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"I Call Alexa to the Stand": The Privacy Implications of Anthropomorphizing Virtual Assistants Accompanying Smart-Home Technology

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ABSTRACT

This Note offers a solution to the unique privacy issues posed by the increasingly humanlike interactions users have with virtual assistants, such as Amazon's Alexa, which accompany smart-home technology. These interactions almost certainly result in the users engaging in the cognitive phenomenon of anthropomorphism—more specifically, an assignment of agency. This is a phenomenon that has heretofore been ignored in the legal context, but both the rapidity of technological advancement and inadequacy of current applicable legal doctrine necessitate its consideration now. Since users view these anthropomorphized virtual assistants as persons rather than machines, the law should treat them as such. To accommodate this reality, either the courts or Congress should grant them legal personhood. This can be accomplished through the application of an objective test that is satisfied by the establishment of social and moral connections with these virtual assistants. Further, due to the paramount privacy concerns resulting from this technology's use within the home, courts should establish a new privilege that protects the communications between users and their virtual assistants.

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The modern digital age allows unprecedented access to the intimate details of the lives of others; such access can now pry into the most intimate of spaces—the home—as smart-home technology integration becomes increasingly pervasive.[1] Several companies market various kinds of in-home devices that operate primarily through user interaction with a virtual assistant—such as Google's aptly named Assistant, Apple's Siri, and Amazon's Alexa.[2] The development of smart-home technology, culminating in this adoption of a virtual assistant, dates back to the beginning of the twentieth century when "[t]he idea of a home that could minimize work for its inhabitants was sold en masse to American homemakers."[3] In 1969,

1. Peter H. Kahn, Jr. et al., *The New Ontological Category Hypothesis in Human-Robot Interaction*, *in* 6TH ACM/IEEE INTERNATIONAL CONFERENCE ON HUMAN-ROBOT INTERACTION 159, 159 (2011).

2. Brian Chen, *How to Make Your House a Smart Home*, N.Y. TIMES, https://www.nytimes.com/guides/technology/how-to-make-a-smart-home [https://perma.cc/GE2N-9A4H] (last visited Feb. 7, 2018).

3. Andrew Weinreich, *The Future of the Smart Home: Smart Homes & IoT: A Century in the Making*, FORBES (Dec. 18, 2017, 11:46 AM), https://www.forbes.com/sites/

Honeywell introduced the first official smart-home technology device, the Honeywell Kitchen Computer, which could do only two things: "add recipes and store recipes."[4] Since then, the definition of smart-home technology has changed due to the increased functionality and capability of these devices. Rather than encompassing only those tasks that automate certain physical activities within the home, current smart-home technology is so named because of its Internet connection and remote-control operation.[5]

While this Note primarily focuses on Amazon's virtual assistant, Alexa, the analysis and solutions apply to all virtual assistants.[6] Alexa is housed inside the Amazon Echo—a cylindrical speaker that can both receive its users' requests and make vocal responses.[7] Alexa connects continuously to the Internet—unless turned off by the user—and operates by a simple utterance of its name.[8] Upon acknowledging this so-called "wake word," Alexa records the user's request and sends it to Amazon, where an Amazon employee fulfills the request and the recording is stored.[9] While the purveyors of virtual assistants maintain that not everything said in the device's vicinity is recorded, the machine itself must be in a constant state of "listening" in order to recognize its wake word.[10]

Mass storage of these requests and the potential for the machine to be constantly listening give rise to legitimate privacy concerns regarding the amount, and possible sensitive nature, of these

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andrewweinreich/2017/12/18/the-future-of-the-smart-home-smart-homes-iot-a-century-in-the-making/#1575cc8157ac.

4. Andreas Jacobsson, Assoc. Professor, Malmö Univ., Threats and Betrayal on the Internet (May 18, 2016) (transcript available in *On Privacy and Security in Smart Homes*, MEDIUM (June 13, 2016), https://medium.com/@iotap/on-privacy-and-security-in-smart-homes-543f62aa9917 [https://perma.cc/D6R7-D3AA]).

5. *Id.*

6. A difference among the virtual assistants that may impact how easily they are anthropomorphized is their names. Alexa has the most standard name that one would associate with personhood, whereas Siri and Assistant are not necessarily immediately recognizable as names attributable to people. This could impact the manipulation analysis that is discussed below. *See infra* Part I.A.2.

7. *See* Richard Baguley & Colin McDonald, *Appliance Science: Alexa, How Does Alexa Work? The Science of the Amazon Echo*, CNET (Aug. 4, 2016, 5:00 AM), https://www.cnet.com/news/appliance-science-alexa-how-does-alexa-work-the-science-of-amazons-echo [https://perma.cc/R4WZ-XHSK].

8. *See id.*

9. *See id.*

10. *See* Tim Moynihan, *Alexa and Google Home Record What You Say. But What Happens to That Data?*, WIRED (Dec. 5, 2016, 9:00 AM), https://www.wired.com/2016/12/alexa-and-google-record-your-voice/ [https://perma.cc/NX3U-GCRU].

recordings.[11] In particular, critics voice concerns about how easily the government may access users' recordings.[12] Specifically, the concerns stem from whether the Fourth Amendment is implicated when the government attempts to seize these recordings. The Fourth Amendment guarantees "[t]he right of the people to be secure in their . . . houses . . . against unreasonable searches and seizures"[13]—thus, the question presented is whether the government accessing these recordings is "unreasonable." A court has yet to clearly resolve this issue.[14] The most likely applicable legal doctrine—the third-party doctrine—seems to suggest that either a simple subpoena or consent of the holder of the recordings is all that is necessary.[15] Courts apply the third-party doctrine to information that an individual voluntarily hands over to another individual or institution.[16] The Supreme Court views this information as outside the protection of the Fourth Amendment and thus outside of the Constitution's warrant requirement.[17]

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11. *See* Hillary Brill & Scott Jones, *Little Things and Big Challenges: Information Privacy and the Internet of Things*, 66 AM. U. L. REV. 1183, 1229 (2017); Jacobsson, *supra* note 4. Consumer watchdog groups have also raised alarms about the possibility that the Echo and Google Home may be recording a much more extensive array of data than previously thought, due to examination of certain patents for which Google and Amazon have applied. *See Are Google Home and Amazon Echo Listening More Than You Realize?*, CBS NEWS (Dec. 14, 2017, 7:45 AM), https://www.cbsnews.com/news/google-home-amazon-echo-patents-track-listen [https://perma.cc/V4CY-DEU8]. Specifically, consumer watchdog groups accuse Amazon of using the Echo for targeted advertising, which Amazon denies. *Id.*

12. *See, e.g.*, Note, *If These Walls Could Talk: The Smart Home and the Fourth Amendment Limits of the Third Party Doctrine*, 130 HARV. L. REV. 1924, 1925 (2017) [hereinafter *If These Walls Could Talk*] (remarking that the Fourth Amendment likely guarantees no protection from government collection of recordings made by smart-home technology).

13. U.S. CONST. amend. IV.

14. The question was presented to a court during the course of a 2017 murder investigation in Arkansas, in which Amazon refused to hand over the recordings; the issue, however, was mooted when the accused and owner of the Amazon Echo in question willingly acquiesced to the recordings being given to the police. *See* Eliott C. McLaughlin, *Suspect OKs Amazon to Hand over Echo Recordings in Murder Case*, CNN (Apr. 26, 2017, 2:52 PM), http://www.cnn.com/2017/03/07/tech/amazon-echo-alexa-bentonville-arkansas-murder-case/index.html [https://perma.cc/TTC3-PJZ9]. *See generally* Stipulation and Consent Order, State v. Bates, No. CR-2016-370-2 (Ark. Cir. Ct. Mar. 6, 2017), https://caseinfo.aoc.arkansas.gov/cconnect/PROD/public/ck_public_qry_doct.cp_dktrpt_frames?backto=P&case_id=04CR-16-370&begin_date=&end_date= [https://perma.cc/FLU6-46R2].

15. Orin Kerr & Greg Nojeim, *The Data Question: Should the Third-Party Records Doctrine Be Revisited?*, A.B.A. J. (Aug. 2012), http://www.abajournal.com/magazine/article/the_data_question_should_the_third-party_records_doctrine_be_revisited/ [https://perma.cc/YAQ2-XD44].

16. Smith v. Maryland, 442 U.S. 735, 744–45 (1979).

17. *Id.* at 744 (stating that an individual assumes the risk that information conveyed voluntarily to a company can be exposed by that company, thus eliminating any expectation of privacy in that information).

While this is a legitimate current concern in itself,[18] another aspect of smart-home virtual assistants like Alexa compounds this privacy issue. Due to the conversation-like interaction between virtual assistant users and the technology itself, users engage in the cognitive process known as anthropomorphism.[19] Specifically, people may assign agency to their virtual assistant, believing that the inanimate object is acting with intentions.[20] This belief may become powerful enough that people stop seeing this kind of technology as an inanimate object entirely, instead viewing it either as another "person" or as some kind of being in between inanimate and animate.[21] A growing cohort of researchers within the fields of robotics and artificial intelligence (AI) argue that this change in the relationship between man and machine necessitates new legal protections, or even legal rights, for this technology.[22] Courts and legislatures should be open to accommodating the changing nature of the relationship between individuals and their technology rather than steadfastly applying anachronistic law that is no longer viable.

This Note addresses the issues presented by the inevitable anthropomorphism of smart-home technology's virtual assistants. Part I gives an overview of the ways in which humans anthropomorphize technology and details the legal doctrine—grounded in one's reasonable expectation of privacy—that controls the government's ability to obtain certain communications. Part II considers the applicability of both anthropomorphism science and legal doctrine to smart-home technology and its virtual assistants. Further, it points out how currently proposed solutions to this problem fail to acknowledge legitimate concerns about the application of anachronistic legal doctrines to disputes involving anthropomorphized technology. Part III offers a legal solution through either (1)

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18. The viability of these concerns has been the subject of preceding commentary on these virtual assistants, which has come to the conclusion that the Fourth Amendment provides little, if any, protection against the government's ability to access the recordings stored by companies like Amazon due to the third-party doctrine's likely applicability. *See If These Walls Could Talk*, *supra* note 12, at 1945; *cf.* Christopher Landau & Sopan Joshi, *Looking Ahead: October Term 2017*, 2017 CATO SUP. CT. REV. 253, 275–76 ("As technology becomes ever more pervasive, the third-party doctrine will allow ever more data to be collected without a warrant on the ground that we have 'voluntarily' provided the data to our service providers.").

19. Friederike Eyssel et al., *Activating Elicited Agent Knowledge: How Robot and User Features Shape the Perception of Social Robots*, IEEE RO-MAN: 21ST INT'L SYMP. ROBOT & HUM. INTERACTIVE COMM., Sept. 2012, at 851, 851.

20. *See infra* Part I.A.

21. *See* Kahn et al., *supra* note 1, at 159 (discussing that children who interact with anthropomorphic robots tend not to see them either as fully alive or fully inanimate, but somewhere in between); *infra* Part II.B.

