Track 8 32:31

21 speakers introducing themselves at APA California Tribute; Polly (at Sperry's lab from 1982) presents paper

Known: Speaker 5 Paul, Speaker 6 (W/ Sperry 1964-65, teacher at U Verona): Speaker 10 John (formally Ronald, Sperry lab '59-60, came from MIT):

Speaker 1: I almost moved from [INAUDIBLE 00:00:11] conceptual stuff to [INAUDIBLE 00:00:14] contribution with [INAUDIBLE 00:00:17]. I've been working on that ever since. [INAUDIBLE 00:00:19] and I'm now working on the very early stages of formation of [INAUDIBLE 00:00:24].

Speaker 2: And you'll be hearing all these people over the next four days in their entirety.

Speaker 3: [INAUDIBLE 00:00:34] 1957 in the early stages [INAUDIBLE 00:00:41 - 00:00:47].

Speaker 2: Yes. I'm actually surprised, and I understand he has not responded to [INAUDIBLE 00:00:52]. So, I'm not sure what's going on.

Speaker 3: Well, [INAUDIBLE 00:00:57 - 00:01:07]. I worked there through my PhD [INAUDIBLE 00:01:09 - 00:01:13] about '63 [INAUDIBLE 00:01:16 - 00:01:24] visual learning. And while I was in [INAUDIBLE 00:01:29], I met [INAUDIBLE 00:01:31 - 00:01:40]. I went to Harvard [INAUDIBLE 00:01:42 - 00:01:48]. I was there for a couple of years, then came back to Caltech and joined the [INAUDIBLE 00:01:51] experiments [INAUDIBLE 00:01:53]. And since then I've been [INAUDIBLE 00:01:57] since 1951. [INAUDIBLE 00:01:59]. It might seem really dumb, but I actually chose to [INAUDIBLE 00:02:05] in order to understand more about [INAUDIBLE 00:02:07], and I've found [INAUDIBLE 00:02:10] throughout the years have found that every aspect [INAUDIBLE 00:02:14 - 00:02:30] beginning in '60.

Speaker 2: [INAUDIBLE 00:02:33] on Sunday. Is that right?

Speaker 3: Monday.

Speaker 2: Monday?

Speaker 4: My name is [INAUDIBLE 00:02:40]. I arrived in [INAUDIBLE 00:02:42 - 00:02:46] and I had no training whatsoever [INAUDIBLE 00:02:49]. And I started my work on [INAUDIBLE 00:02:56 - 00:03:02] my dissertation [INAUDIBLE 00:03:03]. The doctor that I have completely [INAUDIBLE 00:03:09 - 00:03:17]. But now I work with [INAUDIBLE 00:03:19 - 00:03:25] easy for me [INAUDIBLE 00:03:26], so I don't [INAUDIBLE 00:03:27] anymore [INAUDIBLE 00:03:29].

Speaker 2: Oh, I think that once you're in, you're in for good. And her husband?

Speaker 5 Paul: Okay. So, I'm the husband and my name is Paul, and I'm a medical [INAUDIBLE 00:03:45 - 00:04:06]. And I've actually spent most of my life working [INAUDIBLE 00:04:10] working with cats, monkeys, and human beings [INAUDIBLE 00:04:18 - 00:04:23] department of neurology [INAUDIBLE 00:04:24] hospital [INAUDIBLE 00:04:27 - 00:04:34].

Speaker 2: [INAUDIBLE 00:04:36].

Speaker 6 [W/ Sperry 1964-65, teacher at U Verona]:
I am [INAUDIBLE 00:04:38] and I teach physiology and the medical school in University of Verona. And I was with Roger Sperry [INAUDIBLE 00:04:47] in 1964-65, and it was really experience of my life, my scientific life. I came from a good school of [INAUDIBLE 00:04:58] and was interested in [INAUDIBLE 00:05:02], and the idea was to combine [INAUDIBLE 00:05:06] approach with the...with all the work and [INAUDIBLE 00:05:10] experiments on cats. At the time, I was at Caltech, in which it was clear that—I think Sperry had predicted it—the...even though you divide, you separate the hemispheres [INAUDIBLE 00:05:28] the

sleep and waking cycle will remain united between the hemispheres because it is regulated by the [INAUDIBLE 00:05:38 - 00:05:42]. But after I left Caltech, I had received so many ideas and inspirations by Sperry, so I decided, first of all, to study the [INAUDIBLE 00:05:53] in the corpus callosum when you present [INAUDIBLE 00:05:57] stimuli to the animal. And then, also, to try some study [INAUDIBLE 00:06:03] hemispheric transfer in normal people [INAUDIBLE 00:06:08]. And this kept me occupied for at least 15 years [INAUDIBLE 00:06:15], and now I am...in a sense I am back to the origin here at Caltech because I have been able to study a group of split-brain patients [INAUDIBLE 00:06:25] Verona, which is my university, and I will say something about that when...during my talk tomorrow.

