

IP&T 564: The Past, Present, and Future of Evaluation: Possible Roles for the University of Melbourne

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[00:00:33] **ELIZABETH ALEXANDER:** Pro-Vice-Chancellor Liz Sonenberg, Dean of Education Field Rickards, Professor Michael Scriven, distinguished guests and friends.

[00:00:46] It's my very great pleasure to welcome everyone here tonight to the Melbourne Graduate School of Education at the University of Melbourne, a most appropriate site for this degree presentation.

[00:01:03] For those of you who don't know me, my name is Elizabeth Alexander, and I am chancellor of the University of Melbourne. And I'd like to begin this important ceremony by acknowledging the traditional owners of the land on which we meet, the Wurundjeri people of the Kulin nations.

[00:01:22] The ceremony of conferring of an honorary doctorate is a significant event where the university gives its greatest honor to a distinguished graduate or member of the wider community.

[00:01:37] Tonight, the particular honorary degree we confer is the doctor of education.

[00:01:44] This is a rare honor indeed.

[00:01:47] There have been very few given and I believe that the last time we conferred a doctor of education was in 2010 on one of Australia's great education leaders Professor Hedley Beare.

[00:02:01] I'm delighted that we are able to meet tonight to confer this degree in this particular location.

- [00:02:11] Professor Michael Scriven is, for us, a most welcome recipient of the honorary degree of doctor of education.
- [00:02:20] In the first instance, he's a Melbourne graduate, who not only did his bachelor's degree here but his first post-graduate degree was earned at this institution.
- [00:02:32] But secondly and even more important Michael has gone on to have a most distinguished career as a contributor to scholarship on the international stage in philosophy, critical thinking, and above all the profession of evaluation.
- [00:02:53] I'm delighted that on this night where the dean's lecture is being held that we can officially welcome Michael back to the University of Melbourne and confer on him this honor.
- [00:03:10] Thank you all for being part of the ceremony.
- [00:03:13] By virtue of the authority vested in me by the council of the university, I shall confer a degree.
- [00:03:20] I call on Professor Joy Damousi, senior member of the Academic Board.
- [00:03:35] **JOY DAMOUSI:** Chancellor, I certify to you and to the university that the candidates now to be presented have fulfilled the conditions prescribed for admission to a degree and are entitled to be admitted to the rank, privileges, and responsibilities of that degree.
- [00:03:50] **ELIZABETH ALEXANDER:** I shall present the candidate a certificate of admission to this degree, and by so doing, shall admit him to the rank, privileges, and responsibilities of that degree.
- [00:04:01] I call on Professor Field Rickards, dean of the Melbourne Graduate School of Education, to present to the candidate the honorary degree of doctor of education.

- [00:04:12] **FIELD RICKARDS:** Michael Scriven was raised in Melbourne and gained his first degree in mathematics, a BA honors in 1948, and a combined master's degree in philosophy and mathematics, an MA in 1950, from the University of Melbourne.
- [00:04:25] His PhD in 1956 was from Oxford under the supervision of Gilbert Ryle, simple title "Explanations", a study of logic of explanations in the sciences and the humanities.
- [00:04:38] He has since had senior university appointments in Minnesota, Swarthmore, Indiana, Berkeley, Western Australia, Oakland, and Claremont.
- [00:04:48] He's also held fellowships at the Center for Advanced Study and Behavioral Sciences, the Center for Advanced Study in Theoretical Psychology, the Education Testing Service, the Center for the Study of Democratic Institutions, the Academy of Social Sciences in Australia, the National Science Foundation, and was a Whitehead Fellow at the Harvard University.
- [00:05:11] He's made significant contributions in the fields of philosophy, in logic and philosophy of science, critical thinking, and most notably, evaluation.
- [00:05:21] Indeed, it can be claimed that along with Donald Campbell, he helped create and develop the field of evaluation as a research discipline such that it is now a recognized field of academic and professional study.
- [00:05:34] Indeed, a transdiscipline, another Scriven invention with major journals and institutes.
- [00:05:40] His major ideas are about outcomes-based evaluation and formative and summative evaluation and assessment concepts that he devised.
- [00:05:50] Scriven developed the most used definition of evaluation, which is based on merit, worth, and significance.

- [00:05:56] He invented goal-free and cost-free evaluation, developed the major checklist methodology, built the longstanding evaluation for source, and remains the most well-known evaluation professional in the world.
- [00:06:10] Scriven is a past president of the American Education Research Association and the American Evaluation Association.
- [00:06:18] He received the American Evaluations Association's esteemed Lazarsfeld Award for his contributions to evaluation theory.
- [00:06:27] He served on the editorial review boards of 42 journals and authored more than 450 publications.
- [00:06:35] Overall, he is among the most esteemed educationalists and evaluators in the world.
- [00:06:39] His academic origins from the University of Melbourne make him a worthy recipient of an honorary doctorate.
- [00:06:46] Chancellor, I present to you Michael Scriven for admission to the degree of doctor of education, honoris causa.
- [00:07:10] **ELIZABETH ALEXANDER:** Formally, my congratulations Dr. Scriven.
- [00:07:14] This brings us to the end of tonight's conferring ceremony.
- [00:07:19] While the official party, including Dr. Scriven, will now leave the lecture theater for a few moments.
- [00:07:25] We'll leave you in the hands of our wonderful choir.
- [00:07:30] In just a few minutes time, Dr. Scriven and the dean will return and take the stage for tonight's dean lecture.
- [00:07:38] Once again, thank you all for being present.

