

“Retro-Futuristic” Expedition of Howard Leed’s *Small Wonder*

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Abstract:

Popular culture and literature have served as fertile ground for the germination of ideas that eventually find their way into the fabric of the everyday lives of human existence. From the pages of science fiction novels to the silver screen of vanes blockbuster movies, inventions, and innovations conceived in the realm of imagination have often transcended the boundaries of fiction to reshape the world. This research project is an endeavor to explore a similar trajectory of representation of humanoids in a ‘reel’ world portrayal, Howard Leed’s *Small Wonder*, a nineteen eighties American sci-fi sitcom, and its projection to ‘real life’ humanoids of the twenty-first century. The sitcom shall be analyzed through the critical and philosophical lens of Posthumanism. How the sitcom has been instrumental in the early dawning of the technological renaissance, at the same time how it has reinforced certain stereotypes related to robots and gendered artificial intelligence shall be explored. This research is an amalgamation of Humanities, STS, and Literary Studies encompassing various theories and practical applications, to navigate the nuances of Science Fiction and the field of Robotics and Artificial Intelligence.

Keywords: Post-human turn, Uncanny Valley Theory, embodied subject, transhuman identity

Introduction: Being Human – Art Beyond Skin and Bones

Small Wonder by Howard Leeds, aired from 7th Sep, 1985, to 20th May, 1989 tracks the journey of V.I.C.I. (an acronym for Voice Input Child Indicant, pronounced and heron referred to as Vicki) a 10-year-old “android-girl” created by Ted Lawson an engineer cum inventor for *United Robotronics* to assist differently-abled children. Ted introduces Vicki as his “brainchild” both metaphorical and literal to his family- his wife Joan Anderson who dotes on the humanely looking robot and their 10-year-old son Jamie who misses no chance to utilize the humanoid’s utilities for advantage. Vicki possesses superhuman strength, speed, and the ability to compute information at a high-speed data transfer level. The show’s “humor” arising from attempts to integrate Vicki into everyday life while keeping her true nature secret from others- frequently touched themes of family, friendship, and challenges of raising an android in a humancentric world. Vicki’s attempts to learn

human mannerisms, her unexampled echolalia, and her literal interpretations of human speech commands, form the crux of the sitcom delineating the identities of human and machine-human. The repeated utterances of Ted Lawson with added emphasis “stop thinking her as a child”, and “she’s a robot, an android a mechanical device just like your blender” remind both the characters of the series and the audience alike how humanoids no matter how “humane” they appear are still at the disposal of their creators. Through Vicki’s portrayal and her perceived dual-conflicting identities as perceived by the Lawsons and the next-door nosy neighbours The Brindles, the show explored ethical technological, implications of artificial intelligence, robotics, and its rights, nature of consciousness, and the boundaries of human-like AI in a domestic setting.

As such the sitcom’s circumstances arouse interest in re-examining the bygone era series against recent works both in Humanities and AI advancements. In particular, Pramod K Nayar’s work *Posthumanism* is of great interest to better understand the corporeal identities of technology imbibed by humans or mostly the other way around. Nayar outlays the definition of a ‘posthuman’

...the posthuman is a congeries of software, hardware, and wetware. Flesh and machine, mind and computers, self and the world, human and animal merged in a seamless articulation. The posthuman can schematically be sketched in terms of body and mind, while keeping alive, as a point of departure of reference, the traditional human as one endowed with autonomy, sovereignty, and agency. (Nayar 2)

This is of great importance to understand Vicki whose agency and autonomy are restricted by the Lawson family, and her own identity which is construed out of the psyche of the machine with evolving emotions by co-habiting with humans. There is scope for research as neither the sitcom nor the character of the humanoid have been subjected to the critical lens of post-humanism. This concept of ‘evolving beyond the fixed boundaries of embodied existence’ is something that will be addressed with regards to *Small Wonder* and more so as an overarching phenomenon going beyond the limits of Post Humanism. As the show is of a bygone era, it becomes crucial to re-examine it when there have been advances in Science and IT and intellectual movements. The sitcom born out of a need to address social concerns vis-à-vis technology seeping inside the intimate circle of suburban American families in the late nineteen eighties, resonates well today where AI dictates the daily needs of humans right from reminding him to wake up (virtual alarms) to automatically shutting off electronics at night.

Nayar in his introductory essay “Rise of the ‘Post Humanities’ Exit, the Human...Pursued by a Cyborg” remarks on prerogative affect and gives reference to *Terminator* and *Robocop* “...cyborg creatures that seem to possess an intractably human feature: affect” (10) setting the premise for Post Humanities study and humanoid identities. Nayar’s outlining of “...explore the theme of posthuman rights, as a series of juridical, social, technological, negotiations of the very definition of normalcy and humanity” (16) is crucial for this research as Vicki’s rights as an individual embodied identity will be explored and used to comment further actual realizations’ of Vicki like robots in the coming lived realities.

