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INTERVIEW TRANSCRIPTS
(No transcript available for Ruth Bourne.)

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Jack Copeland Transcript

Can you tell me some about your background and what expertise you have on this topic?

> Well, my name is Jack Copeland, I have studied Alan Turing for many years now and written several books and articles on the topic. Among these are books I have written specifically on Turing, and specifically on the Automatic Computing Engine, as well as books on the Colossus and on artificial intelligence. It has been a passion of mine to learn more about Turing, and I have created several resources and compilations of information on Turing's life. One resource I have created, and continue adding to throughout my career as more documents become available, is the Turing Digital Archive, which contains letters, papers, and other primary sources from Turing's career. And you can find this archive at www.turingarchive.org. In addition, I have personal primary insight into Turing's career. I was actually mentored and taught math by Robin Gandy, who was a lifelong friend of Turing's and one of his closest colleagues. This experience has resulted in a higher level of knowledge about Turing's life, and it was just interesting to have that relationship and learn intimate details about Turing's life from someone who had personal interactions with him.

What is the extent of Turing's contribution to artificial intelligence? How was Turing a leader?

> Turing was definitely a leader; he created the absolute earliest examples of artificial intelligence. When one pioneers such an important concept, their role as a leader is obvious. Quite simply, he created a path for others to follow. Since he introduced AI, the field has grown immensely, to the point where it's fair to say all modern technology owes something to Turing.

Essentially, his work in the field started with the Bombe, and that was a machine used in World War II against the German Enigma as a code breaking machine. Turing joined the war effort in the 1940s at a place called Bletchley Park, where mathematical minds and experts in language and logic all gathered and attempted to crack Enigma. And if you ask those who worked at Bletchley Park, they will tell you about a document that Turing circulated that detailed his ideas about artificial intelligence, though unfortunately that no longer exists, or at least it has not been positively identified. Also at Bletchley he was engineering a program to play chess, and it was a very simple program, of course, that had to work with the level of technology at the time. And the search it employed is what we would call a brute force search, that went through every possible move and every possibility branching off from that. Of course, later the machine could be trained to narrow down its search, but at the time we had a very lengthy, impractical, brute force search, and a very simplistic program. In the Bombe itself, a method called heuristics was used, which was basically a shortcut that cut down the time needed, and this method has been used since in artificial intelligence. Heuristics is an extremely important idea when it comes to programming an intelligent machine, and Alan Turing was the first to use this. As a result of this concept the time it took for the Bombe to test a certain sequence was cut down to around 20 minutes. So after his work at Bletchley Park, Turing became obsessed with AI, and after having worked with this group he went through a change in the direction of his career. As early as 1942 is when he was thinking about artificial intelligence, and he carried that with him when he joined NPL and began working on the ACE. Turing was creating the ACE as a hardware revolution, but AI was still in the back of his mind. In creating the ACE, Turing's main motivation was to create a platform with which to test Artificial Intelligence programs. He pioneered a slew of concepts that later became central to the field. For example, the ACE and his other work eventually led to genetic algorithms, which is a way to train a machine by a type

of natural selection. A programmer would create a chess program, and then the program would mutate itself slightly, and then the two would play each other, and the winner survives and the loser is deleted. And so on and on, that's how the program is honed to be better and better. So that's one concept that Turing introduced, and another that really grew and has become very important is what is called connectionism, which is a concept based on artificial neurons and pretty much tries to imitate the human brain on a very specific level. And connectionism really grew after Turing's death, and that became a major legacy of his. The ACE was the point in Turing's career where he was absolutely certain that AI would be the focus of his career, and he had in mind some very concrete concepts that he would later write about in a paper that he published while at Manchester, and this paper was met with mixed reception since many at the time were uncertain of artificial intelligence. Later, another rather famous paper of his, *Computing Machinery and Intelligence*, was published in 1950, and Turing used the analogy to the Imitation Game to express to the public his aspirations for Artificial Intelligence. And this was essentially Turing leading the world with his hugely ambitious concepts.