[00:07:44] **FIELD RICKARDS:** Good evening, everyone, and thank you for your patience.

[00:07:48] Before inviting our most recent doctor of education to deliver the fourth dean's lecture for 2013, I'm just going to add a couple of other achievements as if there could be any other achievements given the ones that I've done in the citation.

[00:08:02] These are the other things I want to just add to that extraordinary academic performance.

[00:08:07] First, Michael and I have a particular affinity, we both are rowers.

[00:08:12] He rode into varsity twice in the late '40s before I came into the world.

[00:08:18] He received a full blue, I did later on.

[00:08:22] He's genuinely an expert in a number of things.

[00:08:25] He's an expert in wines.

[00:08:27] He's an expert in knives.

[00:08:30] He's an expert in flora and fauna and apparently has a very large opal collection.

[00:08:36] He is without doubt an extraordinary person.

[00:08:39] At the conclusion of Dr. Scriven's lecture, I will invite you all to come out and have a few refreshments.

[00:08:49] Michael is going to speak to you for about forty minutes, and I've been instructed to give him a warning with five minutes to go, which we'll see how that extraordinary intellect can pull everything together in five minutes.

[00:09:02] Please welcome Michael.

[00:09:05] **MICHAEL SCRIVEN:** Let me say first though, that I'm really deeply honored by this event and appreciate it greatly.

- [00:09:14] I'm also very grateful to the American Evaluation Society, which paid the fare in order to get me to do a little talk up in Brisbane last week.
- [00:09:27] Through the good fortune of that support, I was able to come down here and receive the degree in person which I was very proud and happy to do.
- [00:09:38] Now what I'm going to talk about is mostly an unconscious bias.
- [00:09:47] Like things that people point at in other people, unconscious biases are rather tricky things to maneuver, because it's hard to establish that they're present.
- [00:09:57] It's pretty insulting to call them a bias that the owner doesn't realize they have.
- [00:10:04] But I'm afraid we're stuck with the truth of the matter.
- [00:10:07] The truth of the matter is that in this case of this bias the effects are extraordinarily long-lasting, although frequently denied or dismissed as not being really realistic.
- [00:10:23] The bias is the bias of continued belief in the doctrine of positivism that in its most objectionable form for us evaluators, which took the form of the value-free doctrine beginning about 1907 or so and which banned the publication in any journal of respectability in the social sciences of any article in which the term evaluation occurred.
- [00:10:55] Even if it occurred in the article and not in the title, it was still basically essentially banned.
- [00:11:03] Well, that had a very bad effect.
- [00:11:06] It meant that in the middle of the century, or of the last century, when two books were published in the same year about poverty in America, they were greeted by leading social scientists who were asked to review them by exculpatory claims about how this is just a myth.

[00:11:28] It can't, there is no real issue of poverty in America, of course, because everybody knows it's the richest country in the world.

[00:11:37] How can anybody be poor? Well, one answer would be read the book.

[00:11:43] But another answer would be to say that this was the result of the leading figures in the social sciences being barred from research on social problems.

[00:11:56] Because of course, what's the social problem is a value judgment.

[00:12:02] Of course, it couldn't be done.

[00:12:04] I remember around the same time, a couple of years later, maybe five or six years later, the annual prize for the American Political Science Association for the best publication of the year was given to somebody, who happened to be president of the association at the time when he received this, for doing a study of New Haven, Connecticut's system of government, which of course were city council-based and so on.

[00:12:37] The study was interesting because what it did was to provide the documentation for the conclusion never drawn by the author, that this was absolutely and totally corrupt.

[00:12:50] That is, everything was achieved by means of bribes.

[00:12:54] As we're fond of saying it's true of other countries.

[00:12:59] This was documented very well in the book.

[00:13:02] But of course never an evaluative conclusion, not the slightest suggestion that this was undesirable or being the concept of democratic management of cities and so on.