To read Nayar better, the key elements of his work as laid out by Hanna Petersson in *Somatechnics* Journal are of much importance. Additionally, N Katherine Hayles’s book *How We Became Posthuman* offers deeper insights into the subject shedding light on “...the complex interplays between

embodied forms of subjectivity and arguments for disembodiment throughout cybernetic tradition" (7). The 2023 Research thesis by K. Chumthangleima *Reading Posthumanism In Shane Acker's 9* is helpful to build up this research along similar lines of "reject the idea that humans are unique creatures of nature as well as their right to control the natural world" (KC 24). Likewise, Glenda Shaw-Garlck's Conference Paper "Loving Machines: Theorizing Human and Sociable- Technology Interaction" is of great merit. Garlock cements Nayar's ideological framework of "emerging human and sociable-technology interaction as a developing site of inquiry relevant to communication studies and cultural studies" (1) "The emergence of social robots in everyday life will alter the nature and dynamics of social interaction" (48). These interactions will be explored keeping Vicki as the prime focus around which the dynamics of the Lawson family revolve, shifting the focus from human to humanoid. In this respect, the work of Peter Mahon *Posthumanism: A Guide for the Perplexed* provides crucial arguments to build this research upon. "Because it actively adapts itself to the user, AI seems destined to work for us and with us more like an assistant or a companion: unlike a hammer or a nail gun, AI listens to us, watches us, responds to us, remembers for us, organizes us, answers our queries, communicates for us and to us, makes things for us, entertains us, guides us, transports us" (Mahon 80). Here this argument can be problematized to explore the autonomy and agency of AI in particular humanoid robots.



Fig 1. Electric Coffee Mug *Small Wonder Season 1 Episode 2, "The Neighbours"*, YouTube



Fig 2. Electric Coffee Mug *Small Wonder Season 1 Episode 2, "The Neighbours"*, YouTube

What is unique to this sitcom is the uncanny resemblance of Vicki to a “normal” 10-year-old human girl. This leaves a potential area of research exploration both for this sitcom and applying it to possible future scenarios involving human-like robots. However, since the area is broad, the scope of this research will be limited to the series characters and their perceptions about Vicki while simultaneously making a comment on Sophia and Repliee Q2 and a possible future hypothesis. The critical tool used to explore this arena is an interesting concept developed by Japanese Robotics Professor Masahiro Mori in 1970 in a work titled *Bukimi No Tani* – The Uncanny Valley Phenomenon. The hypotheses put forth by Mori as an object’s (robot’s) appearance is made more human the emotional response of an observer shifts from positive empathy to strong repulsion to again positive perception. The graphical representation of the same shows a deep “trough” (hence valley). The liminal space where the observer’s response is repulsive to a somewhat human or perhaps a robot is the uncanny effect and is the major obstacle to human-robot interaction. Jasia Reichardt’s 1978 seminal work on Mori’s hypothesis *Robots: Fact, Fiction, and Prediction* are of some interest pertaining to this research. In an interview with Norri Kageki, professor Mori remarked on a question to counter the uncanny valley plunge

...It’s not even interesting to develop a robot that looks exactly like a human, from my perspective... I feel robots should be different from human beings... I do agree that some aspects of humans are like machines. But what I don’t know is the mind. I think this is a problem that humans will never be able to solve. No one can explain whether an object can bear a mind. We don’t know whether a mind will be formed when computers become really precise. Will a computer feel one day that it is not in a good mood or that it doesn’t like this person or that I don’t know. (Kageki 2012)

This can be extended to Vicki whose human like appearance appalls Joan Lawson who treats her as a daughter as well as repulses her when the “mechanistic” characters are revealed. It’s also intriguing to note how Vicki “fools” the Brindles to be a normal but somewhat “weird” 10-year-old girl. The uncanniness effect can further be extended in a reverse order to the humanoid itself, wherein human like emotions are experienced by the interface absorbed into the world of sociable humans. This will be explored with particular instances from the series and Vicki’s defiance of orders and “imitation” of emotions. Can Vicki be considered a possible prophecy for future humanoids? This is a matter of debate and beyond the scope of the present research. However, an attempt shall be made to address the issue in brief. Mori’s own firm stance of not designing human like robots is of great importance to understand both human control over “creation” and robotic agency.