Speaker 7: [INAUDIBLE 00:06:36 - 00:06:41] in 1969 [INAUDIBLE 00:06:43 - 00:06:46] 1972. [INAUDIBLE 00:06:49 - 00:06:56] inspiration of Roger Sperry [INAUDIBLE 00:06:59 - 00:07:10]. After all that, I ran out of ideas [INAUDIBLE 00:07:14 - 00:07:31]. Whenever I feel completely lost, I [INAUDIBLE 00:07:35] Roger Sperry. [INAUDIBLE 00:07:42 - 00:07:47].

Speaker 2: [INAUDIBLE 00:07:47]?

Speaker 8: [INAUDIBLE 00:07:54]. I joined the Sperry Lab in [INAUDIBLE 00:07:58 - 00:08:02]. Nothing quite as illustrious as any of my predecessors here. I joined the lab [INAUDIBLE 00:08:06]. The lab assistants [INAUDIBLE 00:08:09 - 00:08:13] left-brain studies and the eye rotation study, and probably gained my fame and notoriety in Sperry Lab by having managed to flood three entire floors of the building [INAUDIBLE 00:08:25]. That is quite a feat, I'm telling you. And I am no longer [INAUDIBLE 00:08:33 - 00:08:39].

Speaker 2: We'll all be talking to you later.

Speaker 9: My name is [INAUDIBLE 00:08:46]. [INAUDIBLE 00:08:47] Sperry Lab [INAUDIBLE 00:08:49 - 00:08:52]. I study [INAUDIBLE 00:08:54 - 00:08:57] functional [INAUDIBLE 00:08:58]. I went to UCLA [INAUDIBLE 00:09:02 - 00:09:07] naturally went into the restaurant business. And one thing led to the other and now I'm in the movie business. [INAUDIBLE 00:09:18].

Speaker 10 John (formally Ronald, Sperry lab '59-60, came from MIT):
I'm John [INAUDIBLE 00:09:23]. I used to be known as Ronald [INAUDIBLE 00:09:25] before I decided to hide my tracks. I, in fact, joined Sperry's Lab... it must be around '59 or '60. I was here for a couple of years. I came from MIT. And, in fact, once Roger Sperry [INAUDIBLE 00:09:41] from MIT. But I worked on... Well, when I was here, in fact, I was reporting [INAUDIBLE 00:09:50 - 00:09:56] doing some regenerational work, which I continued in Oxford. And I did some work in Oxford with a few people and [INAUDIBLE 00:10:05]. I went to the medical school in Edinburgh [INAUDIBLE 00:10:10] did some work on retinal regeneration in the newt. And then from there I went to Manchester, where I continued the work on retinal regeneration in newts. And then I got [INAUDIBLE 00:10:26 - 00:10:30] at the University of Manchester Institute of Science and Technology, where I am at present and continuing our work on regeneration of the optic nerve [INAUDIBLE 00:10:40] contributions of non-neuronal components regulating [INAUDIBLE 00:10:46] and the mammalian system. We are moving also into looking at [INAUDIBLE 00:10:54 - 00:11:02]. And I am also [INAUDIBLE 00:11:04 - 00:11:36].

Speaker 2: [INAUDIBLE 00:11:37]? Let's start on the right side. Then I'll recognize some of your faces.

Speaker 11: I'm [INAUDIBLE 00:11:44]. I joined the Sperry Lab in 1960. At the time, [INAUDIBLE 00:11:50 - 00:12:06]. I left [INAUDIBLE 00:12:08] for a while [INAUDIBLE 00:12:10].

Speake 12 Linda:
I'm Linda [INAUDIBLE 00:12:19]—I was Linda [INAUDIBLE 00:12:20]—and I [INAUDIBLE 00:12:20 - 00:12:29]. I moved back East and [INAUDIBLE 00:12:32 - 00:12:37] for a while, and then moved back here [INAUDIBLE 00:12:40 - 00:12:50].

