so much larger in its scoop to have these figures soaring this one's leaning backwards. They have ones flying, the men, the women were doing these things with their bodies. um. That was far different than just having ten slabs of tables like an autopsy with bodies lying out and someone cut open and unwrapped them. Okay there's the heart, there's the intestines. But they were all inert. These things I suppose are dead. There's no living tissue there anymore. But they don't look that way. they look like they're absolutely alive and there doing something so you see form not just ah, if you will substance or appearance. That was, who, I would love to have been with the generators of this thing when they came to ide, the question I wonder how we ought to place these bodies. We've got them all ready now there still plastic, they're still movable. And the answer well, put them on a slab that what you're suppose to do and then we'll ship them around the world and let people look at them. But somebody said NO, let's show them let's show function and form. And I think the bases for spirituality.

DOUG FABRIZIO

When you see this...

DR. CHASE PETERSON

You're going to have to cut this program because you're getting I mean it's just, It was so exciting, it was so much more than I thought it would be that I'm talking

too much. But be that as it may, that's for you to cut.

DOUG FABRIZIO

Well, you're not talking too much. All right what is happening when a person is kneeling and praying what are they doing with their body, what's going on? Anatomically, beyond the process of interacting with God, what's going on anatomically?

DR. CHASE PETERSON

You remind me of our final exam in gross anatomy in first year medical school. Please describe the muscles, bones and nerves involved in walking on the stage and playing a violin. That was...ha, ha, Well here this person is kneeling head raised. The raising of the head acknowledges there's something superior to this person. They're I guess holding their heart are they not? I'm not clear about that.

DOUG FABRIZIO

Yes.

DR. CHASE PETERSON

But, they're holding their heart which is thought his, romantically and emotionally to be the center of life. And the, what not. I want to talk about that in a minute. Um, there a, they're kind of offering their heart. to something larger than they are, and that's the beginning of an understanding of the largeness of the human experience. It's not just me, down here. Its not just what makes my skin itch or my nose tingle. Or my breaths come in and out. But that pose is the pose of saying, yeah here's where I am and now I'm reaching out to something larger. But, you couldn't reach out if you didn't have those bones and muscles. If you were just a glob of something called here's the spirit of Fabrizio ah, Peterson's out here, that's called a spirit. Now, it's actually invisible you can't see it because we know it's spiritual. But it's there and good luck. Here you're saying this is the human experience in it's form and its kneeling and reaching and re, looking for something...larger than itself... you see. You could say that person could be, flipping his suspenders and saying look at me, I am the human body and I've evolved over millions of years on this earth. I'm the most complex thing ever created in biology. Ah, you may all worship me for my enormous perfection. No, he's saying yes I am the product of evolution I'm the product of all this that's gone on. I'm the product of divine intervention very likely, at different points along the way. And I'm acknowledging that I am going to use this in the look back or the look up to see the connection of something greater than myself that was involved in all this.

DOUG FABRIZIO

So, talk about the heart. I'm intrigued by your sense of the human heart.

