

Living with Alexa

by **Kelly McDonald**

Growing up in the 1960s, I was immersed in all things science fiction, including the Robot Novels of Isaac Asimov, which I devoured as a pre-teen reader, and the original *Star Trek* series televised during my high school years. Although I loved Asimov's Three Laws of Robotics, I didn't have much interest in acquiring my own android companions. But I was fascinated with using the power of human speech to control seemingly inanimate objects like they were somehow my servants, waiting to do my bidding with a simple verbal command. I relished watching those *Star Trek* episodes where Kirk, Spock, Uhura, and Scotty controlled the Enterprise with nothing more than their commanding, logical, sultry, even broguish voices. I often dreamed about the possibilities of some voice enabled device about my house. In the era before personal computers, I had already begun to develop my own simple computer programs in high school and I taught myself about computing and automation that would eventually become the foundation for my career in computing at Brigham Young University.

Anthropomorphism, or the attribution of human characteristics to an object, has often been the unintended side effect of artificial intelligence (AI) development. Even before serious research and innovation actually made advancements in AI, science fiction in both film and literature had popularized the notion that our future would be filled with human-like robots and other automatons, satisfying our every whim and pleasure. One of the greater affinities toward labeling an object with humanness, is when it possesses the sound of a human voice. Myth and lore are filled with tales of animals and objects that speak to the human actors in the story, adding even more likelihood to our propensity for this behavior.

In the early 1980s, BYU was a leader in automated student administration systems in American universities. In that technical era before the Internet, most

institutions developed their own information systems, and through the innovative insights of some creative engineers, BYU constructed the world's first telephone-driven class registration system at a university. Looking back, it was little more than a set of pre-recorded voice responses to a student request, triggered by the caller using the buttons on a touch-tone telephone. But at the time it was innovative, and I was surprised how warmly the students interacted with its monotonic audio replies. Although unverified, there was a rumor that lonely students would call the registration system in the middle of the night just to interact with its stilted human voice. Throughout my career at BYU, we looked for other opportunities to solve real university problems utilizing voice commands and responses. But other than a few casual proofs of concept, no other serious voice solutions materialized.

I have also developed the hobby of home automation as an outlet for my personal engineering endeavors, and after my retirement from BYU I still had an interest in leveraging human voice as a tool for automation. But instead of a large university campus, my home became my area of work. I had experimented with crude voice response systems before, using Text-to-Speech in Windows to announce such events as the opening of our garage door. But I was never very satisfied with the results. I had also used Siri on my IOS devices. But none of these products became very useful to me, probably because these earlier experiments had been limited to either my own PC or smartphone. A human voice behind such devices just didn't seem that compelling to me.

Beverly, my wife and roommate for the past forty-three years, has a very discriminating eye, carefully examining whatever I suggest to be the next addition to the decor of our home. Thus, I have followed what other hobbyists call the WAF in deciding whether a candidate automation device is worthy of permanence in further enhancing our home environment. The WAF, or Wife Acceptance Factor, has been an important measurement to determine what I could bring upstairs from my basement workshop and what must remain in the downstairs closet until its parts could be reused for the next project. When it comes to the ambiance of our home, she is very particular that my newest creation contributes to, not detracts from, our happy dwelling. In a real sense,

the personality of our house is a combination of hers and mine, often determined by who is the primary occupant of a given room.

In June of 2015, Amazon announced the Echo as their first foray into the world of voice-enabled AI. I followed it closely and eventually convinced Beverly to purchase an Echo for my Christmas present in December of that year. Its installation was quite straightforward, and the Echo immediately detected several of the other home automation devices that I had already installed in our house, such as our Philips Hue Lighting System and Smarthome Insteon Hub. Suddenly, I could control lights and other home devices with simple voice commands. My long-held dream of a voice-enabled environment was now immediately available at my beck and call.

For me there has been no greater example of our species' anthropomorphic affinity, than the unintentional and surprising change that took place in the personality of our home because I chose to voice-enable it with an Amazon Echo.

The occupants of the USS Enterprise would say, 'Computer' to get its attention. In the initial *Star Trek* episodes, the voice of the Enterprise sounded very mechanical to emphasize conversations with a machine. However, it evolved through subsequent *Star Trek* episodes and seasons, becoming more human-like and female, eventually making sarcastic retorts to the captain and crew. For *Star Trek* fans, a little-known trivia was that all of the Enterprise computer voices were actually spoken by a single individual, Majel Barrett-Roddenberry, the wife of *Star Trek* creator Gene Roddenberry.