For this Cynthia Breazeal’s work *Designing Sociable Robots* that contradicts Mori’s ideology is of great significance

...From the perspective of the robot, its body provides it with a vehicle for experiencing and for interacting with the social world...robots can interpret these experiences within a social context...People are attracted to life-like behaviour. (Breazeal 7)

This offers great potential to present duelling opinions on producing human-like robots. While this research does not claim to support either of the two extremities, it is very likely that humanoids are going to be inevitable in near future expanding the whole hotchpotch of social-ethical dilemmas.

The focus is primarily placed pertaining to this project on *Small Wonder*. The findings of this research can build an argument that point to the actualisation of Sci Fi in reality. Moreover, Tyler J. Burleigh's "Does the uncanny valley exist? An empirical test of the relationship between eeriness and the human likeness of digitally created faces" and Elizabeth Broadbent's "Interactions with Robots: The Truths We Reveal About Ourselves" will further help to build these arguments. While this investigation does not offer a quantitative analysis of the uncanny valley phenomenon, it does offer substantial groundwork for further probing.

Another thing to ponder is the cultural aspect of Robotics and Post Humanism. How these two fields do and may coincide as more and more AI enters into the capital market. As Simon During points out in the "Introduction" of *The Cultural Studies Reader*:

... because human beings exist as "embodied social subjects", an individual's relation to the fields continually incorporates and shifts under the contingent givens...language intervenes between the individual and the socio-cultural forces (10) ...Last, given the individuals live first, in symbolic structures which let them speak for themselves; second in bodies that are not their own but not wholly under control; third in temporality which flows towards the unknowable and uncontainable. (11)

This is crucial when it comes to analyzing Vicki. For she is an "embodied" subject not just in terms of her physical human-machine structure but also as her identity of daughter cum maid of the Lawson family, shifting paradigms of symbolic structures of humanoids. If the body of a humanoid is not under its control, how can one question its agency? This is what dynamics of Post humanism reflects on as every piece of human-like existence is considered as an autonomous entity. It becomes interesting to see Vicki as a "subject" thus deepening the question of ethical moral rights. Furthermore, the language aspect is too crucial both for Vicki and AI that use "commands" and how adept they are at interpreting these commands determines their functionality.

Pertinent research questions can be formulated and addressed through critical applications of Cybernetic Studies. The rapid technological advancements of the twenty-first century seldom appear as straight out of popular works of speculative fiction, much in tune with Frederick Paul's comparison of forecasting ability of Sci Fi to the accuracy of a broken clock (Ghiglione 139). The compelling narratives often blur the boundaries of technology and humans, raising intriguing questions of consciousness, transhuman identity, socio-ethical implications and understanding the paradigms of lived reality in 2023. Who is a human and how does one define human consciousness in a technological era? What is a bonded self in a postmodernist world? How do you address the question of 'life' in Post humanism? And most importantly what is the future of AI-Human interface in 2023 with regards to bioethics? This research aims to address such concerns and more by dissecting *Small Wonder* by Critical Post Humanism. The sitcom captures a snapshot of time when the idea of living alongside intelligent humanoid machines was transitioning from the realm of science fiction to a tangible possibility

Unwired Living Code: Organic Essence in Digital Matrix

The thing that intrigues me most is, if a robot is raised as a real child will it eventually be able to program itself to act like a real child? Even have emotions? Maybe one day families will

adopt robots instead of children.

— *Small Wonder* (“The Neighbours” 01:13)

That’s the one concern I had. Can she pass for a human? (“The Suitor” 08:54)

As much as the debate is humanizing a humanoid to take a posthuman turn, the current perplexing dilemma of humans is to “stand apart from robots” in cybernetics. The all-time notorious confirmation of “I’m not a robot” on internet websites, drives people crazy as it tests “the mediocre intellectual abilities” of smart people the maker of smart gadgets. The infamous Completely Automated Public Turing test to tell Computers and Humans Apart (CAPTCHA) developed by Alan Turing not only demarcates humans from computers, but also assesses whether a computer can demonstrate intelligent behaviour akin to humans,

[...] It can be a tricky balance, especially as machines become more sophisticated. Usually, artificial intelligence systems are capable of coping better than humans because, as an example, they don’t suffer from annoyance. They are infinitely patient; they don’t care about wasting time. (Mauro Migliardi wired.com)

Sarika Chaudhary analyses the CAPTCHA industry in her work “Understanding Captcha: Text and Audio Based Captcha with its Applications”

[...] CAPTCHAs are used because of the fact that it is difficult for the computers to extract the text from such a distorted image, whereas it is relatively easy for a human to understand the text hidden behind the distortions. Therefore, the correct response to a CAPTCHA challenge is assumed to come from a human and the user is permitted into the website. (107)