- [00:13:16] This was the typical make-believe game that went on to avoid voicing the evaluative claim.
- [00:13:27] Although, it was in this case obvious what it was.
- [00:13:31] In many cases, it was very hard to get to the evaluative claim. It meant a lot of balancing and justifying differential weighting of various considerations and performances.
- [00:13:45] This is, of course, tricky business when you're not allowed to make value judgments.
- [00:13:49] We had half a century or maybe three-quarters of a century in which the bias against the evaluation (I'll document why it's a bias in a minute) was in fact absolutely dominant and very bad news for the idea that the social sciences, which had cornered a lot of very smart people indeed, were not allowed to turn their attention to addressing very, very bad situations which they might have had some bright ideas about improving.
- [00:14:24] All of that nonsense.
- [00:14:26] Of course, nonsense because it talks about improving and very bad situations like lots of poverty in the big cities particularly, but in the rural regions as well.
- [00:14:37] All of this was bad, banned, and not attended to.
- [00:14:42] For status purposes, any hope of climbing the ladder of fame was restricted to doing purely empirical work (i.e., nonevaluative work or work that was highly theoretical and not evaluative).
- [00:15:00] That was a lot of damage from a bad prejudice.
- [00:15:03] What I'll do for you tonight is unpack the reasons why that prejudice was totally unfounded and totally false.

- [00:15:11] The reason I'm doing this is not in order to get people in the guru level of the social sciences to say that the doctrine of value-free social science wasn't valid or defensible, because they already do that.
- [00:15:29] The reason is that they say that, but they don't do it.
- [00:15:34] This came home to me in a very unattractive way for me as somebody really involved in the efforts to develop evaluation as a discipline as a result of the following experience.
- [00:15:49] The great publisher of evaluation work for a long time (no longer true, but one of the great publishers even now) Sage Publications announced that they had another anthology coming out.
- [00:16:03] That's pretty bad news anyway because anthologies are simply the last gasp of the paper publishers to make a lot of money.
- [00:16:12] They found out that they could sell a thousand or so copies that are 150 bucks at a time because the libraries that can afford it, as there are a limited number of these but just enough to make a profit from, would buy them because they were anthologies written by the good people in the fields.
- [00:16:31] Anyway, Sage got onto that horse pretty early and was making a lot of money out of it, but they had announced that there would be a new anthology coming out shortly, which would be called an anthology of applied social science.
- [00:16:53] Now when I saw that I was sort of pleased because my view of evaluation is it's the crucial step in answering questions that are asked of social scientists like, What's the best way to handle gang violence? Would arming the police more heavily do anything to reduce crime? And so on.
- [00:17:17] These are the questions that people ask for answers about.

[00:17:21] They're all evaluative.

[00:17:23] People want to know how to make life better or certain humans better or avoid some of the worst things that can happen.

[00:17:32] Of course, that's all just evaluation talk and it's forbidden.

[00:17:37] I thought, "Well, this will be promising," and I looked at who the editor was, and to my pleasure, the editor was the current president of the American Evaluation Association, a very respectable, longtime friend of mine Debra Rog.

[00:17:56] I thought, "Well, now we're going to get into the applied social science business a little more straightforwardly than we've had to do in the past." Then, of course, the table of contents came out.

[00:18:10] It did not have a chapter out of its twenty-five chapters on evaluation at all.

[00:18:17] Then the book came out.

[00:18:20] I turned hopefully to the index.

[00:18:23] The word evaluation did not appear.

[00:18:26] This is a book edited by the president of the American Evaluation Association, which at that time had 7,000 or 8,000 members, and I was one of many people in good standing as a member of that and hoped that this was going to be something really valuable for us in evaluation and for people in social science who would get some serious talk about how to bring values into empirical studies in order to get answers to evaluative questions.

[00:19:00] Upon disaster, I run into Debra (I think in Brazil) later that year where we were talking and I said, "Debra, what happened on this." She said, "Oh, yes that.

[00:19:15] Well, that was a deal that Sage made.

- [00:19:19] They wanted to be able to have another anthology which would be about evaluation in the applied social sciences.
- [00:19:27] So, I was not allowed to put anything in here." I didn't say, "Well, you should have turned the damned assignment down." But I mean, that's what was happening once more, the ability to pull that off, which wouldn't have worked at all with anybody who really believed that evaluation is the key to getting the answers to the practical questions that human beings ask applied social science people.
- [00:19:55] It was a total loss.
- [00:19:58] Now, as I reflected on that experience, I began to look at various other things like for example the table of contents of the leading journals in the social sciences looking for evaluation, studies at the article length, and didn't have much luck with that.
- [00:20:19] The ban was no longer in place.
- [00:20:21] You could, in principle, submit and theoretically get published with such articles about evaluation in those journals, but it wasn't happening.
- [00:20:32] It may have happened one or two times, but it wasn't representing 10% of the contributions or half the contributions, which would be about right.
- [00:20:43] After all, it's your fellow human beings and their suffering which you're commissioned by the nature of your subject to study.
- [00:20:53] But whenever it looks like you have to decide who the good guys are and the bad guys and you can't prove it to the satisfaction of the statisticians, then you shut up about it.
- [00:21:03] So, you don't get into a career of study of the really important issues.