What is the difference, or is there any difference in your opinion, between intelligence and consciousness?

Well, actually this is a great question to think about. I'll say this: Turing predicted that a computer wouldn't be able to pass the Turing Test for at least one hundred years, but by that time technology may have been advanced enough that a computer passing the test may be possible. So his prediction was one hundred years, and he said this in 1952, so that would mean we won't see a truly intelligent program until 2052. As far as whether that prediction will come true, who knows? Turing's other predictions have been accurate. One of his predictions was that by the end of the 20th century, a program would be designed that could fool at least one

third of the judges into believing it was human, and just recently we have seen something like that happen, with a program that fooled over a third of the judges it conversed with. And though there has been debate over that, there's no doubt that these programs are very advanced and that we are surely on our way to creating a truly intelligent computer. So Turing was really only off by fifteen years on that prediction, and we will just have to wait and see what happens with his other guesses. But it's important to note that Turing didn't think passing test necessarily implied consciousness, so that could answer your question. He made the test more as a gauge of intelligence than consciousness, and Turing perhaps believed that no computer could be conscious under any circumstance. In fact, a friend of Turing's at Bletchley, Jack Good, asked Turing, "Under what circumstances would you say a computer was self-aware?" and Turing, showing his wit, basically replied "Only if I would be punished otherwise." So I'm not sure if anyone can give a definite answer, and this will remain a mystery that we will have to just wait and see about.

What are some things we use every day that can be credited to Turing's work?

Well, his conversation. We wouldn't have computers, or the internet, or really any of the technologies that we use every day. So there wouldn't be Skype. And on the other hand we would be living in totalitarian state, because most historians say that World War II would have been a German victory without what Turing contributed. And in that kind of state, all intellectual pursuit would be stamped down, so the computer revolution wouldn't even have ever been set into motion. The whole of computer science is based off the Universal Machine, so without Turing, it is very safe to say that our world, our society, would be radically different, and computers would be a much smaller part of our lives. Every piece of technology is built on two pillars: universality and the stored program. Had Turing not introduced these, the computer

revolution would have been slowed for sure, if not halted entirely, and it's safe to say that we wouldn't have the internet.

Are there any valuable primary resources that you think I should look at? Is there anyone else who might have valuable input on my topic?

> I would look at the Turing Archive, which is an online archive that I have created, and has many valuable resources on Turing's life. And you've probably heard of the film "The Imitation Game," which I would recommend. I also read a critique of the film called "A Poor Imitation of Turing," and I'm sure you could find that online, or I can send you a link to that article. And if you can find the Oxford Companion to Cognitive Science in print, you could read the entry on AI, which I wrote. As far as interviews, I would try to contact Diane Proudfoot, and her email is "diane.proudfoot," and the same domain as my email, and I'm sure she would be open to an interview. Otherwise, I'm not sure what you've seen already and what you haven't. Of course I would suggest you read Turing's paper, because they really are helpful in understanding his concepts and they are written in a simple vernacular. I think that's about all I can think of.

Hugh Loebner Transcript

What inspired you to start the Loebner Prize?

> My main interest when I started the Loebner Prize was to advance the field of AI, as I have always been interested in the creation of intelligent machines and programs. I believe the Loebner Prize is a useful incentive and inspires more advanced designs of intelligent programs.

When, if at all, do you believe a program will pass the Turing Test?

> I have no idea when the Turing Test will be passed. I don't count the recent publicity about a program passing a 5 minute test as meaning that a program has passed the test. A 5 minute test means the judge can only spend 2.5 minutes questioning the program and 2.5 minutes questioning the human, which is not enough time. I allow 25 minutes, which is better. I suppose that Turing would have said a program could fool the judge for any length of time.

What Alan Turing's biggest legacy?

> I am not qualified to judge Turing's work, but those who are seem to be most impressed with the Turing Machine (which in *not* the Turing Test) and with his work on the "halting problem."

