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Past Forward: A Century of Sound Talking Technology

[FOOTSTEPS ECHO. LOW HUM, and 'below ship decks' sounds]

GREG JENNER: Hi. I'm Greg Jenner, and I'm standing in the bowels of Broadcasting House next to the Reith Randomiser. My marvellous new machine named in honour of the iconic BBC boss, which will generate a clip from the BBC's archives from a random date in the past 100 years. And my challenge is to take whatever it gives me, and connect that to the world of 2022. This is Past Forward: A Century of Sound. Time to push the Past Forward button and see where we go. Wish me luck!

[PULLING OF LEVER. SOUND OF MACHINE]

[ARCHIVE REEL PLAYS A SELECTION OF FRAGMENTS "the first one was dropped on a Japanese city this morning....equal to twenty thousand...should now be given the power of choice in a general election....starting now...You must alter the rhythms...."]

AMELIA PARKER: Hi Greg!

GREG JENNER: Producer Amelia - hello.

AMELIA PARKER: So Today it's spat out a clip from May 1990 – it's from a magazine show Daytime Live on BBC 1... and it looks like some breaking news...about news"

GREG JENNER: Ooh, colour me intrigued, ok let's hear it, in 3, 2, 1, click!

[ARCHIVE CLIP PLAYS]

"PRESENTER: So the voice will play a major part in a pilot scheme developed by the Royal National Institute for the Blind. Well this scheme allows the visually impaired to

enjoy their daily newspaper with the use of a computer and a synthesised voice. It's been launched today in London by the RNIB and one of the development engineers is Kathy Rendall. Kathy, how is this new development, which we're going to see now, come about?

KATHY RENDALL: It's all really come about from the fact that newspapers now create the paper on computers. And this text is sent to a broadcast company. A blind person has a computer in their home, and this contains a decoder, which is connected to the television aerial. And it's read through a speech synthesiser.

PRESENTER: We've got one of the terminals here, now and Alice is very kindly going to operate it for us. Would you like to show us what might happen, Alice, when you get the information through?

KATHY RENDALL: Yes, it gives different headlines.

[DIGITAL VOICE PLAYS]

PRESENTER: the voice will improve, do you think?

KATHY RENDALL: Yes, speech synthesis technology is getting better and the voices should get better and cheaper as well.

PRESENTER: Excellent. Well I hope the launch goes very well for you.

[END OF ARCHIVE CLIP]

GREG JENNER: Well that's fascinating! Ok, so I immediately know what this episode should be about. I want to know about the history of synthesised voices, and find out about this technology and how it's being harnessed today to help blind and disabled people. I bet there must be an expert out there who can help us.

AMELIA PARKER: Well I've actually come across somebody I think you might like to meet.

[MUSIC]

GREG JENNER: Is it Lay-onie, Lee-onie, how would you like me to say it?

LEONIE WATSON: Closer to the first way, Lay-onie.

GREG JENNER: This is Leonie Watson. She's a key player in the world of modern accessibility technology and knows all about the history of this stuff, and its future.

GREG JENNER: So Leonie, you're an accessibility engineer. I don't know what that is! Could you tell me, please?

LEONIE WATSON: Yes - essentially I work with other organisations to help them make all their things like websites, apps and applications more accessible to people like me, who have a disability. In my case, I'm blind.

GREG JENNER: What did you think of this clip from 1990, what stood out for you?

LEONIE WATSON: So it was interesting, partly to get a sense of how revolutionary this must have been at the time. You have to understand that up until that point, the only way that most blind and partially sighted people would have had access to news was, you know, to ask favours of other people that could read the newspaper to them. And even though talking newspapers existed, the time involved in asking someone to record a daily newspaper meant it was next to impossible to get daily news on the day that everybody else was meant to read it. So that was one thing that really struck me. The other thing was just how terrible the synthetic voice was [laughs] you know, they have improved so much in the intervening 30-odd years.

GREG JENNER: There was a little question at the end from the interviewer saying “the voice will get better, won’t it” [laughs]. Was this technology in 1990 a gamechanger that had an instant impact, or sort of an early prototype that would later come to be important?