22. *See infra* Part II.B.

expanding the definition of "person" to encompass anthropomorphized technology that is the subject of assigned agency or (2) creating a new, objective category of legal distinction altogether. That Part then applies this proposed distinction to existing law and offers suggestions on how courts may use the distinction to facilitate appropriate protections of privacy, such as the creation of a new privilege between the anthropomorphized virtual assistant and its user. Part IV concludes by reemphasizing the need to address these concerns now, rather than allowing the US public to suffer continued privacy violations under precedent that is out of line with the reality of how users interact with and view technology today.

I. BACKGROUND

Smart-home technology represents an interesting nexus of psychology and law, particularly with the incorporation of virtual assistants. The fact that virtual assistants are capable of engaging the user in a conversational manner raises questions about how people truly perceive them.[23] Relevant research suggests that users do not view virtual assistants simply as inanimate devices but rather as something more akin to another person.[24] This is an example of the cognitive process of anthropomorphism—the act of assigning inanimate objects humanlike characteristics.[25] Regardless of how users perceive their relationships with virtual assistants, the nature of the interaction between the technology and its user—specifically, recording and storing communications—likely determines how the government may access these recordings.[26] Under the third-party doctrine, courts would probably view the conveyed, recorded information as wholly lacking any expectation of privacy and thus outside the protections of the Fourth Amendment. Whether the doctrine applies to a given recording would depend on how closely the chosen means of information conveyance and storage resemble case precedents.[27]

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23. Kahn et al., *supra* note 1, at 159 (describing the nondichotomous characterization children have of anthropomorphic robots, that is seeing them neither as wholly animate nor inanimate).

24. *See infra* Part I.A.

25. Nicholas Epley et al., *On Seeing Human: A Three-Factor Theory of Anthropomorphism*, 114 PSYCHOL. REV. 864, 864–65 (2007).

26. *See infra* Part II.C (discussing how the third-party doctrine is the most likely applicable legal doctrine regarding recordings stored by smart-home technology purveyors).

27. *See infra* Part I.B.

A. Anthropomorphism and Attributions of Agency

According to psychologists, "[i]mbuing the imagined or real behavior of nonhuman agents with humanlike characteristics, motivations, *intentions*, and emotions is the essence of anthropomorphism."[28] It "represents a process of inductive inference about nonhuman agents . . . [comprised of] basic cognitive operations includ[ing] the acquisition of knowledge, the activation or elicitation of stored knowledge, and the application of activated knowledge to a given target."[29] The action of assigning agency to a nonhuman agent—that is, believing that the agent acts with intentions—is a process that falls within the realm of anthropomorphism.[30]

The way humans assign agency to nonhumans is an area of research that recently has received significant attention.[31] Scholars present several theories about the ways humans perform this cognitive function in the field of robotics—namely, the promiscuous agency account, the selective agency account, and the transition model.[32] The promiscuous agency account and the selective agency account are oppositional theories—both of which are supported by underlying research—that disagree on whether humans innately assign agency or instead require significant alterations in cognitive beliefs before doing so.[33] Levin et al. recently developed the transition

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28. Epley et al., *supra* note 25, at 864–65 (emphasis added).

29. *Id.* at 865.

30. Christopher Brett Jaeger & Daniel T. Levin, *If Asimo Thinks, Does Roomba Feel? The Legal Implications of Attributing Agency to Technology*, 5 J. HUM.–ROBOT INTERACTION 3, 4 n.1 (2016) ("[U]se [of] the phrase 'attributions of agency' . . . refer[s] to attributions of *human-like* agency, or anthropomorphic attributions." (emphasis in original)).

31. *See generally* Alan M. Leslie, Ori Friedman & Tim P. German, *Core Mechanisms in 'Theory of Mind'*, 8 TRENDS COGNITIVE SCI. 528 (2004). This research has its beginnings grounded in research on "Theory of Mind," which focuses on finding explanations for how humans attribute thoughts and goals to other humans and organic beings, form their mental processes, and how these mental processes translate into behaviors. *See id.* at 528 (citing David Premack & Guy Woodruff, *Does the Chimpanzee Have a Theory of Mind?*, 4 BEHAV. & BRAIN SCI. 515 (1978)). Applications of Theory of Mind to robots began decades ago but focused on the accuracy of anthropomorphic attributions to nonhuman agents rather than seeking an answer as to why this phenomenon occurs. It was Epley et al. who were one of the first, if not the first, to attempt to actually explain the psychological mechanisms that were the basis of anthropomorphizing nonhuman agents rather than continuing the trend of merely measuring accuracy or frequency of such attributions. Epley et al., *supra* note 25, at 865. This research became both the bedrock of and preeminent work from which study of the processes of anthropomorphism of robotic agents began. *See* Jaeger & Levin, *supra* note 30, at 7.

32. The names for these theories are adopted from the work of Jaeger and Levin. *See* Jaeger & Levin, *supra* note 30, at 4.

33. *See id.* at 6–9 (discussing the underlying research for both theories). *Compare* Epley et al., *supra* note 25, at 868 (arguing that assignment of agency is an automatic process in which humans engage), *with* Daniel T. Levin et al., *Tests of Concepts About Different Kinds of Minds:*

model in an attempt to tie the discrepancies of these two accounts together.[34] The transition model does this by expounding upon what Jaeger and Levin term first-line processing and second-line conceptualization.[35] First-line processing seeks to explain what factors lead individuals to be more or less likely to make initial assignments of agency,[36] whereas second-line conceptualization attempts to explain when attributions of agency will apply more broadly on a categorical basis as opposed to an individual one.[37] The transition model ties these processes together through its "transitional elements," which seek to identify when an individual will transition from first-line processing to second-line conceptualization.[38] In terms of the model, this means that the individual transitions from assigning agency to the particular nonhuman agent before him or her to making such assignments to a wider array of nonhuman agents beyond those being currently observed.[39] Regardless of which theory is a true and accurate representation of how people assign agency to inanimate objects, the research consistently demonstrates that the phenomenon exists and has the potential to greatly affect the way humans interact with technology.[40] To fully understand how and why the assignment of agency will have such a profound impact on virtual

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Predictions About the Behavior of Computers, Robots, and People, 28 J. HUM.–ROBOT INTERACTION 161, 187 (2012) (suggesting that assignment of agency is enhanced after a subject puts more thought into a robot's apparent goal orientation).

34. Daniel T. Levin et al., *A Transition Model for Cognitions About Agency*, *in* 8TH ACM/IEEE INTERNATIONAL CONFERENCE ON HUMAN-ROBOT INTERACTION 373, 376–78 (2013).

35. *See* Jaeger & Levin, *supra* note 30, at 11–14. The researchers who developed the transition model also used the terms "first-line default reasoning" and "first-line defaults" to refer to the first element of the model. *See* Levin et al., *supra* note 34, at 377. The difference is immaterial to applying the theory; thus, this Note uses the terms from the most recent research for simplicity's sake.

36. Levin et al., *supra* note 34, at 377. The processes within this first-line category are the researchers' attempt to reconcile the discrepancies between the promiscuous and selective agency accounts in terms of initial attributions of agency. Rather than asserting that such attributions are innate (promiscuous account) or require a specific trigger (selective account), they posit that certain factors make individuals either more likely to automatically assign agency or more likely to avoid making such assignments. *Id.* at 376–78. Essentially, the transition model asserts an individualistic framework for assignment of agency rather than the broad, humanity-wide assertions of the promiscuous and selective agency accounts. Jaeger & Levin, *supra* note 30, at 10–11 ("Neither account needs to provide a universal explanation of attributions of agency. Rather, it may be that each account accurately describes the process of attribution in distinct contexts . . . .").

37. *See* Jaeger & Levin, *supra* note 30, at 12.

38. *Id.* at 11–13.

39. *See infra* Part I.A.3.

40. *See* Epley et al., *supra* note 25, at 865; Levin et al., *supra* note 33, at 187; *infra* Part I.A.3.

assistants like Alexa, it is necessary to fully explain each theory and the underlying mental processes that support each of them.

1. Promiscuous Agency Account

The preeminent theory about the assignment of agency to nonhuman beings—robots or other forms of technology—is the promiscuous agency account, as developed by Epley et al.[41] This theory proposes that humans have an innate knowledge of themselves as beings that leads to their understanding of what it means to be goal oriented.[42] They then apply this knowledge to all other beings that appear to be goal oriented.[43] This self-knowledge encompasses what the individual knows of human characteristics and is the basis for his or her understanding of what it means to be human.[44] In terms of anthropomorphism, this "self-knowledge . . . functions as the known and often readily accessible base for induction about the properties of unknown agents."[45] In other words, humans believe new agents think the same way they do because they only experience their own individualized thought processes.[46] Humans recognize other humans and organic beings as having the agency to make decisions by observing the characteristics that conform to the self-understanding of being a goal-oriented being.[47] The promiscuous account posits that the same attribution of agency humans apply to other organic agents applies automatically to nonhuman agents that exhibit similar behaviors.[48] Scholars consider this a misattribution of agency because the robot, in fact, does not act of its own accord and therefore is not a

41. Jaeger & Levin, *supra* note 30, at 7; *see* Epley et al., *supra* note 25, at 865.

42. Jaeger & Levin, *supra* note 30, at 7.

43. *See* Epley et al., *supra* note 25, at 865.

44. *Id.*

45. *Id.* at 866; *see also* Eyssel et al., *supra* note 19, at 852 ("[P]eople are likely to anthropomorphize an unfamiliar entity because knowledge structures related either to themselves or the broader category of 'humans' becomes activated and accessible. These schemata, in turn, guide subsequent information processing and agent-related judgments.").

46. *See* Epley et al., *supra* note 25, at 865.

47. Epley et al. explain that the innate knowledge described above frequently results in anthropomorphism for three basic reasons: (1) "simple physical constraints mean that humans have direct and immediate access to the phenomenological experience of being a human but do not have such immediate access to the phenomenological experience of any nonhuman agent"; (2) "watching another agent's action appears to activate a phenomenological experience directly consistent with the agent's action, providing a default that is likely to guide subsequent reasoning about that agent"; and (3) "newborn infants are notorious in their need for intensive care giving . . . by other humans[,] . . . [making] [t]he social life of infants . . . dominated by exposure to and contact with other humans." *Id.* at 868.