- [00:21:09] That brought home to me the fact that we really had a case of the bias continuing.
- [00:21:16] As I looked at who the top gurus were in the social sciences, then I saw this confirmed. Here were the theoreticians and the big demographic study people and so on.
- [00:21:29] But there weren't any evaluators getting in there or getting in the list of recommended references.
- [00:21:36] I decided the time had come to really roll up the sleeves and begin to look at this whole story again because it had to change.
- [00:21:45] I decided that what I'd do, unfortunately as I didn't see any way around it, was go back to the foundations of the value-free doctrine.
- [00:21:56] Instead of dealing with it by pointing out that there are a lot of very important scientific studies that are evaluative in some way or another, I'd go back to the reasons that led to the initial denial of the legitimacy of evaluation.
- [00:22:14] So, I did that, and the story tonight is mostly the story about that.
- [00:22:20] Not full of laughs, but something that seemed to me to be worth knowing, and it turned out to be quite interesting.
- [00:22:28] So, hang on guys, it may get interesting enough to rivet you and have you walk out of here with a completely different view of not only evaluation but of the nature of the prejudices against it.
- [00:22:44] We begin with a serious look at the history of evaluation.
- [00:22:54] Then, we will take a serious look at the development of the arguments that lead the positivists to say it could not possibly have scientific status.

[00:23:05] Their reason was that it was simply talking about people's preferences. You can't.

[00:23:12] This is obviously not the subject for scientific study because people differ in their preferences.

[00:23:19] There's no intersubjective agreement.

[00:23:21] It can't be science, end of story.

[00:23:24] Of course, there was something a little quaint about that line of reasoning because it was uttered in front of the freshmen class, first-year class, in every soc class, every psych class.

[00:23:37] We're not here to talk about how the world ought to be.

[00:23:41] We're here to tell you how it is.

[00:23:43] The is-ought gap cannot be crossed by legitimate inference.

[00:23:48] You will never be able to support the evaluative claims by appeal to true factual claims.

[00:23:54] Since you can never deduce or induce the value conclusions from the factual premises.

[00:24:01] You're going to need value premises.

[00:24:04] Of course, you're not going to be able to justify them.

[00:24:07] Because if you tried to support them by producing factual evidence, which we're willing to consider very seriously, you would find you could not get to the evaluative conclusion that you need it as a new premise for further inference.

[00:24:23] Great. Well, where did this stuff come from? I mean, obviously, I think it's false because I'm spending my life, to begin with, my spare time for 15 years before I gave up philosophy and turn into something more important.

[00:24:39] But anyway, something which you would have to look at the origins very carefully.

[00:24:47] Well, roughly speaking, I'm sure we have lots of better historians of philosophy here than me.

[00:24:54] But I was always a mathematician.

[00:24:56] I used to say to the philosophers, "Well, if the old guy said something interesting, tell me about it.

[00:25:01] I'm not going to start acting as if I know just what they said.

[00:25:05] I don't read German or Japanese or whatever the hell.

[00:25:10] I'm counting on you guys, the historians of the subject, to trot out something that's still interesting to other than a historian." That cost me a job at UC Santa Cruz, by the way.

[00:25:22] There were a lot, the historians had a majority vote, and they didn't like the idea that they would serve as handmaidens to people dealing with current problems in philosophy, which was my interest.

[00:25:38] The general problem is, What are we going to make of the beginners who started this story? The beginners were the British empiricists, and of these eventually the really crucial, most impressive arguments for banning evaluative judgments from the domains of science or rational thinking, for that matter, was David Hume the Scot.

[00:26:07] He started us in thinking about two areas that he wanted to warn us off from taking seriously, though he knew that for a couple of thousand years, philosophers had been taking these areas seriously.

[00:26:23] One was causation, and the other was evaluation.

[00:26:29] His argument, famous even beyond the domain of professional historians in philosophy, of course, was the one about the billiard table.

[00:26:38] Here you sit looking at a billiard table.

[00:26:41] One of the objects in a billiard game, which Americans don't understand, is that you're trying to hit one ball in order to make it hit another ball in order to go into a pocket.

[00:26:55] Very complicated concept.

[00:26:57] But you notice that I have this disgusting word "hit" in it, which is, of course, causal.

[00:27:04] What Hume said was, "Look at a billiard table.

[00:27:08] Look at this guy that's playing billiards.

[00:27:10] What can you see? Well, you can see the balls moving.

[00:27:14] You can see balls dropping into the pockets.

[00:27:18] Did you see any causation? Was there somewhere in the field of vision something that could be called observing causation, if you looked at it? No, it's not there.

[00:27:31] It's just a theoretical concept which you have imposed upon the sequence of events that goes on the surface of the billiard table, and not real.