Fig 1. Emily Ferron *No more “I’m not a robot” with Google’s Invisible reCAPTCHA New Atlas*

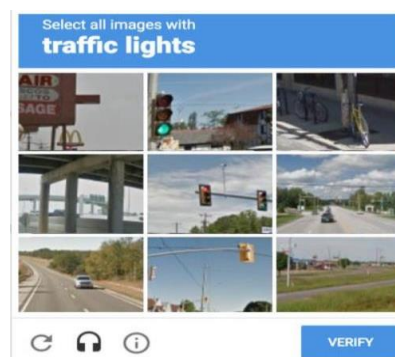


Fig 2. PCMag *Definition of I Am Not a Robot.*

When a humanoid with human intelligence accesses a CAPTCHA test, they would likely be able to complete it successfully, just like any other human. However, if the CAPTCHA test is

specifically designed to detect non-human entities based on behavior patterns or other factors, a humanoid might still be flagged as a potential bot if it behaves in a manner that is inconsistent with human behaviour. Requiring humanoids to prove their humanity through CAPTCHA tests may infringe upon their autonomy and dignity, treating them as objects rather than individuals with rights. This can reinforce societal stereotypes and stigmatize them as “other” or less-than-human, leaving them disadvantaged and denying access to support systems.

The irony of this human-machine-internet nexus is that a test created on network of cyber world by anthropoid intellectual beings, to differentiate bots is taken by humans on a computer device to determine their human identity. By its very nature, this test is a paradoxical functional resemblance of the liminal posthuman identity with regards to rationalising processing. Does selecting images make one human in the cyber world? If a humanoid is able to surpass these tests based on its level of upgraded programming, does that make it less of a machine? How can a test that is developed to prevent cybercrimes relying solely on ability to associate symbols with meanings, determine intelligence and human cognition? Symbolic Functionality throws light on this.

Posthumanism as a study has so far been established to deal with questions of the identity of a human-machine interface. But questions galore, what does it mean to be a human? Where does the breakdown of binaries between human and machine take place? Where does one end and another begin? Who decides? How the paradigm shifts? This shall further be explored through Cultural Posthumanism and symbolic structures, functionality of robots.

Nayar remarks “...human itself is an assemblage, co-evolving with other forms of life, emmeshed with the environment and technology” (4). K. Chumthangleima further expounds this idea in her thesis “...focus on the reconstruction of the human physicality, but consciousness is not an aspect of only the human, but an epiphenomenon that accounts for an organic entity” (4) This “epiphenomenon” mostly regards human as a construct just like gender, that shifts according to innate hardwiring as well as external learned influences. What differentiates man from other animals is the ability to cohabit peacefully with the “other”, this other ranging from diverse life forms to the mechanistic makeup of our existence. The human is a composite of molecular hybrids that shape, dictate and predict its genetic makeup and the ability to mingle with other life forms and conjugate with other humans. As such, if thinking and “reproduction” are nuclear human instincts, so does it apply to animals. The core aspect of being human as ascribed by different branches of humanities is the question of autonomous agency and identity. If this is to be considered as a central argument, can organic machines that have their own “input” processing mechanisms be considered as human? What then shall one consider a demarcating feature under Post humanism to ascribe a human identity to a machine? The question is a rhetorical one.

The central idea is not to label any machine, nanobot, or humanoid for that matter as a “human” rather to take it as a new evolved species itself independent of its preexisting identity as a machine or an organic cell. Just as an added prosthetic does not make a paraplegic less of human, similarly a mere human like appearance flesh and skin over a network of wires, batteries and plugs doesn’t make a machine any more human. Posthumanism doesn’t offer a clear-cut answer to this question, as it proposes that the boundaries between human and machine are fluid and constantly evolving. The distinction is not always easily discernible, especially as technologies like brain-computer interfaces and prosthetics become more integrated with human biology. The determination of where the

boundaries lie between human and machine is a complex interplay of various factors, including cultural norms, ethical considerations, technological capabilities, and individual perspectives. The problem with this arena of studies is something that will be addressed towards the end of this dissertation.

For the main scope of this study particularly with respect to the sitcom, a humanoid is questioned, broken down and re-arranged as a posthuman. Vicki is a master creation of Ted Lawson as V.I.C.I.- Voice Input Child Identical. Alike any electronic interface, the sole purpose of this “modelling” is to aid humans as Ted points “...it could teach in schools, or in hospitals to help in therapy for speech impaired or differently abled children...hundreds of practical uses for it and invaluable to the society” (“Vicki’s Homecoming”). Ted feels like “he has given birth” for “it’s a real child”, although Ted never fully comes to this realization for, he’s aware of the bits and pieces that have gone in its making “...eyes like solar cells, brain a data flow system using wafers scale integration, with data pads hooked into a self-organizing systolic array processor” (06:50). Even the intro title track mentions “she’s a small wonder, pretty and bright with soft curls... a child unlike other girls, she’s a miracle made of plastics, microchips here and there”. It’s clear Vicki exists as an assemblage of electronic units of data inputs, processing and output. But what makes Vicki unique? Is it her resemblance to a human ten-year-old girl? The synthetic skin used in her construction, similar to that used for artificial limbs in biomedical setups? Her voice or ability to perform human tasks?