48. *Id.*

goal-oriented being.[49] These misattributions of agency are not without limitations. Scholars point out three categories of knowledge that will help individuals correct such misattributions: elicited agent knowledge, effectance, and sociality.[50]

Elicited agent knowledge refers to "knowledge about relevant nonhuman agents."[51] According to Jaeger and Levin, for example, "if you . . . interact[] with a robot . . . [while] hav[ing] substantial knowledge about how robots operate[,] . . . you are more likely to correct your bias toward anthropomorphism."[52] One gains this knowledge by acquiring an understanding of how nonhuman agents work.[53] The better the understanding of the underlying processes of the nonhuman agent, the more likely the individual will be able to correct his or her misattributions of agency.[54] Epley et al. explain that "as knowledge about nonhuman agents is acquired, however, knowledge about humans or the self should be less likely to be used as a basis for induction simply because of the coactivation . . . of alternate knowledge structures at the time of judgment."[55] In other words, as an individual gains more knowledge about the nonhuman agent, he or she will be less likely to rely on self-knowledge to explain how and why the agent is behaving in the perceived way. Thus, the degree of availability of this knowledge to the individual correlates directly to its effect on attribution of agency.[56]

Effectance and sociality are motivational mechanisms that theoretically work in concert with elicited agent knowledge to affect the automatic assignment of agency.[57] Effectance is "the need to interact effectively with one's environment."[58] Scholars also describe

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49. Karolina Zawieska et al., *Understanding Anthropomorphisation in Social Robotics*, POMIARY AUTOMATYKA ROBOTYKA, Nov. 2012, at 78, 79 ("To project human characteristics onto robots means to attribute qualities that robots *do not have* (to make attributions which are not only unproven but also unlikely, i.e. to misattribute human traits)." (emphasis in original) (citation omitted)).

50. *See* Epley et al., *supra* note 25, at 866; Zawieska et al., *supra* note 49, at 78.

51. Jaeger & Levin, *supra* note 30, at 7.

52. *Id.*

53. Epley et al., *supra* note 25, at 866.

54. *See id.*; *see also* Eyssel et al., *supra* note 19, at 852 (changing the voice of a social robot between male and female—an act of eliciting specific agent knowledge—to have perceivable effects on participants' perceptions of competence and compassion of said robot).

55. Epley et al., *supra* note 25, at 866.

56. *See id.* ("[A]ctivation of alternate knowledge structures will then influence the application of accessible knowledge to a given target either through a process of correction to incorporate competing knowledge or through an integration of accessible knowledge . . . .").

57. *See id.*

58. *Id.* (citations omitted); *see also* Adam Waytz et al., *Making Sense by Making Sentient: Effectance Motivation Increases Anthropomorphism*, 99 J. PERSONALITY & SOC.

effectance as "motivation to . . . reduce uncertainty about[] one's environment and in one's interactions with other agents in it."[59] In terms of anthropomorphism, effectance refers to the attempt by humans to explain the actions they see nonhuman agents performing.[60] As Jaeger and Levin analogize, "if you encounter a machine that is particularly unpredictable or particularly threatening, you will be less likely to correct your bias toward anthropomorphism."[61] This would lead one to be "more likely to anthropomorphize the machine."[62] Thus, one would find it easier to correct misattributions of agency "if the machine [was] predictable or non-threatening."[63] In sum, predictable agents are easier to stop anthropomorphizing, whereas unpredictable agents are more challenging.

Sociality "describes the need and desire to establish social connections with other humans."[64] The action of assigning agency as an aspect of "[a]nthropomorphism may operate as an attempt to satisfy this [desire] by representing nonhuman agents as sources of humanlike social connection."[65] Research has demonstrated that "experimentally inducing loneliness increases belief in commonly anthropomorphized supernatural agents (e.g., God) and leads people to describe their pets as more humanlike."[66] Applied in this context, sociality posits that people with fewer social connections are more likely to make attributions of agency; conversely, a strong social network makes attributions less likely or more easily correctable.[67]

2. Selective Agency Account

Researchers developed the selective agency account after noticing underlying research about attributions of agency that not only failed to support but directly contradicted the promiscuous agency account.[68] Specifically, research shows that humans "draw

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PSYCHOL. 410, 412 (2010) (defining effectance as "the basic motivation to be an effective and competent social agent . . . ." (citations omitted)).

59. Jaeger & Levin, *supra* note 30, at 7.

60. Epley et al., *supra* note 25, at 866.

61. Jaeger & Levin, *supra* note 30, at 7.

62. *Id.*

63. *Id.*

64. Epley et al., *supra* note 25, at 866.

65. Waytz et al., *supra* note 58, at 412.

66. *Id.* (citation omitted).

67. *See id.*; *see also* Epley et al., *supra* note 25, at 866.

68. Jaeger and Levin describe two sets of conflicting findings as to whether adults strongly distinguish between computers and people in terms of their ability to act deliberately.

sharp distinctions between living and nonliving agents."[69] In contrast, the promiscuous agency account's presumption of applying self-knowledge to nonhuman agents is premised on the idea that such sharp distinctions are *not* drawn.[70] As such, researchers concluded that rather than assigning agency in a promiscuous manner, there are instances where the individual will *selectively* assign agency instead.[71] To reach these conclusions, the researchers conducted several experiments discussed below.

In one set of experiments, researchers placed participants into groups where either a human or robot-computer actor would pick up various objects on a grid.[72] They told participants that in trials one and two of a three-trial sequence, the actor picked up a specific object—a duck—from the same spot within a grid.[73] During the third trial, however, the researchers switched the duck to another spot on the grid while placing a new object in the duck's old position on the grid.[74] They then asked participants whether they believed the actor would pick up the duck or pick up the new object that now occupied the duck's previous position.[75] The researchers noted that "participants consistently made significantly fewer 'intentional' predictions . . . for the [robot-]computer than for the human."[76] In the context of this experiment, a prediction that the robot would act with intention would be to predict that the robot would pick up the duck rather than the new object.[77] Rather than automatically assuming that the robot acted in an intentional way—an outcome that the promiscuous agency account would predict—the participants were reluctant to assign agency to the robot.[78]

See Jaeger & Levin, *supra* note 30, at 8–10; *see also id.* at 10 ("[T]his pattern of findings supports precisely the opposite of the promiscuous agency account . . . .").

69. *See id.* at 8 (citations omitted).

70. *See id.* at 7; *see also* Epley et al., *supra* note 25, at 868 (describing what is believed to be a natural inclination to apply Theory of Mind to nonhuman agents simply because they behave similarly to the observing human).

71. *See* Jaeger & Levin, *supra* note 30, at 10.

72. *See id.* at 8.

73. *See id.*

74. *See id.* at 8 fig.1.

75. *See id.* at 8.

76. *Id.* (citation omitted).

77. *See* Daniel T. Levin et al., *Concepts About the Capabilities of Computers and Robots: A Test of the Scope of Adults' Theory of Mind*, *in* 3RD ACM/IEEE INTERNATIONAL CONFERENCE ON HUMAN-ROBOT INTERACTION 57, 58 (2008) ("[I]f subjects are treating the behavior in a goal-directed fashion, they should predict that the entity will retain the same goal on the third trial, and pick up the duck again.").

78. *See* Jaeger & Levin, *supra* note 30, at 8.

Another experiment focused on the necessary manipulations that would elicit an assignment of agency to a nonhuman agent. The experimental manipulations were the researchers' active and overt attempts to force an attribution of agency from the test subject.[79] Levin et al. showed participants recordings of a robot named "OSCAR" interacting with humans by letting them cross the street in front of "him" and then asked the participants specifically to remember OSCAR's "preferences" when selecting certain items.[80] The researchers found that both of these manipulations were necessary to induce assignment of agency as either individually failed to do so.[81] They concluded that these results demonstrated humans are reluctant to assign agency to nonhuman objects, which directly conflicts with the promiscuous agency account.[82] The study further noted that assignment of agency is actually more likely to occur after repeated interactions with a robot rather than upon the initial interaction.[83]

3. Transition Model

The seemingly contradictory conclusions that the promiscuous and selective agency accounts posit may not be evidence that either is wrong but rather that factors outside of those considered in both theories control whether agency is initially attributed to a nonhuman agent.[84] This thought led researchers to develop the transition model, which attempts to reconcile both aforementioned theories.[85] This model has three aspects that explain if and when an individual will attribute agency to a nonhuman agent: (1) first-line processing, (2) second-line conceptualization, and (3) the titular transitional

79. Levin et al., *supra* note 77, at 59.

80. *See id.*

81. *See id.*

82. *See id.* at 59, 62–63.

83. Jaeger & Levin, *supra* note 30, at 10 ("[R]epeatedly viewing a robot look at one of two objects led participants to attribute more agency to the robot.").

84. *See id.* at 11.

85. *See id.* ("A key empirical observation that the transition model is designed to accommodate is that people sometimes default to promiscuous inductions about agency and then pare back upon further consideration, but they also sometimes start with a selective attributions [sic] and only broaden their attributions after further consideration.").

elements.[86] The first two aspects actually determine whether an assignment of agency will occur.[87]

First-line defaults and processes include four elements—theorized to balance against each other—which lead to either an initial attribution of agency or not. These four elements are (1) perceptual detection and classification, (2) basic agency and reference, (3) first-line knowledge activation, and (4) local givens.[88] Perceptual detection and classification refers to how an individual views a nonhuman agent: if the agent has an outward appearance that causes the observer to associate it with an organic agent, this factor will balance in favor of an initial attribution of agency.[89] Basic agency and reference refers to an individual's ability to detect "self-initiated behavior, movement patterns, and anthropomorphic physical features such as faces and eyes."[90] Naturally, nonhuman agents that exhibit more of these anthropomorphic features will more easily be anthropomorphized initially. First-line knowledge activation encompasses the initial cognitive responses to agents, including the basic heuristics humans use to determine how the observed agent thinks.[91] Lastly, local givens are the context-providing settings and details that can affect behavior predictions.[92]

Second-line conceptualizations allow individuals to reform a previously held belief they feel the need to correct by appealing to deep principles, modifications of classification, entailments, domain theory, or reconceptualization of defaults.[93] When an individual

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86. The term "transitional elements" is adopted to simplify discussing the means by which researchers have studied the ways that transitions from first-line processing to second-line conceptualizations occur, which the researchers have described as either cognitive dissonance or the availability/accessibility of second-line concepts or deep concept availability. *See* Jaeger & Levin, *supra* note 30, at 11; Levin et al., *supra* note 34, at 377.

87. Daniel T. Levin, Megan M. Saylor & Simon D. Lynn, *Distinguishing First-Line Defaults and Second-Line Conceptualization in Reasoning About Humans, Robots, and Computers*, 70 INT'L J. HUM.-COMPUTER STUD. 527, 529 (2012) ("The idea of two modes of reasoning is a generalization of models of [Theory of Mind] which specify an initial, automatic agency-detection/belief inference stage of processing, and a later, controlled conceptual stage that does the more difficult job of tracking situations where belief and the world do not align." (citations omitted)).

88. *See* Levin et al., *supra* note 34, at 377 & fig.2.

89. Jaeger & Levin, *supra* note 30, at 12.

90. *See* Levin et al., *supra* note 34, at 377.

91. *See id.* ("First-line knowledge activation is meant to encompass the initial cognitive responses to agents. This includes basic heuristics about the kind of thinking an agent typically engages in . . . and the results of default problem-solving strategies.").

92. *See id.* ("[L]ocal givens constitute details and contingencies about the current setting that enter into behavior predictions.").