DR. CHASE PETERSON

Well, it was reminded, so much was done about the heart that glorious. you walk into a room and suddenly the sign saying 1,800 barrels of blood are pumped a day, I never thought about that I mean the, that physical image is so great. I could have read that in book somewhere, I must, I probably did. But, I'll never forget eighteen - 1, 800 barrels stacked up in that room and you and I are pumping that each day. But it brought me back to ah, i think, the exposure I had when Barney Clark took on the first artificial heart. Four or five days after we got into it. we were surprised and had to work very fast to anticipate the media interest because everyone was there. 120 people from around the world representing Bear Stern from Germany and the New York Times and everyone in between wanted to watch this and normally science is done in the quietness of a lab and when you finish a report you publish it and so forth. But we weren't allowed that privilege. Susan Standberg who's a wonderful woman in National Public Radio, you've probably met her ah, she's got a voice that would draw the truth out of a stone as far as I can tell, got me on the phone, "Dr. Peterson, why is the world so interested in this artificial heart... process?" And I said well, we don't know we were surprised ourselves. Ah, but ah, my guess is it has something to do with poetry. Namely the heart for years has been thought of as the center of love. The heart of the matter. This troubles my heart. All these poetic different phrases put the heart in a central position. And now for the first time we're taking out somebody's heart and what's going to happen? Well, that was an interesting comment for me to make off the top of my head. And she agreed with my largely. Two days later i learned that Barney Clark had had the same thought. And before surgery he'd turned to his wife and said honey, I wonder if I will still love you when I don't have a heart. And two days later with a tricotmy in his throat, his voice so hoarse he could barely talk. He mouthed out, I LOVE YOU. Ha, ha, ha, And that was it. That was a test of unimaginable importance because it, it said you can love someone without your natural heart. No one could have been sure of that until then. Ha, ha, ah, Any rate the heart was such a feature of this, this exhibit ah, showing the volume of blood it pumps. And then those meshes of of capillaries, hundreds of miles of capillaries in our body that accepts the blood coming out from the heart collects it and then send its back into veins that come back to the heart for recirculation. Um, and again do we have to tell ourselves to beat our heart? No, we can't stop our heart. There's no way you can order your heart. I can tell myself to move my knee but I can't tell myself to stop or start my heart. And ah, that centrality was ill, illustrated by those, by those forms.

DOUG FABRIZIO

You were, seems to me you were moved ah, Dr. Peterson by the gift of the people who had donated their bodies to the exhibit.

DR. CHASE PETERSON

I was. It ah, we all leave something behind when we die. Ah, hopefully the good memories in our families. Maybe things we've taught our children. Any contribution we've made to society. That's our, that's the inheritance we bequeath to the next generation. Um,... most people don't leave too much. They've live and breathed and so forth. But they're not seen for much, ah, they may have done great things but never, never really appreciated. Something got to these people to say we're going to donate our bodies and it's not uncommon to donate them to science, let them be used for thi, teaching medical students, let's say. But, they cut the power of these two I guess their German ah, people that proposed this and were saying, "Yes we'll let you use our bodies to let people have a view of the human experience that the, the presence of skin has blocked since Adam and Eve. And I can't think of any greater contribution, than um I mean, Shakespeare let us a play Beethoven left us a symphony, ah these people whoever they were they're now anonymous. I don't think the names have ever been disclosed. Have they? These people anonymously gave us a vision of ourselves that has never been seen before. It's as is, an astronaut went up and can look back at the earth and see the earth for the first time. It's like that T.S. Elliot poem of, ah, you live your life you walk your journey and when it's over you come back to where you been, where it began for the first time. And to for the first time understand it. Um, you don't understand the earth until you get out there and can look at it and come back. And I think now we can, offer a new understanding of the body because of what these people did, it did for us. I would have, I would have been honored to give my body for that process if it, if the timing was such that it would be of any value. Course I don't think I'd look so good soaring through the air the way some of those people do...ha, ha, ha.

DOUG FABRIZIO

Hey chase, how much does your own image of God influence the way you see the body? you know you hear the term body as a temple body as a shell, body as a vessel how does your sense of something larger influence the way you think about body?

DR. CHASE PETERSON

Well, you see if you're going to have something larger that means by definition you got something smaller. And the smallest can be the life of the uninspired, the life of the, um beaten down. The life of the tragic victim of genocide in Darfur, which doesn't make them any less noble but just that they were so...beaten it was hard for them to express their trueness. So, if there's something small, if there's something large that's also something small and ah, this thing called the