Speaker 13 Larry Benowitz 1967: I'm Larry Benowitz. I entered Sperry Lab in 1967 as a graduate student, and I did very odd things for my PhD. It was a time to be rebellious, so I ignored...I ignored [INAUDIBLE 00:13:10] underpinning hemisphericity. And I've been studying [INAUDIBLE 00:13:20 - 00:13:24] physiological [INAUDIBLE 00:13:25] associated with [INAUDIBLE 00:13:27]. One thing led to another. I [INAUDIBLE 00:13:33] of those systems [INAUDIBLE 00:13:39], and then went on to start doing neurochemistry and then molecular biology [INAUDIBLE 00:13:47] going back to what Roger Sperry had the foresight to see [INAUDIBLE 00:13:53 - 00:13:58] the molecules that are involved [INAUDIBLE 00:14:00]. And that's [INAUDIBLE 00:14:04 - 00:14:09]. I studied [INAUDIBLE 00:14:10] molecules involved in formation of neural connection, specificity of neural connection. [INAUDIBLE 00:14:17 - 00:14:21] regenerating the visual system in goldfish. I've been looking for the trophic molecules that are stimulating the entire process. And somewhere along the way I also made a detour [INAUDIBLE 00:14:34] psychology on other functions of the right hemisphere. And there's no question that although the guidance system behind all of this was [INAUDIBLE 00:14:48]... In fact, [INAUDIBLE 00:14:51] very clear that it was very much determined by [INAUDIBLE 00:14:55].

Speaker 14: [INAUDIBLE 00:14:59 - 00:15:06] and joined Roger Sperry [INAUDIBLE 00:15:08] from '71 to '73, I think. [INAUDIBLE 00:15:12] medical background, I thought I was going to have a short time in research before going on predominantly [INAUDIBLE 00:15:20 - 00:15:26]. The experiment that I executed with Roger was [INAUDIBLE 00:15:30 - 00:15:47]. And there is a sense in which everything I've done since has been [INAUDIBLE 00:15:49] that experiment, which has led me, at this point, into computer simulations of [INAUDIBLE 00:15:58], which I'll have a chance to talk about in my [INAUDIBLE 00:16:02].

Speaker 15: [INAUDIBLE 00:16:07 - 00:16:23]. The other major [INAUDIBLE 00:16:24 - 00:16:32] kind of infrastructure [INAUDIBLE 00:16:33] people with [INAUDIBLE 00:16:36]. I've never, ever [INAUDIBLE 00:16:44 - 00:17:03].

Speaker 16: I'm [INAUDIBLE 00:17:07]. I was probably the third generation [INAUDIBLE 00:17:10 - 00:17:14] Caltech in '79 and in '84. At that time we were working on how the disconnected hemispheres do communicate [INAUDIBLE 00:17:27 - 00:17:34]. I remember especially [INAUDIBLE 00:17:37] in those days and was glad to see that Dr. Sperry [INAUDIBLE 00:17:44] Caltech not just getting their science degree, but getting them and thinking about bigger questions and [INAUDIBLE 00:17:53] still being able to defend [INAUDIBLE 00:17:56 - 00:18:01]. After that, I went and worked in artificial intelligence, working on natural language regeneration. And now I'm semi-retired and teaching psychology [INAUDIBLE 00:18:15].

Speaker 2: Did you talk to [INAUDIBLE 00:18:17] counselor?

Speaker 17 (from Australia, Caltech 1986): My name is [INAUDIBLE 00:18:24]. I'm from [INAUDIBLE 00:18:27], Australia. My [INAUDIBLE 00:18:30 - 00:18:36]. I remember [INAUDIBLE 00:18:37 - 00:18:41] and I discovered that Roger had [INAUDIBLE 00:18:44 - 00:18:48]. And my [INAUDIBLE 00:18:49] probably accidental that I read his book called *Science and Moral Priority*, and I discovered that we were thinking about mind over matter [INAUDIBLE 00:19:05]. My interest was how the mind can influence the brain [INAUDIBLE 00:19:11] physiological and biochemical changes [INAUDIBLE 00:19:17]. And I was [INAUDIBLE 00:19:22 - 00:19:28]. So, I was very curious to discuss with Roger about my ideas, and at that time I was looking for a [INAUDIBLE 00:19:38]. So, I wrote to Roger about my ideas, what I think is the relationship between brain and mind, and how [INAUDIBLE 00:19:49] mind over matter thesis can be applied to [INAUDIBLE 00:19:54] clinical [INAUDIBLE 00:19:55]. And he was so much impressed by my idea that he kindly invited me to spend some time of my sabbatical at Caltech [INAUDIBLE 00:20:08]. I had quite a few sessions [INAUDIBLE 00:20:13 - 00:20:19] and I [INAUDIBLE 00:20:21]. Down in Australia, I try to develop my ideas in this direction [INAUDIBLE 00:20:31] new post that I call clinical biopsychology [INAUDIBLE 00:20:36 - 00:20:42] parameters for clinical [INAUDIBLE 00:20:44]. And as I discussed those ideas with