93. *See id.* & fig.2. Jaeger and Levin explain that deep principles are such things as "abstract formal relationships that hold across many situations . . . . [T]his can be seen as

undergoes a second-line conceptualization, he or she makes some kind of generalization to agents beyond the specific robot or technology observed.[94] One's ability to produce these generalizations affects the likelihood one will assign agency to robots that are similar to the robot inducing such a transition.[95]

A transitional element usually triggers a move from first-line to second-line processes.[96] The two primary transitional elements identified in relevant research are cognitive dissonance and the availability or accessibility of second-line concepts.[97] Cognitive dissonance occurs when an individual's observations do not conform to the individual's previously held belief.[98] The ability to react to cognitive dissonance by shifting one's cognitive framework leads to second-line conceptualizations, particularly a reconceptualization of previously held default beliefs.[99] This is the means by which the transition model incorporates elements of both the promiscuous and the selective agency accounts.[100] It accommodates both individuals who initially assign agency and then undergo a cognitive process to correct it, as in the promiscuous agency account, and individuals initially reluctant to assign agency but who undergo a cognitive upheaval to begin assigning agency, as predicted by the selective agency account.[101] Courts have yet to consider this process in determining applicable legal doctrines to machines and instead focus on their functionality. In the case of Alexa, this functionality is to convey to Amazon information contained within its users' requests and demands, after which Amazon stores that information.[102]

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processing the schematic structure of a problem as opposed to its surface structure." Jaeger & Levin, *supra* note 30, at 12. Modifications of classifications "reflect[] the collections of ways in which a working-memory representation of an agent can be modified[,] . . . involv[ing] changes to the classification of an agent . . . or changes to the entailments of the classification." *Id.* at 12. Further, domain theory "propose[s] that individuals acquire moral concepts about fairness, others' welfare, and rights . . . beginning in early childhood, and this knowledge develops during childhood and adolescence." 5 INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL SCIENCES 279 (William A. Darity, Jr. ed., 2d ed. 2008).

94. *See* Levin et al., *supra* note 34, at 377.

95. *See* Jaeger & Levin, *supra* note 30, at 18.

96. *See* Levin et al., *supra* note 34, at 377.

97. *See id.* at 378.

98. *See id.* at 377.

99. *See* Jaeger & Levin, *supra* note 30, at 13.

100. *See id.* at 11.

101. *See id.* at 7, 10.

102. Baguley & McDonald, *supra* note 7.

B. Legal Doctrines Currently Applied to Information Voluntarily Conveyed to Third Parties

When the government attempts to obtain something from an individual—whether that something is tangible or intangible—the government's action is most often considered a seizure that triggers Fourth Amendment analysis.[103] When the information sought by the government is transferred from the suspect party to a third party, courts often apply a doctrine of Fourth Amendment analysis known as the third-party doctrine. The Supreme Court developed the doctrine, which is grounded in the "reasonable expectation of privacy" test first introduced by Justice Harlan in his concurrence in *Katz v. United States*,[104] through two cases: *United States v. Miller*[105] and *Smith v. Maryland*.[106] In short, the third-party doctrine states "that a person has no legitimate expectation of privacy in information he voluntarily turns over to third parties."[107]

With respect to the third-party doctrine analysis, the *Smith* Court considered whether collecting incriminating phone records absent a warrant violated the Fourth Amendment.[108] In determining what, if any, expectation of privacy the defendant had, the Court stated it "doubt[ed] that people in general entertain any actual expectation of privacy in the numbers they dial."[109] Expounding further, the Court stated, "[a]ll telephone users realize that they must 'convey' phone numbers to the telephone company, since it is through telephone company switching equipment that their calls are completed."[110] Thus, the Court determined that the "voluntariness" prong of the third-party doctrine was satisfied because of the assumption that individuals are generally aware that third parties keep their records and yet continue to convey information to them despite this assumed knowledge.[111] The assumptions being made by the Court confirm that actual, subjective knowledge about the

103. *See* Katz v. United States, 389 U.S. 347, 353 (1967) ("[W]e have expressly held that the Fourth Amendment governs not only the seizure of tangible items, but extends as well to the recording of oral statements.").

104. *Id.* at 361 (Harlan, J., concurring); *see* Smith v. Maryland, 442 U.S. 735, 740 (1979).

105. United States v. Miller, 425 U.S. 435 (1976).

106. *Smith*, 442 U.S. at 735.

107. *Id.* at 743–44.

108. *See id.* at 737. Police officers obtained these records after the phone company installed a pen register—which "is a mechanical device that records the numbers dialed on a telephone"—at their request. *Id.* at 737 & n.1 (internal quotations omitted).

109. *Id.* at 742.

110. *Id.*

111. *Id.* at 743.

possibility of disclosure is not required by the party whose records are sought.[112]

In cases beyond *Smith*, courts applied the doctrine to "(1) bank records, (2) credit card statements, (3) kilowatt consumption from electric utility records, (4) motel registration records, (5) cell phone records, and (6) employment records."[113] Continued application of the third-party doctrine created a binary distinction through which information is categorized as either wholly private and secret or completely disclosed to the entire world.[114] Some argue that this binary implementation is an inappropriate anachronism in a technologically advancing society.[115] Currently, one Justice on the Supreme Court seems to echo this sentiment: Justice Sotomayor wrote in her concurrence in *United States v. Jones* that "it may be necessary to reconsider the premise that an individual has no reasonable expectation of privacy in information voluntarily disclosed to third parties."[116]

At the time of this writing, the Supreme Court is considering a potentially impactful case, *Carpenter v. United States*.[117] This case presents the possibility of limiting the expansive and binary nature of the third-party doctrine.[118] Several amici curiae argue that the third-party doctrine should either be wholly eliminated or limited in application to the information at issue in a specific case.[119] Each amicus brief relies in some part upon Justice Sotomayor's concurrence in *Jones*, questioning the doctrine's continued applicability in the digital age.[120] Should Justice Sotomayor—the sole member of the

112. *Id.* ("Although subjective expectations cannot be scientifically gauged, it is too much to believe that telephone subscribers, under these circumstances, harbor any general expectation that the numbers they dial will remain secret.").

113. United States v. Suarez-Blanca, No. 1:07-CR-0023-MHS/AJB, 2008 WL 4200156, at *8 (N.D. Ga. Apr. 21, 2008) (citations omitted) (collecting cases).

114. *See If These Walls Could Talk*, *supra* note 12, at 1931.

115. *See, e.g.*, *id.* at 1933; Brief for Electronic Frontier Foundation et al. as Amici Curiae Supporting Petitioner at 19, Carpenter v. United States, No. 16-402 (argued Nov. 29, 2017), 2017 WL 4512266, at *19.

116. United States v. Jones, 565 U.S. 400, 417 (2012) (Sotomayor, J., concurring).

117. *See* United States v. Carpenter, 819 F.3d 880 (6th Cir. 2016), *cert. granted*, 137 S. Ct. 2211 (2017). The issue before the Court in this case is specifically related to whether the Fourth Amendment provides protection against the warrantless seizure of historical cellphone records from the cell service provider, which reveal the location and movements of a cellphone user. *See* Brief for Electronic Frontier Foundation et al., *supra* note 115, at 2.

118. *See* Brief for Electronic Frontier Foundation et al., *supra* note 115, at 2.

119. *See* Brief for Data & Society Research Institute et al. as Amici Curiae Supporting Petitioner at 6–9, Carpenter v. United States, No. 16-402 (argued Nov. 29, 2017), 2017 WL 3530957, at *6–9; Brief for Electronic Frontier Foundation et al., *supra* note 115, at 3.

120. Brief for Data & Society Research Institute et al., *supra* note 119, at 7; Brief for Electronic Frontier Foundation et al., *supra* note 115, at 19.

Court to openly express her view that the doctrine is an anachronism—be able to convince more members of the Court to join her, it could spell the end of the third-party doctrine, but the fate of the doctrine remains to be seen.[121]

II. ANALYSIS

The incorporation of virtual assistants makes smart-home technology more susceptible to an assignment of agency than ever. Because there is now an actual humanlike interaction with the virtual assistant,[122] application of the agency assignment theories leads to the conclusion that users perceive such virtual assistants as exhibiting agency.[123] Smart-home technology is rapidly evolving as companies continue working on improvements to make virtual assistants more lifelike.[124] As such, it is appropriate to examine what effects this technological advancement will have and what form it will likely take.[125]

There are two primary factors that will likely lead to even more assignment of agency to virtual assistant technology: (1) advancements in AI and (2) the effect that exposure to virtual assistants has on a child's perceptions of technology.[126] A compounding factor is that the prevalence of such technology carries clear implications for privacy considerations within the home.[127] Thus, it is appropriate to discuss what legal doctrines will have the most impact on the recordings created and stored by virtual assistants and how easily the government can access them.

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121. While the Court has changed composition slightly since *Jones* was decided—Justice Scalia, the author of the *Jones* opinion, has been replaced by Justice Neil Gorsuch—it seems unlikely that this will provide any difference in opinion because Justice Gorsuch has shown a willingness to abide by the third-party doctrine. *See* Kerns v. Bader, 663 F.3d 1173, 1184–85 (10th Cir. 2011) (noting that the existence of debate about the applicability of the third-party doctrine to medical records was all that was necessary to conclude that law enforcement seeking such records without a warrant did not clearly violate the law).

122. Rory Carroll, *Goodbye Privacy, Hello 'Alexa': Amazon Echo, the Home Robot Who Hears It All*, GUARDIAN (Nov. 21, 2015, 7:07 AM), https://www.theguardian.com/technology/2015/nov/21/amazon-echo-alexa-home-robot-privacy-cloud [https://perma.cc/FKC9-EPAR].

123. *See supra* Part I.A.

124. *See* Ben Fox Rubin, *Alexa, Be More Human: Inside Amazon's Effort to Make Its Voice Assistant Smarter, Chattier and More Like You*, CNET (Aug. 29, 2017), https://www.cnet.com/html/feature/amazon-alexa-echo-inside-look/ [https://perma.cc/ZV53-CAA7].

125. *See infra* Part II.B.

126. *See infra* Part II.B.

127. *See* Jaeger & Levin, *supra* note 30, at 15.

A. Anthropomorphism Applied to the Virtual Assistants Incorporated in Smart-Home Technology

An initial question is whether the agency assignment and anthropomorphism research discussed above can be appropriately applied to the virtual assistants accompanying smart-home technology. While current anthropomorphism and agency assignment research has focused primarily on robots,[128] its application extends beyond robotics because the literature specifically refers to the broader category of *nonhuman agents*.[129] Alexa and other virtual assistants fall within this category of nonhuman agents because they exhibit conversational capacity, which is a humanlike characteristic.[130] The ability to hold a conversation, or at least respond lucidly with a voice to a request, is one of the clearest examples of a humanlike characteristic that can invoke anthropomorphism.[131] Thus, it is appropriate to analyze how virtual assistants will be subjected to assigned agency under the theories this Note examines.[132]

As discussed above, the promiscuous agency account almost certainly indicates that users assign agency to virtual assistants.[133] The theory assumes that humans will naturally assign agency to a virtual assistant like Alexa due to its humanlike characteristics and would have to acquire specific knowledge to correct that assumption.[134] For elicited agent knowledge to decrease the likelihood of an assignment of agency, the user must obtain specific knowledge about the virtual assistant's underlying hardware or software.[135] This is unlikely, as the complexity of both the hardware and software

128. Levin et al., *supra* note 77, at 57 ("Previous research has explored how subjects attribute specific knowledge to intelligent artifacts such as robots, and how people are more likely to interact with robots that produce social cues." (footnotes omitted)).