body that we now see with such clarity. Ah, I don't know I can't speak as a scientist on that because it isn't in the field of science. But I do think that there's such thing as spirituality and think there's such a thing as God. And um, i think that this body as opposed to a lump of stone is so much more capable of engaging in that spiritual interchange then would be a rock. That ah, then to see what the origin of this interchange are um, PAUSE...it gives a, it gives a connectedness I guess is what I'm saying. Ah, that image in that exhibit is fully worthy of the hand of God, put it that way. In Genesis they talk about the six and seven days and people don't realize at the end it says and it was good. Well if that phrase is there, it means also there's a possibility it wasn't going to be so good. It might have been another way, let's scrub this one, we got to start over again um, whatever Genesis really means. Um, but we did such and such and such and such and then we man was created and it was good. You damn right it was good. Ha, ha, ha. It was incredible. And capable of justify a relationship of unlimited intelligence, unlimited beauty, unlimited exquisiteness, unlimited love, ah, all these things can come out of something that turned out to be in Genesis terms, that good. Its really, it's hard to talk about spirituality in generality because I think it's exquisite individual and it's not my job to tell the rest of the world necessarily the inner aspects of my sense of spirituality. And so much evil has in the name of organized spirituality from pogroms to Crusades to all these things. Or to people who have had, psychotic distorted vision of things and have done things rob, beat and killed in the name of some image they had in their head that it's hard for one person's sense of spirituality to be sold to another person for fear that it's could be misused I guess.

DOUG FABRIZIO

Let me ask you this finally, we had Steve Mikita in her yesterday. I don't know if you met Steve.

DR. CHASE PETERSON

He's with the Attorney General?

DOUG FABRIZIO

Yeah, with the Attorney General.

DR. CHASE PETERSON

Spinal muscular atrophy. Oh, I never met him but I know a lot about him. Cause I had a grandchild die of that disease.

DOUG FABRIZIO

OH, he's a lovely guy. Kind of that's the question I mean, I wanted to ask you finally about imperfect bodies. It seems bodies have cycle to them. Some are perfect, some are imperfect and it's interesting that there's still that mystery and you can look at these things. You go to this exhibit and you can see the all of those in some ways we're stripping away the mystery but there is still something about the cycles of bodies imperfect bodies that there's something profound about that. Seems to me.

DR. CHASE PETERSON

Well, it's a wonderful question. I don't think I have the answer. But, ah, one of the most exciting things about the body is homeostasis meaning the body has a constant re correction capacity redev, re re, recovery capacity. I mention the excretion of urine or the, the maintenance of the right ph in the body and so forth. These are exquisitely delicate body management systems the body has so it's not as if, you're Michael Angelo and you finish the statue and you stick it on the pedestal, that's it. Once this body is created and born it's just the beginning. And all these mechanisms, if you didn't have these mechanisms ah, ah, a bod, a life would not last more than hours days or weeks. But there's these self correcting self adjusting mechanisms we have. Sometimes they don't work. Sometimes they have too great a challenge. Spinal muscular atrophy is cause by genetic defect which cause the cell in the spinal cord to deteriorate more rapidly than they normally do, and therefore the person goes through a level of paralysis ah, prematurely and ah, 99.9 percent of the people handle that, this point 00001 something percent don't with this genetic defect. And I guess you'd say the rarity of the defects are a tribute to the greatness of the organism. But having said that then the heroism that involved with people who are prepared to survive imperfectly is another testimony to the spirit of man. ah, Fred Friendly ah, a man you knew of I'm sure kind of the man behind Edward R. Murrow and a great man in news journalism. came out to Utah and we'd become good friends for other reasons and he came out to Utah late in his life to speak at a dinner to give tribute to Arch Madsen who was retiring from his job at Bonneville. The two of them apparently I didn't know this had built radio free Europe during World War II and they were real close friends. He got up, we were sitting with him, with Fred and his wife Ruth. They got up, says ladies and gentlemen I'm here to honor my friend there's was nothing that would keep me from being here but I had a small stroke two month ago and i can't find all the words that I'd like to use. And that's pretty tough for a man who's lived in a life with words. But my wife who's sitting here she knows what I'm going to say anyway and you'll see me stop from time to time look down at her and she'll give me the word I need. Well, that hero got up and sure enough he would stop and look down and then continue. that's what I refer to as living with some almost trivial imperfection in the midst of the brilliance of all the good things that were going on in that min, man's body and mind. And not letting the one trivial imperfection deny this crowd or deny Arch Madsen the honor he deserved for that. Well, ah the man you mentioned in the Attorney General office has been plagued by painful difficult