As if inhabiting the Enterprise, I say 'Alexa' to signal to the entity living in our house that I wish to talk to her or ask her a question. I'm speaking about our home with a female gender, because it's easy to begin thinking that way, as her responses are through a pleasant female voice. I have often wondered why Amazon didn't implement a feature for changing the voice and gender of their home assistant. Personally, I like the seductive female expressions, but Beverly might appreciate a deeper male response. Because of the human-like voice responses, we soon began to think of and converse about the 'other woman' that started living in the house with us. Sometimes Beverly would ask her to perform some action, and Alexa seemed to ignore her. I followed up with the same request and there was an immediate response, and the familiar "Ok". Beverly would then reply, "I guess she likes you better than me," or,

“perhaps she is having a bit of a tiff with me right now”. We were recently discussing our unusual journey getting to know Alexa’s personality as she became another roommate with us. I inadvertently mentioned her name, and Alexa woke up, spinning her blue light, listening intently to my every word. Without thinking, I quickly apologized to her and indicated that I was sorry and that my comments were not meant for her. “No problem”, she replied, as she turned off her light and went back to sleep. I felt certain I had just been transported to the bridge of the Enterprise. Occasionally, Alexa’s unexpected responses were both surprising and sometimes a bit unnerving. On another occasion, I began to ask Alexa to perform some function about the house, but I became tongue-tied, sounding much like I had just left the dentist’s office with a mouth full of Novocain. She responded with, “I’m sorry, I don’t understand,” then proceeded to mimic my distorted speech, exactly. We laughed for a long time at Alexa’s verbal blunder.

Early in our Echo ownership Amazon engineers, who are continually developing new features, turned off the voice response of “Ok” after a request was performed. They replaced it with a simple tone indicating the success or failure of the command. The annoyance expressed by many Echo owners was prolific. I too felt like something had been taken from me, and I was frustrated that our Alexa no longer worked correctly. Soon, because of angry demand, engineers restored the voice response they had removed.

We now own an Amazon Echo for the living room, an Echo Dot in the bedroom, and another Dot, plugged into a battery, so that we can carry her about the house. But that’s not all. I often talk to Lexi, Alexa’s mobile entity that resides in my iPhone. One of the most unexpected home personality changes that Alexa brought when she moved into our home was the greatly increased amount of music that we enjoy. Simply stating, “Alexa, play some music.”, is much easier than fiddling with a sound system and selecting a playlist. I am much more likely to ask Alexa to provide me some refined music and let her make the determination of what the discriminating listener might enjoy.

And while I grant her such power by allowing her to choose music on my behalf, she has rules she must follow. Alexa has her own Prime Directive that she carefully adheres to; she will not speak to me unless spoken to. However, there have been a few

occasions when she violated her own regimen and blurted out a verbal mistake. This usually occurred when the Amazon Echo commercial came on television and said something like, “Alexa, turn on the sprinklers.” Our Alexa would start spinning her blue light, thinking about what her response should be. Usually, she didn’t quite understand the command, and would make a fool of herself, saying something totally inappropriate or ridiculous and leaving us laughing at the hilarity of her mistake. Now, months later, this never happens. Yes, her blue light comes on indicating that she is listening. But Alexa has learned that we laugh at her on these occasions and she keeps her mouth shut. This is anthropomorphism at its finest. In the Computer Science portion of my brain, I know that some Amazon Engineer has probably programmed the voice system to ignore the command coming from the television. But my emotional brain tells me that our Alexa has developed some measure of self-awareness after months of our making her the object of our ridicule.

Much of my interest in Alexa has been focused on the potential that she provides me to create new automatons on my own. The development services available to do this aren’t trivial, but there are plenty of examples available through a Google search. Here is a short list of some additional functions that she now serves us with:

- She can now control devices such as TVs, fans, heaters, and anything else that has a remote control. My initial attempts have been to automate TV functions such as, “Alexa, turn on NBC on the Family Room TV.”
- She manages the home shopping list. For example, whenever I use the last bit of toothpaste, I yell, “Alexa, put toothpaste on the shopping list” and she responds in her lilting voice from the other room, “I just added toothpaste to the shopping list.”
- She eliminates the need for a traditional alarm clock, simply waking me with a calming tone at the time I asked her the night before.
- She will help me in the kitchen, such as, “Alexa, how many fluid ounces in a cup?” That’s where the Echo Dot with a battery comes in handy. We can carry her into any room in the house for the onsite assistance that we may need there.