129. *See, e.g.*, Epley et al., *supra* note 25, at 895 ("These nonhuman agents may include anything that acts with apparent independence, including nonhuman animals, natural forces, religious deities, and *mechanical or electronic devices*." (emphasis added)).

130. Zawieska et al., *supra* note 49, at 78 ("[A]nthropomorphisation in social robotics is usually understood as the human tendency to perceive robots as humanlike in response to visual, *audio* and/or tactile stimuli provided by robots." (emphasis added)).

131. *See* James R. Hurford, *Human Uniqueness, Learned Symbols and Recursive Thought*, 12 EUR. REV. 551, 552–53 (2004).

132. *See supra* Part I.A.

133. *See supra* Part I.A.1.

134. *See supra* Part I.A.1.

135. *See* Jaeger & Levin, *supra* note 30, at 7 ("[I]f you are interacting with a robot, and you happen to have substantial knowledge about how robots operate[,] . . . you are more likely to correct your bias toward anthropomorphism.").

continues to increase as innovators implement new technology.[136] A major factor here is whether the agent appears human enough to trigger an assignment of the user's underlying self-knowledge—the fundamental premise of the promiscuous agency account.[137] This is less important, however, when the user's underlying knowledge about the agent is insufficient to correct for anthropomorphism.[138] The fact that these virtual assistants respond with a humanlike voice may help prevent triggering agency knowledge that would be expected to maintain the misattribution of agency through continual invocation of the user's self-knowledge.[139] Effectance is likely to weigh against attributions of agency, however, because the virtual assistant responds in a particular way to requests by design. This predictability leads to corrections of misattribution,[140] but a sufficient number of random or alternative responses might be enough to counter such corrections. Sociality will be very difficult to apply to virtual assistant technology; even if it were easily applied, its effect would be incredibly individualistic. As individuals grow increasingly accustomed to online interactions, they may be more willing to accept the interactions between themselves and responsive robots as social interactions. As such, individuals may begin to seek out social interaction from these social robots, thus becoming more likely to assign agency to such forms of technology.

The selective agency account, while not suggesting automatic assignment of agency to virtual assistants, would likely still conclude that people assign agency to smart-home technology. According to the selective agency account, the key feature affecting whether one assigns agency to a robot is the sufficiency of the manipulation to assign agency.[141] Circumstances that manipulate one to assign agency include viewing the robot behaving in a way that humans behave—such as crossing the street and stopping to allow others to pass in front of it—and receiving instructions to remember the robot's apparent cognitive choices.[142] Despite being unable to physically

136. *See* Baguley & McDonald, *supra* note 7.

137. *See* Epley et al., *supra* note 25, at 869.

138. *See id.* at 878 ("[O]ur account . . . predicts that those without sufficient time or cognitive resources to engage in effortful correction will show stronger evidence of anthropomorphism than those given more time or ability to engage in more effortful thought.").

139. *See id.*

140. *Cf.* Jaeger & Levin, *supra* note 30, at 7 ("[T]he 'promiscuous agency account' . . . posits that, when confronted with an unknown or *unpredictable* stimulus, people default to anthropomorphizing it." (emphasis added)).

141. *See id.* at 9.

142. *See id.* (noting that participants made predications of robots having intentional behaviors when they were asked specifically to remember the objects that the robot "preferred").

perform any actions, both of these manipulations can be present in virtual assistants through specific wording in the instructions packaged with the technology and continuous exposure to humanlike responses, as explained below.

While it would be impossible for Alexa to walk across the street or behave in some outwardly visible, humanlike way, its interactions with users may be sufficient to elicit humanoid quality determinations. Alexa responds in a way that an individual could interpret as facilitating conversation—a distinctly human quality.[143] The ability to have a conversation with Alexa may have an incredibly powerful manipulating effect.

One could analogize a conversation with Alexa to a traditional phone conversation. While a technological device—either Alexa's accompanying hardware, the Amazon Echo, or a phone—is clearly separating the parties and facilitating their ability to converse, the user is not limited to assigning agency only to the hardware in front of him or her.[144] Rather, in both instances the hardware—the Echo and the phone—is only a means to communicate with the subject to which the individual actually assigns agency. Agency is attributed to the person on the other end of the phone, while the phone facilitates the communication. Similarly, agency is attributed to Alexa itself, while the Echo device merely transmits the communication.

Specific manipulation could also arise from being told to treat Alexa as a person rather than a robot. The instructions that accompanying the Amazon Echo may provide sufficient manipulation if they instruct users to interact with Alexa as if it were a person[145] in order to make the technology most effective. This instruction, in conjunction with the conversational way that interactions occur with Alexa, may be sufficiently similar to the manipulation exemplified in the research described by Jaeger and Levin above.[146] Research demonstrated that such manipulation was sufficient to elicit

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143. *See* Hurford, *supra* note 131, at 152; *see also* Carroll, *supra* note 122 (describing his personal experience of having an instinctual desire to placate Alexa when he perceived to have offended her).

144. Anthropomorphism and assignment of agency attach to nonhuman agents that exhibit humanlike characteristics as explained above. *See supra* Part I.A. In this context, it is not the hardware itself but rather the individual on the other end of the phone call who exhibits "humanlike" characteristics. In regard to the Echo, it is Alexa, the virtual assistant, that is exhibiting the humanlike characteristics, rather than the hardware itself.

145. *See Meet Alexa*, AMAZON, https://www.amazon.com/meet-alexa/b?ie=UTF8&node=16067214011 [https://perma.cc/WR4S-8JM5] (last visited Mar. 19, 2018). Amazon's own website introducing Alexa invites viewers of the webpage to "meet Alexa" and details various skills that Alexa can do or learn. *Id.*

146. *See* Jaeger & Levin, *supra* note 30, at 11.

assignment of agency among participants; thus, those subjected to the priming described above would likely assign Alexa agency as well.[147]

Further, researchers advocating for the selective agency account note that when humans repeatedly view a robot behaving in a goal-oriented way, they attribute agency to that robot at a higher rate.[148] Thus, repeatedly engaging with Alexa, as would likely happen naturally over time, may be sufficient to establish the assignment of agency.

Since both the promiscuous and selective agency accounts would likely be individually sufficient to elicit assignment of agency for Alexa, the transition model also supports the conclusion that Alexa will be the subject of agency assignment.[149] The communications Alexa requires of its users likely satisfy the perceptual first-line processing of the model. Users must speak and make requests as if they are talking to another person. Indeed, users engage Alexa by saying its name, thus facilitating the perception of a conversation with an intelligent being rather than a simple request to a robot.[150] Further, the transition model literature specifically uses this kind of interaction to exemplify what could lead to a first-line Theory of Mind default cognition that would attribute agency to such technology.[151] Notably, first-line processing would result in assignment of agency on a limited scale applicable only to the robot in front of the individual. However, there are similar transitional functions available that could lead to second-line processes allowing for broader assignment of agency.[152] One such transitional function is the "deep concept availability,"[153] which is similar to the manipulation examples explained above in regard to the selective agency account.[154]

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147. *See id.*

148. *See id.* at 10.

149. *See id.* at 11.

150. *See* Baguley & McDonald, *supra* note 7.

151. *See* Jaeger & Levin, *supra* note 30, at 12 ("[C]arrying on a conversation about politics with a computer will likely invite more first-line attributions of agency than would typing a paper in Word on the same computer.").

152. Levin et al., *supra* note 34, at 377.

153. Levin et al. describe deep concept availability as

> the current availability of the second-line concepts [that] facilitate transitions. This idea is based both on Epley et al.'s idea of elicited agent knowledge and on developmental research demonstrating that inductions based on the broad living-nonliving distinction . . . require that children be reminded of the status of specific things as living or nonliving.

Id. at 378 (footnote omitted).

154. *Id.* at 377 fig.2, 378; *see supra* notes 79–81 and accompanying text.

B. A Forward-Looking Approach to Smart-Home Technology and Its Virtual Assistants

Two primary aspects of technological advancement are relevant when considering smart-home technology: (1) the rate at which technology can expand and (2) the increased exposure to this kind of technology at an earlier age in technologically advanced societies.[155] Moore's Law, or the law of exponential growth, illustrates the availability of technological advancement and the timeframe in which that advancement can be expected to occur.[156] While it is impossible to predict with any certainty *when* a specific technological advancement will occur, predictions about the potential effects of advancements may be easier to chart.[157] Advancements in AI stand to make the greatest impact on smart-home technology.[158] While the legal implications of AI exceed the scope of this Note,[159] the near certainty of impending expansive incorporation of AI to improve both the efficiency and user experience of virtual assistants like Alexa makes consideration of these topics even more pertinent.

The most pressing implication of AI advancement is that the attribution of agency to virtual assistants may no longer be considered a misattribution. The law as it now stands is ill-equipped to deal with the possibility that Alexa could achieve true AI—or even sentience[160]—which has already led other researchers to argue for the creation of rights for social robots.[161] As the technology advances and

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155. *See* Jim Taylor, *How Technology Is Changing the Way Children Think and Focus*, PSYCHOL. TODAY (Dec. 4, 2012), https://www.psychologytoday.com/blog/the-power-prime/201212/how-technology-is-changing-the-way-children-think-and-focus [https://perma.cc/QBL6-FBGG].

156. *See* Gordon E. Moore, *Cramming More Components onto Integrated Circuits*, 38 ELECTRONICS 114–15 (1965). *But see* Michael Guihot, Anne F. Matthew & Nicolas P. Suzor, *Nudging Robots: Innovative Solutions to Regulate Artificial Intelligence*, 20 VAND. J. ENT. & TECH. L. 385, 404 n.82 (2017) (discussing research that suggests Moore's predictions about rapid expansion of computing power may finally be at an end).

157. *See* Opinion, *14 Predictions for the Future of Smart Home Technology*, FORBES (Jan. 12, 2018, 9:00 AM), https://www.forbes.com/sites/forbestechcouncil/2018/01/12/14-predictions-for-the-future-of-smart-home-technology/#621a28532e21.

158. *See* Guihot, Matthew & Suzor, *supra* note 156, at 395 (discussing that a broad definition of AI encompasses the personal assistants developed by various companies—which would include Amazon).

159. For an overview of potential regulatory solutions to the burgeoning issue of AI advancement, see *id.* at 418–54.

160. *See Sentient*, NEW OXFORD AMERICAN DICTIONARY (3d ed. 2010) (defining sentience as the ability "to perceive or feel things").