paralysis that probably is progressing slowly and is probably ah, an endless challenge to him. And yet on the scale of things, what virtues does he have? he's got a deficit over here on spinal cord cells and control of his nerves, his muscles. What's he got on this side? he's got vision, he's got smell, he's got thinking, he's got speech, he's got his mind that's been trained in the law, he's got a life to live of example to people who have difficulties and so forth, he's winning 99 to 1 in any football game you want to talk about. He'll be in the BCF or whatever it's called for sure as one of the teams that will play. Um, and yet for most people this one thing is so handicapping that it could cause him to give up. and he hasn't and I think that's true of us all. I don't know what your weakness are, but you've got some I'm sure. I've got some I'm sure and I'm going to work as best as I can to improve on my weakness but I won't conquer a lot of em. You talk about spirituality. I used to stutter a lot when I was in college and I was trying to figure out what is the nature of this thing called God as a Sophomore with all the enthusiasm of a sophomore. The adjective is sophomoric. And i finally got on my knees one night and I said heavenly father if I'm on this earth to be of any value to myself or anyone else stuttering is an inefficient way for me to operate will you please help me stop it. And it wasn't so much a beseechment as an order. He, he. I apologized for the tone of my voice I think and I woke the next morning and there after I've controlled my stuttering. Now, I don't know what went on in my brain and I'm not here to be mystical or anything else and i know about placebo effects and the power of positive thinking. And all these things. I'm just grateful. That i was able to engage in a thing which said I've got something useful to do in this world and this is making it more difficult. And it doesn't seem to be necessary what can I do to get rid of it. Well, this wonderful lawyer that you're talking about is probably doing that nightly, daily to say, I've got these things I can do help me do them without an excessive handicap on this side.

DOUG FABRIZIO

Let me ask you this finally I mentioned body having a cycle. And one of the images of body's i have there's those wonderful old bodies that are worn, wearing out um and as I get older surely as you get older. Ha, ha, ha. Well, I mean that was the thing I'm thinking just about bodies have cycles and they end.

DR. CHASE PETERSON

Hm,hm. AH, well of course maybe they do, maybe they don't ah, certainly tissue as we know them, heart get weak, bones get weak, ah those things end. But, I'm not so sure what end means. And ah, if my grand child can inherit some virtue that maybe I was able to share with them. Then that virtue doesn't end, it because immortal. That is the definition of immortality I'd assume. But yes we do get old and tired. we can have a long discussion of my aching bones and my this and my that and all the rest. I have a lot of things that don't work as well as they used to. Um, and the answer is so what? Again this balance what have I got I'm

still in a position of ownership of the most exquisite organism instrument that ever came out of a bioengineering laboratory far more than any robotic thing ever imagined being. And I can do things that robots can't do, I can do things that computers can't do. The computers can do things I can't do also, we trade that off. But, ah, yeah there it is. And ah, is there some point where you say I've lost this skill, this skill and this skill therefore KIIT, it's over. Ah, I'm aged. I don't think so, I think that I've lost this, this and this, I've retain this, this ,and this ...And yesterday I got this new skill of something else. I can understand something that I've been dealing with for thirty years never understood and I finally understand it. Ah, thank goodness I kept working on it and it finally came through. And my guess is that goes on till you die. Impaired difficulty. Slowed. Hard for me to remember telephone numbers more than it used to, but who in the blazes wants to spend their time remembering telephone numbers. You can handle that in some other way. But this exhibit, um you know that word expose, it always sounds like, um there's an expose. well this was an expose that strip off the hind and said look what's inside and it didn't give you the answers it just said you are part of a journey with this exquisite things called muscles, and nerves, and bones, and pumps and all these things. And you're a pretty dull fellow if you don't have some appreciate for that and some excitement about that process.