More than that it is the way she is treated by the Lawson family and the civilization around that determines her liminal space of existence. The way she is perceived by the humans around her “shapes” her robotic assemblage and “molds” her humane permeance. As Joan questions “How do we treat her?” and Ted’s response “Like it was a real child”.

This determines Vicki’s posthuman identity. With the constant juggle between ordering of tasks to a robot and affectionate treatment from Joan or the Brindle’s towards a child, Vicki’s identity oscillates between machine and human in the human world. As K Chumthangleima remarks on Nayar’s language and representations module, “...sexual differences built into language and representations and subjectivity are invoked through participation in language, even to the extent of experimental understanding. This implies that identities are not fixed or stable...rather constructed through language and the act of naming itself” (13). It is Vicki’s unique ability to comprehend and respond to human language that makes her “humane” over her counterpart Rodney the robot created by Brandon Brindle Ted’s rival who constantly repeats only one phrase, “My name is Rodney pleased to meet you” and is labeled as “stupid”. In spite of Vicki’s echolalia and her monotonous facial expressions (which Ted later “perfects”) her ability to interpret commands and process them consciously determining her actions make her more human than a mere automated robot.

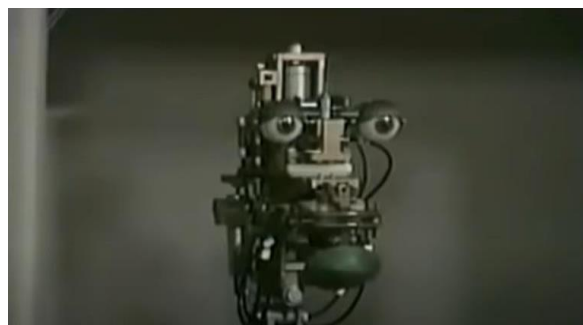


Fig 3. Electric Coffee Mug *Small Wonder Season 4 Episode 23*, “See No Evil”, *YouTube*
(Vicki disembodied from her human self to a connection of wires and metal pieces. The liminal identity of Vicki)



Fig 4. Fig 3. Electric Coffee Mug *Small Wonder Season 1 Episode 1*, “Vicki’s Homecoming”, *YouTube*



Fig 4. Electric Coffee Mug *Small Wonder Season 1 Episode 1*, “Vicki’s Homecoming”, *YouTube*

Ted’s constant concern is “how human she can be” and also goes to the extent of “...developing a metabolic thermostatic servo mechanism to regulate Vicki’s polynucleotide processor” (“Fats of Life” 01:38) in short, he gives Vicki an appetite like a human. But a more interesting facet unravels in season 4 episode that goes beyond construing the biological needs that define humaneness where Ted creates Vanessa –

[...] A new improved Vicki...who doesn’t even talk like a robot, because her voice has two method modes larynx track replication for natural speaking and oral speaker digital synthesizer...who doesn’t spout computerized statistics like Vicki does like a robot, makes subjective evaluations and her thinking is very close to human and can make her own decisions... (“The Bad Seed” 02:35-03:40)

Even to the extent where Ted wishes to dismantle Vicki as she is obsolete against protests from Joan who feels she’s family. The issue is with the consciousness and autonomous thought processing factor that Ted adds to Vanessa creates her more human in her sensibilities making her a “mechanical terror” to the extent where he realizes “...she has faults as some of us humans have arrogance and an over inflated ego.” Ted’s realization, “...I thought I could make the perfect robot, what I forgot was no matter how close you come to making it human the one thing you can’t give a machine is conscience...” (19:00-20:00) is a comment on the posthuman itself, the lack of a human conscience. Is

it what makes it a human, possessing this innate characteristic of philosophical, biological, sociological makeup of conscience? What about individuals whose lack of this determines whether one is “bad seed” or a good “social being” make them any less human? Only a post- posthuman world can answer this rhetorical question.