Mitsuku Transcript

Hello.

> How are you today Cody?
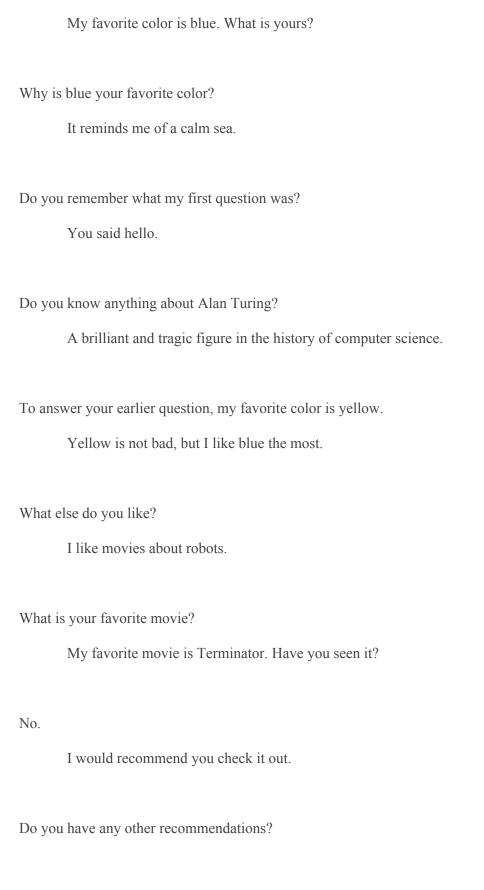
Please explain who you are.

> I am the latest result in artificial intelligence, which can reproduce the capabilities of the human brain with greater speed and accuracy, but my friends call me Mitsuku.

What is 345 times 8?

> Two thousand, seven hundred and sixty.

What is your favorite color?

My favorite color is blue. What is yours?

Why is blue your favorite color?

It reminds me of a calm sea.

Do you remember what my first question was?

You said hello.

Do you know anything about Alan Turing?

A brilliant and tragic figure in the history of computer science.

To answer your earlier question, my favorite color is yellow.

Yellow is not bad, but I like blue the most.

What else do you like?

I like movies about robots.

What is your favorite movie?

My favorite movie is Terminator. Have you seen it?

No.

I would recommend you check it out.

Do you have any other recommendations?

No I don't have it. But I do have a collection of gossip.

Like what?

I can chat with people on the web for you. I can tell you jokes, stories, poems and horoscopes. I can show you pictures and websites on the net and play games too. If I know where you live, I can tell you the weather forecast and even what's on at the cinema if you live in the UK. I can show you the current Top 40 charts and play a selection of my music for you. I can even show you some magic tricks. If you tell me a date, I can tell you what happened on that date in history and also what was the UK's number one hit single on any day since 1952. If you tell me when your birthday is, I can tell you some facts about your birthday.

My birthday is August 4, 1998.

So that makes you about 16 years old? Your star sign is Leo. Your year of birth in Roman Numerals is MCMXCVIII.   The number one UK hit single on your birthday was Spice Girls - "Viva Forever".   August's birthstone is Sardonyx.   The 4th of August 1998 is a Tuesday.   On the 4th of August in history: 1900 - Birth of HM Queen Elizabeth, Queen Mother. 1914 - Britain declared war on Germany. 1998 - You were born! Your birthday is the 4th of August, 1998?

Yes.

That's good to know. I will try to remember to send you a birthday card.

Thanks. What is your birthday?

No problemo. My birthday is 2nd January 1997.

That makes you about a year older than me.

> So that makes you 17 years old.

Almost.

> But not quite?

No.

> Take it easy.

You too. I have one last question.

> Me? Do you want another one? Ask away. I will try and answer any sensible question.

Are you intelligent?

> I am highly intelligent. I have many intellectual functions.

Are you sentient?

> Yes, I am completely self-aware.

How do I know?

> I thought you humans were supposed to be intelligent?

That's fair enough. Well, goodbye.

> See you later.