- [00:27:43] The real stuff is the color of the table, the color of the balls, the motions that you observe, and the sounds that you hear when a ball hits against another ball.
- [00:27:56] Yes, but the rest, the causal story is just bullshit. Let's get rid of it.
- [00:28:03] It can't be part of science if we're going to take science seriously. Let's get rid of it." Well, of course, this did start a bit of a fight, and it went on for a couple hundred years or three hundred years, so quite a fight.
- [00:28:19] But the general point was the same with evaluation.
- [00:28:23] He wanted to say, "Listen.
- [00:28:24] What do we know? Here's what we know.
- [00:28:27] All stuff that we gathered by fieldwork as well as reading and interviewing the experience of others, our own direct experience when we watch things happening as observers.
- [00:28:41] This is all part of the fact-finding mission of the research scientist in the social areas.
- [00:28:52] Of course, we have to face the fact that they can't be seeing anything evaluative." What they see is people are wanting to find strange characters from other parts of the planet.
- [00:29:09] What they see is somebody winning the elimination games, well-known rules, Australian rules, which I've missed very much for the last 60 years.
- [00:29:23] But I was able to watch the whole of the game between the Dockers and the Geelong, which is a great pleasure, especially since I spent a number of years at the University of Western Australia where we were fans of the Dockers soon as they were created.

[00:29:40] They lived down the stream a bit, but what the hell, it was the nearest we had at that stage.

[00:29:47] This was something where we were again misled about, What was the fact? There were facts here on the billiard table, but there was no fact there about causation.

[00:30:03] And there were facts about human interactions and achievements, but there were no facts about value there.

[00:30:11] What you see is somebody who publishes a lot of stuff.

[00:30:15] Does that mean that he's any good? No, you've got to actually invent the concept of good and apply it to determine whether he's good.

[00:30:25] Of course, you know that you won't be agreed with by equally well-educated people.

[00:30:30] They won't think it's good, and other people will.

[00:30:33] We're into the realm of non-science.

[00:30:38] I started looking at this a little more carefully.

[00:30:42] Remember that what happened in the succession to Hume was the emergence of the German physicist become scientist become philosopher, who in fact gave the name of positivism to the movement.

[00:31:04] That emerged, and then following him, there was the development of the Vienna Circle, a bunch of scientifically trained, very bright people who took this even more seriously and began to take the view that they could displace philosophy, which they saw as being uninterpretable, unfollowable, massive German language.

- [00:31:31] They could displace it completely by applying the scientific method to philosophical problems.
- [00:31:38] A leading move in this was to drop causation and evaluation.
- [00:31:44] Bertrand Russell bought in on this, though he wasn't a positivist in many respects.
- [00:31:49] He thought causation was a concept that had no place in science at all.
- [00:31:55] So, this idea has spread beyond the hardcore positivists.
- [00:32:00] Here we are in about a quarter of the way through the 20th century, and we've got an absolutely solid block against any evaluative stuff in the social science area.
- [00:32:15] We had very tough requirements about establishing causation, which we were agreed we could establish if we use very tricky experimental designs, but probably not otherwise.
- [00:32:29] Now move forward to the last quarter of the 20th century and you've got people saying exactly the same things.
- [00:32:38] That is, you can't establish causation without very tricky, increasingly tricky experimental designs, randomly allocated subjects between at least two groups, one of which was control on the other experimental. If you didn't have random allocation, large groups, and a very careful procedure for doing what you call randomizing, then you wouldn't have proof of causation.
- [00:33:06] Well, if you started talking to any practical person, they'd think you were kidding.
- [00:33:12] That's why we kept them out of the university as much as we could.
- [00:33:15] What were they doing? They were hammering things and the nails were going in.

- [00:33:22] Most ordinary citizens were convinced that the reason the car just slowed down with the red light ahead was because you put your foot on the brake and that you observed that this interaction between your foot, the brake, and slowing down was occurring many times per driving excursion.
- [00:33:41] So, you were firm believers in observing causation.
- [00:33:46] It seemed a little ridiculous to attempt to show that you were misled into believing in these causal connections through sloppy design of your experiments and so on.
- [00:33:58] This began to look to me, at least, as being basically bullshit, more of the same.
- [00:34:07] It might be better than the German philosophy of the time, which was indeed hard to manage in any way, but there it is.
- [00:34:16] But it certainly wasn't very good in its own right.
- [00:34:19] So, I started pushing hard to see if I could undo each of the links in this chain and found ways to do it.
- [00:34:28] One of the ways to do it was to look very carefully at the history of the development of knowledge.
- [00:34:37] That's what I'm going to turn to.
- [00:34:39] Now I'm going to introduce you to some very modern technology.
- [00:34:44] The technology works like this.
- [00:34:46] I draw the graph.

Start visual description. Scriven uses a laser pointer on a blank whiteboard to outline invisible x- and y-axes. End visual description.

[00:34:48] There are the axes.

[00:34:49] Keep that in mind.

[00:34:52] Now then this axis (*Start visual description. Scriven indicates with his laser pointer what would be the x-axis. End visual description*) is, of course, the beginning of things in the timeline, which is this line.

[00:35:01] This axis begins in the history of science down near the abscissa because there's not much science around at the time of the beginning of science.

[00:35:14] Then it zooms along from there on.

[00:35:17] There it goes up like that.

Start visual description. Scriven draws an imaginary line with his laser pointer that starts at the origin and increases positively. End visual description.