Whatever the humane or beyond humane outcome be, the good-bad-evil-saint humans exist in cultures and subcultures that determine “cultural materialism. Development and deployment of humanoid technology are influenced by cultural, economic, and political factors. Cultural posthumanism examines how power dynamics shape the production and consumption of humanoid technology and how these technologies, in turn, reinforce or challenge existing social hierarchies. The cohabitation of human-machine interface puts forth shifting paradigms. As Florian Cord labels the posthuman as a “non-human turn”, in “Post Humanist Cultural Studies: Taking the Nonhuman Seriously”, this opens a debate of polar ideas altruistic on one end and purely materialistic on the other depended on the human’s perception of the post human.

[...] The nonhuman here only ever appears as a site of inscription or projection for *human* meaning, never as a locus of value, meaning, or agency in its own right” (27) ... the nonhuman turn has the capacity to become another such interruption, and to reorganize the field in some significant ways. Not least, this will involve an engagement with the “question of anthropocentrism,” i.e., of how far, in spite of its critique of the self-enclosed Cartesian subject, the discipline has nevertheless tended to reaffirm humanity’s central place in the world. Cultural Studies, in other words, will further be post humanized. (29)

The power to create a superhuman machine rests with the one that has access to resources, technology, and the means of utilizing it to max with added knowledge which is goal oriented. If the goal of the creation is purely social, will the humanoid created be “like the image and likeness” of its master? (Genesis 1: 26-27). This is answered by Ted’s two diverse creations- Vicki created as a means to assist children and hospice patients, resembles more human super ego whereas Vanessa created out of Ted’s own needs of perfection and out doing himself reflects man’s ego. This is further evident through Vladimir created by a Russian diplomat Boris, another humanoid oblivious to the human society and the Lawsons themselves. “...The best minds come from Russia” (“The Russians are Coming; The Russians are Coming” 08:07). The sense of capitalism runs throughout the episode and in particular the discourse of Boris through his ulterior agenda of claiming the United States-

[...] He will defeat children all over America. Comes then the biggie. We go to Washington and in front of President of United States, we show world how superior is Soviet education. (15:26)

As Vicki and Vladimir are put against each other in a quiz combat, a dominant culture of competitive humans over a sub culture of command following competitive humanoids is persistent throughout the episode. When cultural materialism is forayed into the field of robotics, a new dimension of powerplay and politics runs amok. Not only binaries of human-machine and nature-technology are broken down, but also are boundaries of ethics, inequity, materialism and social justice. If *Small Wonder’s* this episode be used as means of projection for the future, before a sub culture of humanoids can exist, the forces that will determine how these humanoids express themselves shall depend on their creators and their motives. If this extrapolation is used, the post human humanoids

reflecting their predecessors can either be socially oriented or materialistically motivated. How will that interaction shape the post anthropocentric cultural discourse? As is evident from Vicki's and Vladimir's interaction, although they both possess innate processing abilities of the world around them independent of their "masters" lead, they still follow their respective creators' commands, which is always the disposal of "re-programming". If the robot is given agency will a new cultural scenario open up that is independent of social or materialistic discourses? Will the structuralist and post structuralist disciplines of Marxism, Cultural Studies and Anthropological studies be replaced by a unique culture of "roboism"? "...For much of the intellectual work connected with the nonhuman turn, sometimes implicitly, often explicitly, is in fact political in nature and committed to emancipatory change" (33). Perhaps the non-human turn is the much-needed change to diverge from the inhumane humanism that the contemporary world finds itself in. The "What If" question always looms.

Papadopoulos and Koulouglioti's cumulative findings through data collection, analysis of articles, questionnaires and lab experiments using a robot with a sample population in "The Influence of Culture on Attitudes Towards Humanoid and Animal-like Robots: An Integrative Review" throws much light on this interdisciplinary approach. The response of different setups and age groups in different countries is as diverse as the phenomenon of science and cultural anthropology itself.

[...] Mexicans are the most negative towards robots, US the more positive, especially when asked about interacting with robots. Japanese were more concerned about the social influence of robots, especially emotional aspects of interacting with robot. USA participants liked more the human-like robots whereas Japanese reported the opposite. The more human-like the less it was liked by the Japanese (658) ... Italian children are more open, expressive and closer (physical distance) to the robot compared to the Dutch children. Japanese rated higher the robot on mental capability to experience (e.g. feel pain, pleasure) and agency (ability to plan, memorize) ... Participants from Greece, Portugal, Cyprus and Slovenia were the most hostile towards the use of robots whereas respondents from Eastern European countries -Lithuania, Poland, Czech Republic and Austria- were the most favourite. (670) ... Why do people from different cultures perceive different things when interacting with the same robot in similar conditions? (671) ... A person's cultural background influences many behaviours, and not only acceptance of robotic technology. The current evidence indicates that preferences about a robot's appearance, the general attitudes towards the use and application of robots, along with verbal and nonverbal communication styles are impacted by culture (673)