Sperry, [INAUDIBLE 00:20:49 - 00:21:02]. I was really pleased to be with Sperry and I was impressed by his ideas during my short stay at Caltech in 1986. Glad to be back here.

Speaker 18 : I'm a clinical psychologist with neuroendocrinology and neuropsychology background from the University of [INAUDIBLE 00:21:28] Australia. [INAUDIBLE 00:21:30]. I do treat post traumatic stress disorder [INAUDIBLE 00:21:36 - 00:21:40]. It fully explained how Sperry's theory [INAUDIBLE 00:21:43], but nobody has done any research in this area. By moving [INAUDIBLE 00:21:48] sexually abused children [INAUDIBLE 00:21:52] bring up their trauma and they are resolved, meaning the impact of the trauma disappears. There have been some studies [INAUDIBLE 00:22:02] not to the point of [INAUDIBLE 00:22:06 - 00:22:13]. I feel that it's an area which can be [INAUDIBLE 00:22:16]. I'm interested to find out. I'm currently doing research at the University of [INAUDIBLE 00:22:24] project involving also [INAUDIBLE 00:22:29 - 00:22:39].

Speaker 19: Well, I must compare notes [INAUDIBLE 00:22:44] whether I may be the first of Roger's students here. I took his course in 1948, I believe. [INAUDIBLE 00:22:54 - 00:23:00] got me to go back and look at my old lecture notes [INAUDIBLE 00:23:04]. The other thing to be said is... two things. One: A medical student and I tried to [INAUDIBLE 00:23:13] Roger's interests at that time by doing surgery on the spinal cord of a dog [INAUDIBLE 00:23:22]. And the other [INAUDIBLE 00:23:26 - 00:23:29] PhD thesis. [INAUDIBLE 00:23:32] today, I guess [INAUDIBLE 00:23:33].

Speaker 2: And Betty.

Speaker 20 Betty: I'm Betty [INAUDIBLE 00:23:38]. I joined the lab [INAUDIBLE 00:23:41] from '72 to '92. I got my PhD in 1980. [INAUDIBLE 00:23:46] California [INAUDIBLE 00:23:50 - 00:24:05].

Speaker 2: [INAUDIBLE 00:24:07] Sperry's students? Well, last but not least, let's turn to our first speaker, Polly [INAUDIBLE 00:24:15]. Polly's going to read both her paper, and then she's also going to read Erica's paper, who unfortunately could not be here. However, Erica did send a bunch of her humankind advancing journals and I will have them available for you tomorrow. [INAUDIBLE 00:24:35]. Okay. Polly.

Speaker 21 **Polly**: I'm Polly [INAUDIBLE 00:24:40] and I came to Dr. Sperry's lab...

Speaker 2: Polly, it looks like this session is actually being taped beyond myself, so is there any possibility... Could you... Yeah. Or, if you'd like to sit down, let's go ahead [INAUDIBLE 00:24:51].

Speaker 21 **Polly**: I'm Polly [INAUDIBLE 00:24:55] and I came to Dr. Sperry's lab in '82 [INAUDIBLE 00:24:59], with my area of expertise in musical processing and interest in right hemisphere cognitive processing and interaction between the two hemispheres. And I found that... I had several auditory tasks that I did and I found rather consistently that one of the interesting and sometimes frustrating aspects of testing right hemisphere function was how difficult it was to get the right hemisphere to be able to control [INAUDIBLE 00:25:27 - 00:25:31]. And I became increasingly interested in clinical processes. For example, on singing, I found that the right hemisphere could not sing until the left hemisphere [INAUDIBLE 00:25:44], and the other two could not hear the correct tune until [INAUDIBLE 00:25:53]. So, this led me to be increasingly interested in clinical processes, and I tested a woman with multiple personality disorder, comparing her child alter to adult alter, with the hypothesis that the child alter was a right hemisphere dominant, right hemisphere controlled personality, and the adult...the primary adult was left hemisphere dominant. And that worked out empirically that the data supported that hypothesis, so [INAUDIBLE 00:26:28] continued in that direction. I'm getting increased... I'm getting clinical training now and my most recent work was [INAUDIBLE 00:26:35 - 00:26:40] and having them draw them [INAUDIBLE 00:26:42] lateral limits [INAUDIBLE 00:26:44], and looking at right hemisphere control, I'm very excited because I've been able to get the right hemisphere to stay in control [INAUDIBLE 00:26:55]. So, without