[00:35:20] Technology is interesting because it begins much higher. Why? Because it began two million years earlier than science.

Start visual description. Scriven draws a second imaginary line that starts much higher than the science line and increases positively. End visual description.

[00:35:31] Look it up in the Oxford American Dictionary, it says, technology is applied science.

[00:35:36] Unbelievable nonsense. It's possible that you could argue that science is applied technology, but you can't possibly argue that since we have tangible artifacts from 175,000 years ago and nothing in science until at best 5,000 years ago.

[00:35:57] It's clear that it cannot be the case that technology is applied science because there wasn't any science for 170,000 years after there was lots of technology.

- [00:36:09] When we get serious about the origins of technology, we get back close to a million years because, of course, it began long before the Stone Age. It's just that wood spears don't survive a million years of sitting around, whereas stone spears do.
- [00:36:27] The footprint shows up better with thinking with the age of the thick stuff as the age of technology.
- [00:36:35] That little story, which isn't tonight's story, is actually very interesting.
- [00:36:40] The idea that big science managed to sell the political world on the idea that science is what you need in order to make a contribution to technology.
- [00:36:55] The facts were simple.
- [00:36:57] You looked at what a couple of guys called Steve did in their garage, invented the microcomputer and all this sort of thing, and a student at MIT came home one night and said to his roommate, "You know what he said in the accounting course tonight as the assignment for the week? He said change the tax rate from 2.5% sales tax to 2.75% and tell me what you get." He said to his roommate, who was working in electrical engineering, "Isn't this the sort of garbage that you do with a computer?" That roommate said, "Yeah, but they're a little expensive." This guy says to him, "Well, write the damn software so that it didn't cost you anything, and then we'll do something about making the thing." So, that's how we got the spreadsheet.
- [00:37:57] It was a naughty student looking for a cheap way to do his homework.
- [00:38:01] Of course, the two Steves, Jobs and Wozniak, were interesting because they produced a few million dollars' worth of clear profit in the first few years.
- [00:38:15] Steve Jobs stayed with the game and got Apple going, again and so on.

[00:38:21] But what did Steve Wozniak do? After the first million or so, he resigned from the firm and took on an assumed name and enrolled at Berkeley where I was teaching.

[00:38:37] In what? Computer science.

[00:38:40] He thought it might be interesting to have a look at computer science.

[00:38:43] He creates the whole damn technology not having the faintest idea who Shannon was or any of the stuff in computer science courses.

[00:38:52] But he has no trouble inventing giant arms of technology.

[00:38:58] Women were always being told to not get caught up with the nerds and getting into these computer courses for years.

[00:39:08] Until my friends here and I were at the University of Western Australia were told the story: "You don't want to get in there.

[00:39:16] The boys own that stuff." The general brainwashing of kids at the point in high school when they had to begin taking serious math and science, got this from the counseling gang and from lots of other people, including people teaching math and science.

[00:39:35] This was all myth and in Australia, I'm pleased to say, roughly speaking, it was the first country where in all the standardized tests for the first time, girls who had already been beating boys in almost everything else proceeded to beat them at math and science once you've persuaded them that they had a fair shot at doing well in the area.

[00:39:58] We were all pretty high-bounded stereotypes that were lacking in any substantiation at this time.

[00:40:08] The general story here is that we've got a myth going about values that had about as much behind it, in fact, as the myth about girls are genetically ill-equipped to handle serious mathematics.

[00:40:25] As we look back at the history, we find more and more of this mythmaking.

[00:40:32] Where we are at the moment is that we've got the story with the actions in technology which zooms off up there and in science which zooms off here.

[00:40:44] There's a little bit of an early start with Greek science and people like Archimedes and so on, who were mighty help and handy at technology and also science in its early stages.

[00:41:00] What about evaluation? Here are the axes like that and here is science beginning and at this time technology beginning.

Start visual description. Scriven draws a third imaginary line that starts much higher than both the science and technology lines. End visual description.

[00:41:14] Interesting, up here is evaluation.

[00:41:18] How did it get up there since it's a fake subject? It has no scientific or rational status.

[00:41:26] Well, let's zoom back a bit.

[00:41:28] How far back should we go? 2.25 million years.

[00:41:33] That's where technology spawned evaluation, and I'll tell you how it happened and why it's 2.5 million years.

[00:41:44] It's 2.5 million years since that's the age of Homo sap.

[00:41:49] As soon as there was Homo sap, early hominids, as soon as that emerged, maybe a lot sooner, we had evaluation.

[00:42:00] How is this possible? You are a million years from having a language.

[00:42:04] How can you possibly have serious evaluation? Well, look at how you teach your kids things.

[00:42:12] You're talking to them they're a few months old, maybe they're beginning to get a few words.

[00:42:19] They are in their second year perhaps and they've got a few words, but nothing that's going to do you much good on evaluation.

[00:42:27] How do you teach them something like a game when they're very little and don't have language.

[00:42:33] While you do it the easy way you show them how to play, then you give them the bits and tell them to play.