161. For an overview of the arguments in favor, see Kate Darling, *Extending Legal Protection to Social Robots: The Effects of Anthropomorphism, Empathy, and Violent Behavior Towards Robotic Objects*, *in* ROBOT LAW 213 (Ryan Calo et al. eds., 2016). *See also* Kahn et al.,

advanced interactive technologies move beyond being inanimate,[162] it will only become clearer that a gap in the law exists.

Another implication that research has yet to address is how growing up in a world of pervasive smart-home technology affects children's propensity to anthropomorphize and assign agency to such technology. One theory, proffered by Epley et al., assumes a base "human" intelligence that people can innately access and thus use to make intuitions about agency.[163] Other research notes that children are more likely than adults to anthropomorphize or make attributions of agency to technology.[164] Children exposed to this kind of technology at a young age may develop distinct human knowledge that incorporates the existence of smart-home technology by default.[165] Thus, children may be more likely to anthropomorphize and make assignments of agency to technology when they become adults.

C. Results of Steadfast Application of the Third-Party Doctrine to Smart-Home Technology

As noted above, courts apply the third-party doctrine in several situations but have yet to apply the doctrine specifically to smart-home technology with an accompanying virtual assistant.[166] As of September 2017, only one court has faced the possibility of applying this doctrine to Alexa, but prior to its ruling on the matter, the accused—and owner of the Echo in question—consented to turning over the recordings voluntarily, thus mooting the issue.[167] Despite the lack of clear precedent, adoption of the third-party doctrine is likely in this context due to the parallels between Alexa's functionality and the technologies to which the doctrine is already applicable.[168] In Alexa's case, the smart-home technology records user requests made after the

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supra note 1, at 159–60. To the Author's knowledge, however, no such argument for robotic rights has been accepted by any legislature or brought before a court.

162. Kahn et al., *supra* note 1, at 160.

163. Epley et al., *supra* note 25, at 865.

164. Kahn et al., *supra* note 1, at 159–60; *see* Epley et al., *supra* note 25, at 865.

165. This could have a particularly drastic impact on the promiscuous agency account due to its base assumption regarding how the individual views his or her own self-knowledge when being exposed to a new agent. *See* Epley et al., *supra* note 25, at 865.

166. *See supra* Part I.B.

167. McLaughlin, *supra* note 14. *See generally* Stipulation and Consent Order, State v. Bates, No. CR-2016-370-2 (Ark. Cir. Ct. Mar. 6, 2017), https://caseinfo.aoc.arkansas.gov/cconnect/PROD/public/ck_public_qry_doct.cp_dktrpt_frames?backto=P&case_id=04CR-16-370&begin_date=&end_date= [https://perma.cc/FLU6-46R2].

168. *See If These Walls Could Talk*, *supra* note 12, at 1925 ("The doctrine has been used to allow warrantless collection of email records, internet browsing data, and cell phone location history, among others.").

invocation of a wake word—"Alexa"—that the manufacturer of the technology, Amazon, subsequently stores.[169] The contract between the manufacturer and the user is likely sufficient to establish voluntariness, which is a necessary prerequisite for application of the third-party doctrine.[170] As such, applying the doctrine to Alexa's stored recordings would result in the government only needing either a subpoena or consent from the holder of the recordings, Amazon, to access them,[171] neither of which is a very high bar for the government to pass.[172] As such, the next time this question arises and the defendant is unwilling to moot the issue through consent, the third-party doctrine will likely become the applicable legal standard for all recordings of the queries and requests made to Alexa. The third-party doctrine is ultimately an inappropriate legal standard due to technology's rapid pace of innovation coupled with potentially expansive governmental access to intimate communications within the home.

III. SOLUTION

To maintain the paramount level of privacy within the home[173] despite the growing presence of ever-listening virtual assistants, this Note suggests a multipart solution. First, either courts or Congress should adopt some form of legal distinction that treats Alexa as a person as a matter of law. To accomplish this, the Author suggests

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169. Baguley & McDonald, *supra* note 7.

170. In the oral arguments for the *Carpenter* case currently being decided by the Supreme Court this term, Justice Alito specifically referenced a contract between the parties that signified the possibility of certain disclosures as signaling satisfaction of the voluntariness prong of the third-party doctrine. *See* Transcript of Oral Argument at 16–17, Carpenter v. United States, No. 16-402 (argued Nov. 29, 2017).

171. *See* Kerr & Nojeim, *supra* note 15.

172. In *United States v. Nixon*, 418 U.S. 683, 700 (1974), the Supreme Court noted that the requirements for a subpoena to be issued are "(1) relevancy; (2) admissibility; [and] (3) specificity." This is opposed to the more stringent requirements of obtaining a warrant. *See* Akhil Reed Amar, *Fourth Amendment First Principles*, 107 HARV. L. REV. 757, 779 (1994) ("At a minimum . . . a lawful warrant can issue only from one duly authorized, and only if it meets the explicit textual requirements of probable cause, oath, particular description, and so forth.").

173. The Fourth Amendment specifically protects citizens' houses from unreasonable searches and seizures. U.S. CONST. amend. IV; *see also* Payton v. New York, 445 U.S. 573, 585 (1980) ("[T]he [Fourth] Amendment 'reache[s] farther than the concrete form' of the specific cases that gave it birth, and 'appl[ies] to all invasions on the part of the government and its employés of the sanctity of a man's home and the privacies of life.'" (quoting Boyd v. United States, 116 U.S. 616, 630 (1886))); Wyman v. James, 400 U.S. 309, 316–17 (1971) ("[O]ver the years the Court consistently has been most protective of the privacy of the dwelling."); Camara v. Mun. Court, 387 U.S. 523, 530–31 (1967) ("For instance, even the most law-abiding citizen has a very tangible interest in limiting the circumstances under which the sanctity of his home may be broken by official authority.").

either that courts adopt an objective test to determine the categories of technology to which this distinction shall apply or that Congress enact some form of legislation also making use of an objective test. As discussed above, adaptation of the law is becoming a necessity so that the law can both keep up with how society actually views assistants like Alexa and avoid the possibility of continuous application of anachronistic doctrines that do not take into account society's interconnectedness in the modern digital age.[174] Second, this Part posits that the adoption of legal personhood for Alexa is insufficient to offer adequate privacy protections to "her" users because it simply streamlines the Fourth Amendment analysis rather than enhancing it. As such, this Part concludes by suggesting that courts should be willing to create a new privilege between anthropomorphized virtual assistants that are subjected to assignments of agency and their users.

A. Alexa and Other Virtual Assistants Should Be Considered "Persons"

When the legal implications of a technology's impact on one's privacy interests are extreme, as is the case with smart-home technology, "a thorough empirical account of attributions of agency can, and should, play an important role in shaping law and policy about intelligent technologies."[175] Research suggests a steadily growing need for a new ontological category that encompasses personified technology.[176] The premise behind the necessity of this new categorization is that developmental psychology research finds that children do not view "whether an entity is alive . . . [as] a necessary precondition . . . to attribute psychological states such as cognition and emotion to [that entity]."[177] Incorporating agency theory into the law acknowledges the realities of our interactions with technology while simultaneously preventing anachronisms from developing by keeping the law current with further technological innovation. As discussed above, virtual assistants are very likely to be subjected to assignments of agency, which greatly impact how individuals view the technology.[178] Courts and legislatures should consider the legal implications of virtual assistants subjected to agency assignment, because users view such assistants as something

174. *See supra* Part II.

175. Jaeger & Levin, *supra* note 30, at 4.

176. Kahn et al., *supra* note 1, at 159 ("Ontology refers to basic categories of being, and ways of distinguishing them.").

177. *Id.*

178. *See supra* Part II.A.

more than machines.[179] Further, the future advances that might increase the assignment of agency to virtual assistant technology reveal why such a distinction for the technology is needed sooner rather than later.[180]

1. Common Law Reasonable Person Approach

Courts have the capacity to define how to treat virtual assistant technology and should extend the term "person" to certain technologies that are subjected to assignments of agency. By applying research on "personified robots"—robots subjected to anthropomorphism by users—courts can develop an objective standard to distinguish this type of technology from others not necessitating such a distinction.[181] This research suggests that technology should be considered under a new, distinctive category that asks whether a reasonable person would experience and create a social and moral connection to such a robot.[182] Specifically, the research looks at how people develop social and moral connections with personified technology.[183] The research criteria can provide an outline for a two-prong reasonableness test regarding the relationship between the use of the technology and the technology itself: one prong regarding development of social connections, and the other regarding development of moral connections. When applying this test, courts should ask whether a reasonable person would develop social and moral connections with the technology at issue.

The social connections experienced between user and virtual assistant would likely fall closely in line with the agency assignment effects discussed throughout this Note.[184] Thus, when a reasonable person would assign agency to a virtual assistant, the social connection prong of the reasonableness test is satisfied.[185] The test's moral connections prong would require that the user experiences a negative emotional reaction to the idea of "harming" the technology.[186]

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179. Jaeger & Levin, *supra* note 30, at 6.

180. *See supra* Part II.B.

181. *See* Kahn et al., *supra* note 1, at 160.

182. *Id.*

183. *Id.*

184. *See, e.g.*, *supra* Part I.A.

185. *See* Jaeger & Levin, *supra* note 30, at 16 (discussing various factors of nonhuman agents that can lead to "*reasonable* attributions" of agency (emphasis added)); *see also* Kahn et al., *supra* note 1, at 160.

186. This moral connections test is based loosely upon personified robot research. Although the relevant research focuses specifically on the potential of inflicting physical harm upon a social robot, harm can be more broadly defined to include verbal abuse or harassment intended to cause emotional or mental damage. *See* Darling, *supra* note 161, at 216; *see also*

Thus, the second prong is satisfied when a reasonable person would have an instinctive negative emotional reaction to the idea of harming the technology at issue.

Alexa is an example of a virtual assistant that likely satisfies both prongs of this objective reasonableness test. Regardless of the theory of agency assignment that is applied, users likely anthropomorphize Alexa.[187] Whether this is a natural tendency of humans or sufficient priming exists to elicit such a response, a reasonable person would anthropomorphize Alexa and other virtual assistants, thus satisfying the social connection prong. The second prong is satisfied, for example, by some of Alexa's programmed responses when a user employs foul language in either a query or demand.[188] The response programmed by the developers is so effective that it can elicit a feeling that Alexa deserves an apology for the user's poor choice of language.[189] Thus, a reasonable user would likely experience both social and moral connections with Alexa, and the technology would qualify as a "person" under the new distinction created by the courts.

2. Alternative Approaches—Congress Changing the Dictionary Act Definition of "Person," and Other Statutory Options

If courts fail to extend the term "person" to apply to virtual assistant technology, it may then fall upon Congress to act. Within the Dictionary Act, Congress codified a definition of "person," which "include[s] corporations, companies, associations, firms, partnerships, societies, and joint stock companies, as well as individuals."[190] This demonstrates Congress's willingness to consider things beyond an individual human as a person.[191] Congress could simply add

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Waytz et al., *supra* note 58, at 425 ("[P]eople report that it is less acceptable to harm nonhuman entities that they perceive to have minds. Individuals chronically high in the tendency to anthropomorphize also judge harm committed toward a computer, a motorcycle, or even a bed of flowers to be more morally reprehensible." (citations omitted)).