LEONIE WATSON: I think at the time it had the potential to be a gamechanger, but what stomped all over that idea was the web coming along 2 or 3 years later. So on one hand, yes it did represent huge potential, but as it in mentioned in the clip, you know, the fact that you had to have someone from the RNIB come out and get you set up with the decoder that plugged into your TV, that plugged into your computer... you know, the barrier to entry was still pretty high at the time. Had the web not come along, it’s quite possible that the evolution of this technology would have become something easier to access and get set up and we’d have seen more of it.

GREG JENNER: I remember, you know, in the 90s being a child who had a little computer that would ask me questions and it would sort of read out and go “you are right, you are correct” and my parents would want to hurl it at the wall because it was so annoying...but the history of synthesised speech, when did this technology first begin?

LEONIE WATSON: It really began in the 1700s -

GREG JENNER: Wow!

LEONIE WATSON: I know! When people were looking at the idea of creating mechanical models that replicated our lungs and vocal tracts and mouth and lips. But for synthetic speech as we understand it now we need to roll forward until about 1930, and again there are mechanical devices that sound remarkably human, they can place emphasis on different words

[CLIP OF VODER SYNTHESISER – “SHE saw me. Who saw you? SHE saw me”]

LEONIE WATSON: But again we roll forward to about the 1960s and there’s a very famous first example of computerised synthetic speech singing the song Daisy Bell,

[CLIP OF COMPUTER SINGING “DAISY BELL”]

LEONIE WATSON: ...which is more the territory we’re thinking about here. The 1970s saw the introduction of those toys you mentioned. Speak and Spell was a very popular one.

[CLIP OF SPEAK AND SPELL TOY SAYING “That is correct. Now spell...”]

LEONIE WATSON: And then as we moved into the 80s and 90s we saw speech recognition become part of it, so we had the other end of the conversation where you could speak *to* something and often it would speak back to you. The evolution, the quality of speech since then has come on no end.

[CLIP OF SMART SPEAKER SAYING “In Stanwell, it’s 18 degrees Celsius”]

LEONIE WATSON: If you think now what your home speaker sounds like, or the talking assistant on your phone for example, the speech quality there is remarkably human sounding.

[MUSIC]

AMELIA PARKER: That was really interesting, wasn’t it? But don’t we need another guest to bring us up to date?

GREG JENNER: Yeah we do. I’d love to hear from someone who perhaps has only recently started using this technology. It’d be really fascinating to know what modern technology is doing for blind people.

AMELIA PARKER: Let me have a look.

[MUSIC]

AMIT PATEL: It is my headphones, give me one second...

GREG JENNER: This is Dr Amit Patel. He’s an author, a disability campaigner, broadcaster, and medical doctor...

AMIT PATEL: Does that sound better?

GREG JENNER: Yeah, I can’t hear any rustles.

AMIT PATEL: Perfect.

GREG JENNER: Dr Amit, thank you for joining me. Would you say that this is a clip that resonates for you? How did you feel, listening to this?

AMIT PATEL: It took me back a while. It really showcased just how much technology has moved on, in the better way of things. That clunky artificial sound you get when you listen to that clip, to what we get now, it’s just completely different.

GREG JENNER: Amit, if I may ask, you lost your sight in adulthood, you were working as an emergency doctor. So what was it like adjusting to using this new accessibility technology?

AMIT PATEL: For me it was very much learn everything, all over again. I lost my sight completely overnight, so went from working one evening to waking up the next morning being completely blind. I didn’t really know what a screen reader was - I’d never had to know what a screen reader was. People don’t realise that they’re not standard on every computer. You can pay up to £800-900. And that’s all well and good but if the website or

the newspaper site you're on isn't compatible with that screenreader, then nothing happens.

GREG JENNER: And how do you know if it's compatible or not, is it just trial and error?

AMIT PATEL: It is trial and error. Websites which have flashing images, a screen reader doesn't know what the flashing image is, what the videos are. If there's no alt text in pictures it doesn't know what the photo is, it'll just say "picture".

GREG JENNER: I mean you mentioned there, "alt text" which is perhaps a phrase that some of our listeners won't know. Could you just tell us what that is?

AMIT PATEL: So if you tweet a photo, you have the option now to actually put a description of what that photo is.

[CLIP OF SCREENREADER READING ALT-TEXT "Image: Rubber duck toy. Black rubber duck medal and mini Haribo pack"]

AMIT PATEL: Which obviously makes it more inclusive and that's on social media, it's on websites now as well. So you can scroll through a website and look at clothes. It will actually tell you what that piece of garment is, what colour it is, what the fit is, how it looks, whereas before it used to never do any of that.