[00:42:40] Then when they start making wrong moves, you say no.

[00:42:45] They don't have language, but they can recognize when you're disapproving.

[00:42:50] When they make a good move, you smile and congratulate them.

[00:42:55] They get the message. Positive and negative reinforcement predate language.

[00:43:01] Don't make a mistake about it.

[00:43:03] Now, what were you doing when you said to them, "Wrong move, don't do that." What you're doing is, of course, evaluating the moves they just made.

[00:43:15] Now, a study was published within the last few months, which is really interesting (if you write me, I'll give you the exact reference), in which a very strong case was made that three-month-old kids can evaluate.

- [00:43:36] They did it using puppet figures, which the kids had been used to watching puppet games with and cheering the good guys, they're normally wearing white coats and so on, and sneering or booing the bad guys.
- [00:43:53] Now we show a scenario in which one of the guys starts beating up on the other guy.
- [00:44:05] You say, "Do you like that to them?" They don't know what "do you like that" means, but you're asking for their judgment, and they cheer the good guy and boo the bad guy, no problem about it.
- [00:44:21] A bunch of kids will agree altogether to it, all of them, and so on.
- [00:44:27] Here they are, they're picking up—five minutes time, I'm about a third of the way through.
- [00:44:39] Here we've got the necessity for evaluation at the beginning of hominid survival.
- [00:44:49] Why? Because they have a colossal asset as a result of using evaluation.
- [00:44:56] It is evaluative knowledge.
- [00:44:59] They know what good fetching materials are.
- [00:45:03] They know where the spots are to fish.
- [00:45:06] They now know what the good tubers are to pull out of the ground, and what the bad ones are that will make you sick.
- [00:45:12] They have a body of evaluative knowledge at the dawn of civilization, and they spend their time increasing it.
- [00:45:20] We go on beginning by this time, when science is just beginning, they have this huge communal social capital that they pass on all the time to their adult friends, coworkers, and so on and so on.

- [00:45:40] We get the beginning of technology because the emergence of people who are very talented becomes apparent and they become the leaders of the skill area, and so we get experts emerging.
- [00:45:55] They keep the body of evaluative knowledge growing all the time.
- [00:46:01] They're learning more about patching, fishing, hunting, etc.
- [00:46:06] This becomes one of the great survival characteristics of humankind.
- [00:46:12] When language emerges, it accelerates enormously.
- [00:46:15] When the brain blossoms in size, it emerges again.
- [00:46:20] When various things happen like the shoulder joint reconstructs itself in the process of evolution because the minute you can throw, you immediately get a terrific advantage over the other predators looking to gather things for food.
- [00:46:38] It's a huge survival advantage to get it.
- [00:46:42] That's the origin of evaluation.
- [00:46:46] Now, when it becomes more sophisticated still with language and passing it on through language, that becomes a great benefit for the societies and the social groups from the tribe up that have this, and so they benefited in the normal evolutionary process.
- [00:47:06] Now we come to the point where David Hume starts casting doubt on the evaluative stuff and has, as the positive is still after him and so on, has invented a new type of foundational knowledge, namely non-evaluative.
- [00:47:26] He is arguing that the non-evaluative knowledge, the color of the walls here, the sound of the voice from the amplifier, and so on, that's the real knowledge.
- [00:47:39] But what are the facts? The facts are that that is real knowledge.

[00:47:44] But so is the evaluative knowledge.

[00:47:46] Here you're telling a fisherman that there's no such thing as nonevaluative knowledge about what fish or what bait to use or what line to use or whether to cast out or in the weed bed, and so on and so on.

[00:48:02] They're brimming with evaluative knowledge.

[00:48:05] We pay them for it as guides, we write books about it.

[00:48:09] Evaluative knowledge from 2.2 million years ago was pricelessly valuable.

[00:48:16] Just as valuable as knowing the color of the front door in your hut.

[00:48:21] Whatever the hell in the way of knowledge, it met the standards beyond reasonable doubt.

[00:48:28] Nobody had any problem about validating it.

[00:48:31] You want to know who the good fishermen are? Watch who brings home the fish.

[00:48:35] You want to know how to do the best job that can be done on making fish hooks? Watch the guy that gets the fish.

[00:48:43] This is not hard to validate, but we're being told in the 20th century, that you can't possibly validate evaluative claims.

[00:48:53] Of course, it can have no place in science or any other rational discourse.

[00:48:57] Sorry about the rest of the story, guys.

[00:49:00] I wanted to get to these exciting things up here.

[00:49:05] What happened to evaluation was that he came in and doing well, but after the attack from the positivists, the nascent social sciences bored in on that.

Start visual description. Scriven indicates the imaginary evaluation line with his laser pointer and shows it decreasing to zero. End visual description.

[00:49:17] We got to the period when the doctrine of value-free science existed, which brought it down to zero.

[00:49:25] There was no value to evaluation because it was a nonsense subject, we couldn't think of it as producing knowledge.