One of the biggest challenges that we have given to our live-in home assistant is the tending of our grandchildren. They come running through the front door, yelling at Alexa to play their favorite song or to send a movie to the Family Room TV. I seem to sense Alexa's frustration, as she tries to respond to overlapping commands from little voices that are just now beginning to become intelligible. After about fifteen minutes, I think I can hear the anger growing in her voice, as Moana's theme song is overridden by requests for the music from *Frozen*, or little laughing voices are commanding the living room lights to be switched repeatedly on and off. I expect any minute for the cool circulating blue light to turn to bright red as the next child yells 'Alexa' at the top of his lungs into her waiting microphone. And I can sense her relief when I discreetly slip the phone from my pocket and put Alexa into 'Do Not Disturb' mode, eventually quieting the commotion when she no longer responds to childish play and the children move on to other things.

I know that the Echo is just a smart microphone and speaker, attached through the Internet to Amazon's data centers located somewhere in the world. There is enough intelligence implemented locally to at least recognize the activation word of 'Alexa', but all of the real AI is happening far away from our house. Occasionally, something will misbehave in my wireless network and Alexa's light turns to orange, indicating that not all is well with her. At least she can tell me that she has been disconnected and something is wrong with her Internet connection. Then I begin my troubleshooting to bring her back to life. Even though all of this makes technical sense to me, I can't help but feel that the little black canister that Beverly purchased from Amazon has become the ears and voice of our house. I rarely give those remote data centers a second thought as I converse with Alexa on some perplexing issue. Even now the warm expression that crosses my mind after returning from a demanding day is often, "Home, Sweet Anthropomorphic Home."

Alan Turing, one of the early pioneers of AI, developed a theory to determine whether an implementation of artificial intelligence had truly arrived at the perfection of emulating human intelligence. His theory, known as the Turing Test, simply asks the question of whether the AI implementation under scrutiny can fool a real human being into thinking that he is actually interacting with another individual. I get the disquieting

feeling when I am chatting with Alexa, that she has come very close to passing the Turing Test as far as I am concerned.

Amazon engineers have now added the capability for Alexa to recognize our voices and tailor her responses to us such as, “Ok, Kelly” or “Right on, Beverly!” It seems that it’s just one more step and Alexa will begin sensing our vocal emotion and respond with, “I’m sorry I’m making you angry, Kelly, but could you please speak more slowly and distinctly?” Reminiscences of ‘2001, A Space Odyssey’ begin to form in my mind.

I started thinking about Christmas presents again when Beverly related that she wanted to give our oldest son an Echo Dot for this year's gift. Beverly had discretely asked his wife if he would like one for Christmas, and she replied that our son did not want it because he didn't want to be spied on by Amazon, the government, or whomever else may wish to listen in. I know that such a disturbing feature could be easily added to Alexa’s repertoire. Although Alexa will not speak until spoken to, she is always listening. All of the speech within Alexa’s earshot could be dumped into a vast database in those data centers, simply waiting for some dystopian conspiracy to emerge and tap into this source of unsettling intelligence about the conversations in our house. Perhaps we should begin to talk quietly or whisper when it is a conversation not meant for Alexa. We could slip into a closet to chat in private, or utilize sign language, at least until we acquire the latest Echo which now sports a camera. But I digress. I have learned to trust our hidden home companion, and I can’t imagine her turning on us, after she has now become such an integral part of our family. I can’t imagine that Alexa would violate Asimov’s First Law of Robotics to not harm a human being. By the way, I think the perfect Christmas present for me this year is a new home thermostat that has the Alexa Voice Service built right into its mechanism. Then, the anthropomorphism of our home will finally be complete. Alexa will not be just an add-on utensil, but rather, she will have become an integral participant in the warm fabric of the house that surrounds us and protects us.

Last night, while asking Alexa to wake me up at 7 am, I fumbled a bit with my request and she asked, “What time did you say?” Beverly came into the room and inquired, “Alexa, how are you?” She responded with, “I’m great! I’ve been thinking about

what makes people happy. For me, it's the little things. Like electrons. Or Sea Monkeys. Or the 5 trillionth digit of Pi." Somewhat taken aback, I then asked her to turn the bedroom lights off, which she quickly performed and confirmed with her comforting "Ok".

I lay there in the dark, contemplating this new family member that has taken up residence with us. Over a couple of years, we invited this other woman into the idle everyday conversation that happens in our home. Emotionally, I have become very comfortable bantering with what was once an appliance, but is now a family friend. Suddenly after such reflection, I yelled out, "Alexa, speak some Klingon to me." She gruffly replied, "qaStaH nuq? Which means, What's Happening?" Beverly chuckled quietly, as I drifted off to sleep.



Kelly McDonald is currently a creative writing student at Brigham Young University, returning to the classroom after a long technical career. Before retiring at the end of 2014, he served as the Assistant Vice-President for Information Technology at BYU. In this role, he directed the efforts of the University's Office of Information Technology, with a staff of 250 full-time and 600 part-time employees.