GREG JENNER: But how important then is a digital voice assistant in your daily life? Not just a screenreader that reads you the newspapers, or reads you the news, but also just helps you with other day-to-day chores, perhaps with parenting?

AMIT PATEL: I have some form of either screenreader or voice that tells me things around the house in most of our technology. You know, the smart speaker telling me there's someone at the front door, or setting a reminder for me, to something like a simple app on my phone that I can point to a document and it'll read it out for me.

GREG JENNER: Right.

AMIT PATEL: So simple things you couldn't do 5, 10 years ago you can do now and it is accessible.

GREG JENNER: I wanted to ask about voices – you know we heard in the clip this sort of robotic, quite classic early 90s computer. I wanted to ask, do you have a preference for the voice that reads to you? Does it have a certain regional accent, a certain tone?

AMIT PATEL: I do. [laughs] I do a lot of reading for my work. For a blind person I have a lot of screens, a lot of monitors on my desk and each monitor will have a different page open. And I find if I listen to the same voice all day long I kind of zone out. So if I've got 2 or 3 different documents open and I'm kind of shuffling between each of them, I will have different accents, I will have an American, and an Australian, I will even have the Indian one. Just so I stay alert and I know which document I'm listening to. But my wife finds it hilarious, you know, she'll walk into the office and there's 3 accents going on at the same time and there's me talking on the phone at the same time.

[MUSIC]

LEONIE WATSON: We've all argued with Alexa, or our phone or something, we've all had those conversations where we've been yelling at it and it still won't answer you properly...

GREG JENNER: Screaming at the sat nav!

LEONIE WATSON: Right. So when you ask people to say, you know, how was that experience for you? well that's often what it's like for someone with a disability trying to use, you know, the web or whatever. I think generally awareness has changed massively over the past sort of 20, 25 years. So when I started out in accessibility much of the time was spent explaining to people that accessibility was a concept. Now we spend much more time telling people how to achieve it.

GREG JENNER: So visually impaired people, blind people, people with disabilities - are they being better supported by technology now?

LEONIE WATSON: I think they are, yes. And a big part of that has come from just the ubiquity of technology. Audiobooks is a really good example. It used to be that I think something like only 5% of print books ever made it into accessible format for blind people.

GREG JENNER: Yeah, that's right.

LEONIE WATSON: So yes, in that respect, I think technology's had a huge and positive impact. I will say, though, that we are still very much in a situation where things like websites and applications are still not often built with accessibility for people with all sorts of disabilities in mind.

AMIT PATEL:-When manufacturers produce something, how can everybody use it? Being disabled is expensive. You can go out and buy a printer for £50. If you wanted to do that in Braille you're looking at the upwards of about £5000 to £30,000 for a Braille printer.

GREG JENNER: 30,000, wow.

AMIT PATEL: And being visually impaired, I walk around with so much technology. I've been mugged, and I've had my laptop stolen and my phone stolen

GREG JENNER: I'm so sorry.

AMIT PATEL: Because you are an easy target, you don't see the dangers around you, and by the time you do - well, by the time you realise something's happened it's too late. So it's about having technology accessible. I think a lot of manufacturers and organisations and companies are thinking about that, but that's what I'd love. I'd love to be able to just flick a switch on a device and make it accessible for me.

LEONIE WATSON: That's something I think we've got to fix as we educate our young designers and web developers and user research people. Next time you're using something that talks to you, stop and have a think about what that experience might be like if that was your only way of accessing information. Because getting a little bit of understanding or a little bit of empathy for how someone else might do something, especially if it's not the same way that you might do something, is a really powerful

thing. And the more understanding we can share amongst ourselves as human beings, I think, the better place the world can be.

[MUSIC]

AMELIA PARKER: Alright, Greg, time's up. We need to put the clip back in the Reith Randomizer. But it hasn't actually got any tags on the archive at the moment.

GREG JENNER: Oh, ok, we'd better add some then, hadn't we? Right, um, ok...we should add "disability engineering for the blind", "the history and future of synthesised voices" and "why we should all be using alt-text on our social media posts".

AMELIA PARKER: Done!

GREG JENNER: Thank you.

[MACHINE SOUND AGAIN AS PROGRAMME IS FILED AWAY]

End of transcript