187. *See supra* Part I.A.

188. *See* Carroll, *supra* note 122 (explaining the author's urge to apologize to Alexa after she chastised him upon mistaking something said as foul language).

189. *Id.*

190. 1 U.S.C. § 1 (2012).

191. "Congress updated the Dictionary Act most recently in 2002," which shows that Congress is not unwilling to consider updates to either change definitions or add new ones when the political pressure exists. *See* Emily J. Barnet, Hobby Lobby *and the Dictionary Act*, 124 YALE L.J.F. 11, 12 n.6 (2014). The Supreme Court noted, however, that all of the additional terms are amalgamations of several humans usually acting toward a singular similar goal. *See* FCC v. AT&T Inc., 562 U.S. 397, 404–05 (2011) ("We have no doubt that 'person,' in a legal setting, often refers to artificial entities. The Dictionary Act makes that clear.").

"anthropomorphized virtual assistants" to the statutory definition of "person," but this has the potential to create difficulties in implementation if Congress fails to further define the term. Having this language within the Act, however, may provide a statutory basis by which courts can implement the objective reasonableness test described above when interpreting applicability of the statute.[192]

Congress may be wary of changing the definition of "person" within the Dictionary Act because the change may imbue Alexa, other virtual assistants, and smart-home technology with rights that the technology cannot yet exercise.[193] It is important to note, however, that Congress is not limited to simply amending the statutory definition of "person." Congress may find a better solution by adopting an entirely new statute that makes use of the same empirical considerations as the above-described common law approach.[194] The research regarding the criteria courts should consider when developing an objective reasonableness test should also inform Congress's approach in adopting a new, legally distinctive category for anthropomorphized virtual assistants subjected to assigned agency. Political pressure for such a change, however, is likely to occur only once the US public realizes the vulnerability of their communications with these virtual assistants and believes that it is acceptable and normal to view them as deserving of legal distinction.[195]

B. Treating Alexa as a "Person" Does Not Alone Provide Sufficient Protection of Privacy Under the Fourth Amendment

Giving Alexa some kind of legal personhood does not eliminate the privacy concerns present in the status quo of treating her as nothing more than a machine. Within the existing legal framework of

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192. *See supra* Part III.A.1.

193. Those nonhuman entities that fall within the definition of a person within the Dictionary Act are capable of exercising rights just the same as the humans who naturally fall within this definition. *See* Burwell v. Hobby Lobby Stores, Inc., 134 S. Ct. 2751, 2768–69 (2014) (holding that a for-profit corporation may exercise religious liberties as it is a "person" within the Dictionary Act).

194. *See* Jaeger & Levin, *supra* note 30, at 4.

195. Privacy concerns are an important consideration for the public, particularly when it comes to the government's ability to intrude within one's home. *See* Christopher Slobogin & Joseph E. Schumacher, *Reasonable Expectations of Privacy and Autonomy in Fourth Amendment Cases: An Empirical Look at "Understandings Recognized and Permitted by Society"*, 42 DUKE L.J. 727, 738 tbl.1 (1993) (showing empirically gathered data wherein government invasions into the home were rated as some of the most intrusive to one's expectation of privacy); *see also* Samuel J.H. Beutler, Note, *The New World of Mobile Communication: Redefining the Scope of Warrantless Cell Phone Searches Incident to Arrest*, 15 VAND. J. ENT. & TECH. L. 375, 387 (2013) (noting that an individual's home "represents the zenith of privacy expectations").

reasonable expectations of privacy in communications with third parties, recognition of this new status simply shifts the analysis from consideration of Amazon as the relevant third party to Alexa herself. Courts consistently maintain that there is no reasonable expectation of privacy in the communications made between individuals, as "[t]he risk of being overheard by an eavesdropper or betrayed by an informer . . . is probably inherent in the conditions of human society."[196] Succinctly put, "[this] is the kind of risk we necessarily assume whenever we speak."[197] Applying this principle specifically to the context of the home, the Supreme Court has found no Fourth Amendment violation when an individual was voluntarily invited into another's home, despite the fact that a police officer was listening to the entire conversation via a concealed wire.[198] Thus, since the user voluntarily brings Alexa—in this scenario, a legal person as a matter of law—into his or her home, the same analysis would likely apply because the two situations are conceptually identical. As such, regardless of bestowing legal personhood upon Alexa, this result would be identical to the way courts are currently likely to treat the recordings collected by Alexa. This failure of doctrine to adequately protect the privacy interests enjoyed within the home—which are paramount[199]—necessitates that courts take a drastic measure to prevent further privacy invasions.

C. A New Privilege Should Be Created Between Users and Their Virtual Assistants

Courts have had total purview of the creation of privileges since Congress enacted the broad language of Federal Rule of Evidence 501, which states that "the common law—as interpreted by United States courts in the light of reason and experience—governs a

196. Lopez v. United States, 373 U.S. 427, 465 (1963). While *Lopez* was decided prior to the creation of the reasonable expectation of privacy test, the reasoning applied in its approach to inter-person communications is consistent with the test's approach to privacy concerns. *Compare id.*, *with* Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring) ("[C]onversations in the open would not be protected against being overheard, for the expectation of privacy under the circumstances would be unreasonable.").

197. *Lopez*, 373 U.S. at 465.

198. *See* On Lee v. United States, 343 U.S. 747, 751–52 (1952). It should be noted that this case was decided on a Fourth Amendment analysis grounded in trespass, as opposed to expectations of privacy, but despite this, courts have consistently affirmed the holding in this case. *See id.*; *see also* United States v. White, 401 U.S. 745, 750 & n.4 (1971) ("We see no indication in *Katz* that the Court meant . . . to disturb the result in the *On Lee* case.").

199. *See* U.S. CONST. amend. IV; Wyman v. James, 400 U.S. 309, 317 (1971) ("[O]ver the years the Court consistently has been most protective of the privacy of the dwelling.").

claim of privilege."[200] In choosing this broad language, Congress explicitly rejected an initial draft proposed by the Supreme Court that contained thirteen individual evidentiary privilege rules.[201] The purpose of including this broad rule at the outset was to allow the judiciary to develop a uniform set of rules through case law for federal courts to use in evaluating privilege;[202] it also gave courts "greater flexibility in developing rules of privilege on a case-by-case basis."[203] As such, "federal courts have . . . confirm[ed] the eight privileges which existed in the common law prior to 1973 and . . . introduce[d] one new privilege."[204] The privileges currently recognized by federal courts include (1) required reports, (2) attorney-client, (3) psychotherapist-patient, (4) spousal, (5) clergyman-penitent, (6) political vote, (7) trade secrets, (8) state secrets, and (9) the identity of an informer.[205]

There are two basic models that inform whether a privilege should exist—the instrumental model and the humanistic model.[206] The instrumental model relies upon four criteria, famously articulated by Dean Wigmore:

> (1) The communications must originate in a confidence that they will not be disclosed.
>
> (2) This element of confidentiality must be essential to the full and satisfactory maintenance of the relation between the parties.
>
> (3) The relation must be one which in the opinion of the community ought to be sedulously fostered.
>
> (4) The injury that would inure to the relation by the disclosure of the communication must be greater than the benefit thereby gained for the correct disposal of litigation.[207]

According to Wigmore, "[t]he second and third [criteria] are the most pertinent to the specific task of identifying the relationships that deserve the protection of an evidentiary privilege."[208] Wigmore based the second criterion on "[t]he assumption . . . that absent the

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200. FED. R. EVID. 501.

201. PAUL F. ROTHSTEIN & SUSAN W. CRUMP, FEDERAL TESTIMONIAL PRIVILEGES § 1:2 (2d ed. 2006).

202. *Id.*

203. *Id.* § 1:2 n.7.

204. EDWARD J. IMWINKELRIED, THE NEW WIGMORE: EVIDENTIARY PRIVILEGES § 6.2 (3d ed. Supp. 2018) (alterations in original) (noting that the psychotherapist-patient privilege was created by the Supreme Court in *Jaffee v. Redmond*, 518 U.S. 1 (1996)).

205. *Id.*

206. *Id.*

207. *Id.* § 3.2.3 (citing 8 J. WIGMORE, EVIDENCE § 2285, at 527–28 (McNaughton rev. ed. 1961)).

208. IMWINKELRIED, *supra* note 204, § 6.2.

assurance of confidentiality furnished by the privilege, the typical person would probably be unwilling to confer or communicate with the confidant."[209] The third criterion is satisfied when "the relationship[] [is] so fundamental to contemporary society that 'in the opinion of the community' [it] 'ought to be sedulously fostered.'"[210]

The humanistic model, by comparison, has three criteria distinct from those required under the instrumental model:

> (1) the relationship is a consultative one;
>
> (2) there is a firm societal understanding that the consultant's task is to single-mindedly help the other person pursue his or her interests and make an intelligent choice; and
>
> (3) the consultative relationship is centered on choice in an area of the person's life implicating a fundamental life preference.[211]

In sum, "a privilege should attach only if the persons stand in a certain type of consultative relationship with respect to a particular type of choice."[212] The type of relationship that would warrant a privilege under this model exists "when it is understood that the confidant is to put all other interests aside and assist the person to make an enlightened choice furthering the person's interests."[213] Regardless of which model applies to the relationship between a virtual assistant and its user, courts should adopt a privilege to protect communications shared between them.

1. Instrumental Model

The relationship between a user and Alexa—when Alexa is treated as a "person"—satisfies all of the criteria of the instrumental model and therefore deserves protection. In terms of Wigmore's first category, communications with Alexa undoubtedly "originate in a confidence that they will not be disclosed."[214] The fact that the virtual assistants share communications with a third party should no longer be sufficient to dismiss an expectation of privacy due to the inappropriateness of categorizing communications as either wholly private or public in the current digital age.[215] Regardless of the fact

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209. *Id.*
210. *Id.*
211. *Id.*
212. *Id.*
213. *Id.*
214. *See id.* § 3.2.3.
215. *See If These Walls Could Talk*, *supra* note 12, at 1931 (discussing how the dichotomous categorization of communications as either private or public is no longer applicable to the nature of communication in today's technological environment); *see also* Kimberly A.

that a third party can maintain the recordings made by Alexa, it is likely that her users are not fully aware that forced disclosure of said recordings is easily at the government's fingertips.[216]

The second and third criteria of the instrumental model rely upon the same kind of evidence to demonstrate satisfaction. Specifically, this will rely upon two factors: (1) the public's response upon becoming fully aware of the extent to which the government can currently access this information,[217] and (2) the demonstration that the asserted privilege also "serv[es] public ends."[218]

If a court determines that the third-party doctrine applies to recordings Amazon collects through Alexa, the public will likely understand that the use of such technology allows the government to access private conversations within the home. As such, a reasonable response will likely be for users to limit the extent of their communications with Alexa as much as possible. The Supreme Court has addressed similar concerns arising out of the psychotherapist-patient relationship, holding that the failure to adopt a privilege would have a chilling effect on communications between these parties, thus defeating the relationship's fundamental purpose.[219]

Further, with respect to these criteria, courts weigh the value of the evidence that may be lost by adopting a privilege between the parties against the public interest that the privilege furthers.[220] The public interest served by the adoption of such a privilege between man and machine could be substantial. Both citizens and courts view the sanctity of the home against unreasonable government intrusion as paramount.[221] Within the home, individuals should be able to engage

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Houser & Debra Sanders, *The Use of Big Data Analytics by the IRS: Efficient Solutions or the End of Privacy as We Know It?*, 19 VAND. J. ENT. & TECH. L. 817, 855 n.281 (2017) ("[T]he third party doctrine was established long before the Internet. While the third party doctrine may well apply to *public* postings, . . . the same reasoning cannot hold for private online activities (such as a Google search).").