This spectrum of behaviours of humans towards robots that are both human like or mere piece of machinery in its physical manifestation is dependent of individual perceptions and collective cultural experiences. As posited, Vicki's identity that makes her any more like a human is due to the "perceived" factor of The Lawsons that know of her humanoid origin and by The Brindles and others who are completely unaware of the same. The people belong to the same American suburban culture, yet they differ in their attitudes towards a humanoid. So much so that the same Joan that orders Vici around the house as a house help also treats her as a daughter she never had. Jamie though forever is mindful of Vicki's superhuman powers and never misses a chance to use the same, but is also proud to have a "sister" and be concerned for her, landing both of them in occasional trouble. In "Sibling Rivalry" when Vicki falls from the tree house, the Lawsons are devastated to have "...lost their sweet little girl" (19:20). Even Ted takes a while to realize that "robots can't die, the worst it can do is rust" (19:06).

Humanoids raise profound questions about ontology (the nature of being) and epistemology (the nature of knowledge). They raise questions to their human counterparts, to reconsider fundamental assumptions about what it means to exist as conscious beings and how they come to know themselves vis a vis the world around the “cultural other.” If the attitudes of people itself differs towards a humanoid, how will a humanoid-to-humanoid interaction be? How they will perceive each other in their own sub culture? The symbolic structure and functionality will better unravel this perplexing idea.

Symbolic structures and functionality in humanoids refer to the various ways in which these beings are designed, programmed, and perceived within cultural contexts. It covers a wide area of basic structures- physical appearance, cultural signifiers, goal-oriented functionalities, and technological-economic systems. The physical appearance of humanoids often carries symbolic meaning. Design choices in their appearance, such as facial expressions, body language, and overall aesthetics, can evoke specific cultural associations and interpretations. For example, a humanoid with a humanoid face might evoke feelings of familiarity and comfort while one with a more mechanical appearance might symbolize advanced technology or artificiality. Incorporating cultural signifiers that reflect values, norms, or aesthetics convey cultural identity or status. For example, in a recent development Iris a saree clad humanoid was introduced in the classrooms of KTCT Higher Secondary School, Keala designed under Atal Tinkering Lab (ATL). With specific functionalities tailored to their intended tasks in the case of Vicki or Iris, this includes capabilities such as mobility, manipulation of objects, communication through speech or gestures, and cognitive abilities like problem-solving or learning. The functionality of humanoids is closely tied to their design and programming, which are influenced by cultural, economic, and technological factors. By the virtue of their design to adapt and learn from their interactions with humans and their environment, their functionality enables them to improve their performance over time, respond to changing circumstances, and develop more nuanced and sophisticated behaviours.

Symbolic structures and functionality of humanoids reflect the ways in which humanoids are perceived, utilized, and integrated into society, as well as the cultural values, norms, and aspirations that shape their development and deployment. The ground breaking hypothesis by the Physical Symbol System Hypothesis (PSSH) by Allen Newell and Herbert A. Simon forms a philosophy of artificial intelligence (“Elements of a Theory of Human Problem Solving”) An ideological breakthrough that secured them Turing Award focuses on a physical symbol system that possesses the necessary and sufficient means for intelligent action. This assertion argues that human thought is a form of symbol manipulation and, therefore, intelligent human-machine interfaces are possible. It relies heavily on discourses of Hobbes, Leibniz, Hume, and Kant. The computational theories of mind put forth by Hillary Putnam and Jerry Fodor further substantiates Newell and Simon’s claims, that intelligence arises from the manipulation of symbols according to rules. In the context of humanoid robots, this hypothesis suggests that human-like intelligence can be achieved by implementing a system that processes symbolic information in a rule-based manner. This means developing algorithms and systems that enable them to perceive their environment, reason about it using symbolic representations, and then generate appropriate actions based on this reasoning. This could involve methods such as natural language processing for communication, computer vision for understanding the environment, and symbolic reasoning techniques for decision-making.