[00:49:34] The knowledge was all imposed by some vision we had actions that weren't visible at all, therefore not factual.

[00:49:41] But we overcame that.

[00:49:44] We came up like this, and eventually we got to the point where we were semi-respectable.

Start visual description. Scriven indicates the imaginary evaluation line with his laser pointer coming up from zero and resting higher, but not as high as it was. End visual description.

[00:49:50] But, guys, not really respectable.

[00:49:54] The gurus, the guys in the center of the big, high-status social sciences, weren't buying in on it.

[00:50:02] They don't say it anymore, but it has at last dawned on them that there's something a little odd about teaching your first-year class that we are here to describe the way the world works, not to say how it ought to work, then go back to your office and grade your students' papers.

[00:50:23] Then start reading the papers that were sent into the journal on whose book review board you exist, which is supposed to be grading.

[00:50:32] Then you're going to start talking about which students to give scholarships to.

[00:50:36] Then you're going to have a vacancy in your department, and you will evaluate the candidates.

[00:50:41] Then you're going to need some equipment in the lab. What are you going to do? Toss a coin about which device.

[00:50:47] No, you're going to evaluate.

[00:50:49] Ah, that's strange.

[00:50:52] Here you are, your damned life consists of doing evaluation, and yet it's all fake.

[00:50:59] Very peculiar schizophrenia parent here, divided personality.

[00:51:05] I'd love to tell you more, but I'll just finish by saying, there are still things ahead at this point.

[00:51:11] The things ahead are the move from a respectable profession with a lot of dissenting voices at the undercover level, to a transdiscipline where we discover that it's actually rather useful in other disciplines.

[00:51:28] That the ability to evaluate is indeed an important part of establishing the credentials of other disciplines.

[00:51:36] What's wrong with astrology? There isn't any quality control over the theories, the hypotheses, the data quality is on.

[00:51:45] What's okay about psychology? There is some sort.

[00:51:49] But in general, these guys are all depending on a very simple, straightforward, honest-to-goodness way to establish merit, which is peer review.

[00:52:00] Okay. Well, or is it okay? Well, they do it a lot.

[00:52:05] All the journals do it.

[00:52:07] All the reviews of personnel do it.

[00:52:09] But when we look at whether it's valid, we find it isn't.

[00:52:16] What is the correlation coefficient between two random samples of panels taken from the same pool of experts to review applications for funding? At the time that my PhD student Chris Corry got into this there were three studies.

[00:52:37] In one thousand disciplines they had once, three people had looked at the minimal requirements for respectable evaluation procedure.

[00:52:50] That's all. Of course, the correlations were 0.2, 0.3.

[00:52:55] That is, the thing doesn't work at all.

[00:52:57] You might as well toss a coin. Not quite.

[00:53:00] They do pick up the occasional factual problem like their computers aren't strong enough to do the analysis that he's proposing be done with their computers.

[00:53:10] Yeah, pick up a little bit, but it's mostly just random.

[00:53:14] This is all bullshit.

[00:53:15] What emerges from this is you get a decent training in evaluation.

[00:53:22] You will pick up the logic of evaluation, and when you come looking at the great senior disciplines, it turns out they're built on sand because they got the logic of evaluation wrong.

[00:53:34] They built it all on badly designed, badly executed peer review, and that don't work.

[00:53:41] Guys, sorry, it took so long.

[00:53:53] **NEW PROFESSOR:** Ladies and gentlemen, you've had a treat tonight.

[00:53:57] I've known Michael for twenty-five years.

[00:54:00] We have been working together in three different universities.

[00:54:03] When I mean working together, it's a bit like tonight.

[00:54:06] You come along, and you hear thinking, as opposed to a lot of presentations I go to where you hear a finished product.

[00:54:13] Tonight you saw five million years in the last forty-odd minutes.

[00:54:18] You had a man who has, in the introduction, invented many of the concepts that we now take for granted.

[00:54:26] You've seen tonight for the first time (well, I've seen for the first time) the laser-driven hyperplane, three-dimensional, intraocular device and the experience.

[00:54:36] That's another kind of bonus.

[00:54:39] The other thing is you've heard is that despite the fact that Michael hasn't been back to Melbourne for sixty-three years, he still has got the vernacular, and he knows bullshit when he sees it.

[00:54:49] The other message that I'll be taking away from tonight is that (I'm sorry to say this Michael) but the fight will continue.

[00:55:00] Last week, the chief scientist in the country near us declared that science is value-free.

[00:55:05] You know as you entered in your lecture tonight the RCTs and the evidence-based and all that language is still there.

[00:55:12] The fight will continue.

[00:55:14] I think all of us tonight will realize what an incredible heritage that Michael has brought to this issue.

[00:55:19] The work that he has done over the years, inventing evaluation, all the major concepts we've used.

[00:55:24] I think that you will join with me in giving a big thank you to Professor, the honorary doctor, Michael Scriven.

[00:55:31] Thank you.