216. *Cf.* Brief for Empirical Fourth Amendment Scholars as Amici Curiae Supporting Petitioner at 3–5, Carpenter v. United States, No. 16-402 (argued Nov. 29, 2017), 2017 WL 3530963, at *3–5 (discussing how empirical research about actual subjective expectations of privacy undermines the necessary assumption regarding whether individuals knowingly and voluntarily convey information to third parties).

217. Jaffee v. Redmond, 518 U.S. 1, 11–12 (1996) (discussing the chilling effects of a lack of privilege as a significant factor when considering whether to recognize a privilege).

218. *Id.* at 11 (quoting Upjohn Co. v. United States, 449 U.S. 383, 389 (1981)).

219. *Id.* at 11–12.

220. *Id.* at 2 (noting that in contrast to the public and private interests supporting recognition of the psychotherapist-patient privilege, "the likely evidentiary benefit that would result from the denial of the privilege is modest").

221. *See* U.S. CONST. amend IV; Payton v. New York, 445 U.S. 573, 585 (1980); Wyman v. James, 400 U.S. 309, 317 (1971); Camara v. Mun. Court, 387 U.S. 523, 530–31 (1967); Jaeger & Levin, *supra* note 30, at 15; Beutler, *supra* note 195, at 387.

in unhindered, open expression without the fear that anything and everything said could one day be used against them by the government. Courts should see this as a compelling public interest in maintaining the ability to engage in this free and open expression within one's home. The potential loss of evidence seems to be minimal as well, as recordings from Alexa have only been sought as potential evidence in a single case[222] despite the technology being in existence for over three years.[223] Thus, the "element of confidentiality [will] be essential to the full and satisfactory maintenance of the relation between the parties."[224] Further, once the US public sees how intrusive government access can be within their homes, "[t]he relation [will] be one which in the opinion of the community ought to be sedulously fostered."[225] Courts and the public agree that the home should be a place where the government's ability to intrude upon individuals' privacy must be most restrained.[226]

The final criterion is the most difficult to analyze. Due to the limited implication of virtual assistant technology in criminal cases despite its now widespread availability, it would seem that the benefit to the government of submitting evidence derived from such technology would be slim.[227] In contrast, the injury that the parties would suffer if Alexa's recordings were admissible could be immense. Considering the instrumental model's second and third elements, the public will find the possible level of government intrusion intolerable, as privacy concerns consistently rank highest among Americans' considerations of government overreach.[228] Thus, a balance of the

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222. *See* McLaughlin, *supra* note 14.

223. *See* Press Release, Amazon.com, Inc., Amazon Echo Now Available to All Customers (Jun. 23, 2015), http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-newsArticle&ID=2061798 [https://perma.cc/LX5L-B9JT].

224. IMWINKELRIED, *supra* note 204, § 3.2.3 (citing 8 J. WIGMORE, EVIDENCE § 2285, at 527–28 (McNaughton rev. ed. 1961)).

225. *Id.*

226. *See* Wyman v. James, 400 U.S. 309, 316 (1971) ("[O]ver the years the Court consistently has been most protective of the privacy of the dwelling."); Slobogin & Schumacher, *supra* note 195, at 737 (showing a table of empirically gathered data regarding individuals' actual expectations of privacy regarding types of government intrusions measured relatively against each other).

227. *See* IMWINKELRIED, *supra* note 204, § 3.2.3 ("The injury that would inure to the relation by the disclosure of the communication must be greater than the benefit thereby gained for the correct disposal of litigation."); *see also* McLaughlin, *supra* note 14. *See generally* Press Release, Amazon.com, Inc., *supra* note 223.

228. As late as March 2017, a Pew Research Poll showed that 87 percent of respondents to a questionnaire found that the right to privacy was essential to their own sense of freedom. PEW RES. CTR., PEW RESEARCH CENTER'S AMERICAN TRENDS PANEL POLL, MAR, 2017 (2017), https://ropercenter.cornell.edu/psearch/question_view.cfm?qid=1897838&pid=50&ccid=50#top [https://perma.cc/GZ5Y-7N35].

anticipated injury and benefit weighs in favor of satisfying the model's fourth element. Since all four of the relevant criteria are satisfied under the instrumental model, courts should recognize a privilege protecting the communications between users and their virtual assistants subjected to an assignment of agency.[229]

2. Humanistic Model

The humanistic model is the ideal means by which courts can justify creating a privilege for communications between virtual assistants subject to assigned agency and their users. The relationship between such technology and its users can be classified as "consultative" under the model's first element.[230] Alexa acts as an assistant to the user by responding to requests and providing answers to queries.[231] When one person consults with another, he or she seeks information or advice from the other party;[232] Alexa provides both by either fully answering the questions posed to her or pointing the inquirer in the best direction to have his or her query answered. The second criterion requires that Alexa "single-mindedly help the other person pursue his or her interests and make an intelligent choice."[233] The user's interests certainly outweigh Alexa's, as the virtual assistant has no personal interests to be balanced; thus, the communication certainly satisfies this criterion. Without the potential for conflict of interests between the parties, Alexa does nothing but "single-mindedly pursue [her user's] interests."[234]

The final criterion requires that the subject matter of the communication relate to "fundamental life preference choices."[235] This criterion may, at first, appear unsatisfied by the types of communications in which a user and Alexa engage, but as Imwinkelried points out, "the applicability of a privilege to the type of relationship in question . . . does not dictate the conclusion that every communication between parties standing in that relationship is privileged."[236] Thus, much like the relationship between an attorney and client, the user-defendant can invoke the privilege when a certain

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229. *See* IMWINKELRIED, *supra* note 204, § 3.2.3 (citing 8 J. WIGMORE, EVIDENCE § 2285, at 527–28 (McNaughton rev. ed. 1961)).

230. *Id.* § 5.4.3

231. *See* Baguley & McDonald, *supra* note 7.

232. *See Consult*, NEW OXFORD AMERICAN DICTIONARY (3d ed. 2010).

233. IMWINKELRIED, *supra* note 204, § 3.2.3; *see also id.* § 5.4.3 (describing the contours of this fiduciary duty requirement).

234. *Id.* § 3.2.3.

235. *Id.*

236. *Id.*

type of communication begins between the parties.[237] Inquiries made to Alexa that do not pertain to such "fundamental life preference choices" may fall outside the scope of a privilege created for a user's relationship with Alexa.[238] As such, courts could subject communications falling outside the privilege to the current standard for collection of such communications, which does not provide the level of protection homeowners would expect regarding such communications.[239]

Both models generally appear to support the creation of a new privilege for communications between virtual assistants and their users. Limitations to the immediate creation of this privilege certainly exist, however, particularly with respect to the prerequisite adoption of some form of personhood for anthropomorphized technology.[240] The humanistic model seems more favorable to the creation of a privilege, but the "fundamental life preference" requirement limits the model's applicability.[241] It is difficult to say how often a user engages in such communications with Alexa at this point, but this information may be quantifiable in the future. Virtual assistants will continue to develop as AI continually advances. It is not beyond imagination to think that there will come a time when virtual assistant technology offers such a complete experience of communicative interaction that users turn to it rather than seeking out a therapist, a lawyer, or perhaps even a spouse.[242] If and when technology assumes the mantle of performing the kinds of roles recognized under privilege law,[243] it will almost certainly become appropriate to adopt a similar privilege for the technology. However, that may still require more time—and several scientific breakthroughs.

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237. *See* MODEL RULES OF PROF'L CONDUCT r. 1.6 (AM. BAR ASS'N 1983).

238. IMWINKELRIED, *supra* note 204, § 3.2.3.

239. *See supra* Parts II.C, III.B.

240. *See supra* Part III.A.

241. *See* IMWINKELRIED, *supra* note 204, § 3.2.3. This requirement's limited applicability stems from its narrow scope, which greatly limits which communications may qualify for protection. It would be hard to say that asking Alexa about the weather or trying to figure out the capital of Somalia and other typical inquiries made of Alexa can be classified as "fundamental life preferences."

242. *See, e.g.*, HER (Warner Bros. Pictures 2013).

243. *See* IMWINKELRIED, *supra* note 204, § 3.2.3 (citing 8 J. WIGMORE, EVIDENCE § 2285, at 527–28 (McNaughton rev. ed. 1961)).

IV. CONCLUSION

The presence of an ever-listening and recording "person" within the home upon whom the government can call to testify against you at will is the actualization of an Orwellian nightmare.[244] Under the likely applicable jurisprudence regarding virtual assistant technology, the US public has no way to prevent government access to communications made within earshot of the device. As concerns for one's privacy become an increasingly prevalent aspect of political debate and as smart-home technology continues to advance, the time to address this issue is now. That people see these virtual assistants as something more akin to a person rather than a piece of technology informs the steps that Congress or the courts should take to limit the government's ability to use such technology against users. When a reasonable person views this technology as something like a person rather than a machine, the law should adopt a specific legal category to classify this technology and protect the resulting communications.

A shift in categorization allows both Congress and the courts to make the necessary distinctions between smart-home technology with anthropomorphic properties and wholly inanimate recording devices devoid of perceptions of agency. Applying a new categorical distinction to the current legal structure allows for maximum privacy protections of an individual's home, as the Constitution intended.[245] Furthermore, this new distinction accounts for the inevitable advancements that this technology will undergo, wherein the differences between it and wholly inanimate machines will only become more concrete. Rather than falling behind the reality in which society exists, as is so often the case with the law, the judicial and legislative branches of the government have the opportunity to act preemptively instead of reactively. A preventative response protects the security and privacy of US homes to the fullest extent possible. Alexa may always be listening, but at least she will not be sharing what she hears with anyone who asks.

*Christopher B. Burkett**

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244. *See generally* GEORGE ORWELL, 1984 (1949).

245. U.S. CONST. amend. IV; Wyman v. James, 400 U.S. 309, 317 (1971).

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