further ado, I think I want to... Oh, I did want to make one comment. My last time here... The last time I was in this hotel was in March, when I had the honor of presenting Roger's final work, and it's a real honor today to be here to give [INAUDIBLE 00:27:17].

Roger Sperry was fond of asking his students "How does this research fit into the big picture? What have you discovered that's new to science?" I recall him pose this question to me. As I began to describe my findings, he interrupted and said, "That's what you discovered in psychology. What did you find that changed science at large?" A daunting question, but typical of Sperry. He applied this yardstick to his own work throughout his long, productive scientific career. In 1981, the Nobel Committee recognized the significance of his findings of independent conscious awareness within each cerebral hemisphere, and awarded him, along with co-winners Hubel and Wiesel, the Nobel Prize in Medicine and Physiology. The [INAUDIBLE 00:28:09] work secured his place in the history of psychology. However, as those who know the Nobel procedures can tell you, this prize is given for a lifetime of scientific achievement. Last year, the American Psychological Association acknowledged him with an award for his outstanding lifetime contribution to psychology. Today, I will review the contributions that have given him a permanent place in the history of our field, and the teachers and institutions that played an important role in his development.

As a young man, Sperry became interested in the mind-body relationship and read *The Principles of Psychology* by William James. Apparently, James played an influential role in Sperry's intellectual life. When explaining why he believed his consciousness work to be more important than developing the implications of the [INAUDIBLE 00:28:59] work further, he quoted James as saying: "The attainment of a genuine glimpse into the mind-brain relation would constitute the scientific achievement before which all past achievements would pale." Sperry received his undergraduate education at Oberlin College, where he majored in English. This influence was evident in his beautifully crafted manuscripts in which well-chosen words accurately described the high degree of specificity that his thoughts demanded. At Oberlin, he studied psychology under Raymond Stetson, who had received his doctorate in psychology from Harvard University in 1901, at which time William James was on the faculty. Although Stetson did not interact directly with James, he did his dissertation under James' colleagues, Münsterberg and Santayana, and his former doctoral student, McDougall. It was Stetson who originally asked Sperry the significant question, and with whom he discussed the mind-body relation. Stetson's doctoral dissertation on rhythm and rhyme continually refers to questions of conscious experience. In his dissertation, Stetson asks, "Is our enjoyment of rhythm independent of any ideational content? Are the pleasurable feelings that accompany the intellectual work of ordering and synthesizing distinct from the sensuous feeling process that also arise and give pleasure?" Sperry's split-brain work answered Stetson's questions. The intellectual ordering of the left hemisphere is indeed separate from the affective ideational processing of the right hemisphere. Sperry credits Stetson with being his most important intellectual influence. He worked as his driver and did a master's degree with him. This was Sperry's only degree in psychology.

Convinced that to answer the mind-brain question one must know physiology, Sperry went to the University of Chicago and did his doctorate in zoology under the direction of Viennese biologist Paul Weiss. Scientists at that time believed that the brain was plastic and that neurons could learn any function. They thought that neurons did not connect selectively, but went out to any [INAUDIBLE 00:31:13] became selective in response to their interface with it. Weiss himself had lectured broadly on this view. In his doctoral study, Sperry investigated the effects of interchanging the nerves that connect the flexor and extensor muscles in a rat to see whether the nervous system would relearn to use the muscles property. After careful surgery and time for healing, active foot movements began to reappear in the operated limbs. However, these foot movements were opposite to those required. When the rat tried to rise on its toes, the toes swung up in the air and the body weight fell on the back point of the heel. Relearning never occurred. Nerves were not functionally interchangeable. Thus, at a time when it was widely thought that the wiring of the brain was the result of experience,

Sperry demonstrated neural specificity that indeed indicated that the brain was hardwired and that innate programming determined its course.

After Chicago, Sperry went to Harvard and did six years of postdoctoral work with Karl Lashley, one of the leading psychologists of the time. Lashley was an accomplished physiologist who demanded that his students know their animals well. He had received his doctorate at Johns Hopkins—