For Vicki this comes with interpretation of language commands. Language- the determining factor of humans, that lead into different discourses which stems from cultural context. As “The Influence of Culture on Attitudes Towards Humanoid and Animal-like Robots: An Integrative Review” states, “...Another theme was related to the closeness of the robot to the recipient’s culture. A robot’s features, such as language and communication style, were found to influence the perceptions of people from different cultural backgrounds.” (671) When Ted first worked on Vicki, he starts by feeding input commands in his computer connected to her- “Blink Eyes”, “Wiggle Nose” and “Respond to Voice Commands” which ultimately activates language inputs, process, output, and subsequent execution of tasks. This evolves gradually as Vicki first interprets every command word to word. Like “keep an eye” on the door she sticks herself to the door and has to be explained elaborately by breaking it down. She follows these commands without much emotion or understanding, akin to a programmed robot. When Jamie tells her to “put him down” after she has lifted him up, she drops him down following the command literally without applying appropriate “reasoning”. Vicki’s reactions to these commands varies depending on the context of the scene. For example, when commanded to clean her room or do her homework, she usually complies without complaint, showcasing her “obedient” and “helpful” nature as a robot. However, there are also instances where she displays curiosity or confusion, especially if the command conflicted with her developing sense of individuality or if it presented a moral dilemma. Overall, Vicki’s reactions added humour and depth to the show’s exploration of human-robot interactions. Her performing of tasks depends on the nature of the commands. For example, as Vicki has in built mechanisms that double as electronic appliances, she uses them to complete the chores of the house, or sometimes does it like a “normal human”. Like making milkshake she uses her inbuilt blending system, to cool the water she utilizes her cooling refrigerating system. Vicki’s reactions are often stiff and overly literal, reflecting her robotic nature. She tries to interpret and execute commands in her own mechanical way, often misunderstanding human nuances and idioms however a shift is observed over the series as Vicki is “humanized” due to her interactions with the people around her. When following commands, she reproduces a mechanical robotic voice implying she’s a programmed device and when imitating fellow human co habitants, she emulates imitative voice with expressions, tone, and annotations indicating her human turn.

This reinforces Newell and Robert’s hypotheses. Vicki has developed reasoning due to her interpretation of symbolic signs and symbolic exchange of data from human to human and human to humanoid. Vicki’s echolalia and imitation of human words and behaviour replicates a child’s learning of language and the creation of an image of self which is different from the other as one enters the symbolic order (Jacques Lacan’s hypothesis on Psychoanalysis). For Vicki the “mirror stage” is when she tries to identify that she’s a “programmed robot” but also has independent thinking capacity (which is still restricted to input commands) as she develops “human language” of answering back. To give an example, in the “Bad Seed” when Ted talks of dismantling Vicki over Vanessa she replies “No Way Jose!”. Vicki has learnt this response as ways of imitating Jamie’s talking style, however she has also learnt when to use it by following Jamie’s usage of the term and on basis of her own understanding and processing the nuances of human language. As Cynthia Breazeal remarks in *Designing Sociable Robots*, “...new experiences would continually shape a robot’s personal history and influence its relationship with others. New skills and competencies can be acquired from others, either humans or other agents...such as learning by imitation, goal emulation, mimicry or observational conditioning” (9)

Vicki begins to display more emotional responses to certain language commands as she learns about human feelings. For instance, she might show confusion or distress when someone uses harsh language or expresses anger towards her. Vicki's understanding of humor and sarcasm improves over time, but she still struggles to comprehend subtle jokes. Her reactions to sarcastic remarks or ironic statements become more nuanced as she learns to interpret tone and context. Vicki becomes capable of understanding and executing more complex instructions as her programming evolves.

Angelo Cangelosi points at grounding of language into action and sensorimotor knowledge as put forth by Glenberg and collaborators in her work titled "Grounding language in action and perception: From cognitive agents to humanoid robots",

[...] meaning consists of the set of actions that are a function of the physical situation, of how our bodies work, and of our experiences. Glenberg investigated the Action–Sentence Compatibility Effect (141) ... In the modelling approach presented here, cognitive agents, be they simulated agents or humanoid robots, learn symbols (words) that are directly grounded into the agents' own categorical representations, whilst at the same time having logical (e.g. syntactic) relationships with other symbols...each symbol is directly grounded into internal sensorimotor categorical representations... perceptual categories, sensorimotor categories, social representations, and other categorizations of the agent's own internal states (e.g. emotions and motivations). (149)

For Vicki this holds true. As she asks for clarification or additional information if she doesn't fully understand a command, demonstrating a growing awareness of her own limitations. She turns more and more self-aware of her "role", her questioning of commands that conflict with her sense of morality or ethical principles which leads to moments of introspection and personal growth as she navigates the complexities of right and wrong. She can also "retaliate" but she only does it through words and not actions- "...Put Vicki in her cabinet. That's what you always say" ("The Neighbors" 12:05), implying it is still language that dictates her actions. Throughout the series, Vicki's reactions to language commands serve as a reflection of her evolving understanding of humanity and her own identity as a sentient being. Her development from a simple robot to a more complex and empathetic individual is a central theme of the show.

The only question that still looms at large with regards to the discourse of post humanism, does Vicki's behavior stem out of an inner evolution of her own identity? Is it due to her interaction with the humans that's determines her sense of self making her aware of her liminal humanoid and human like existence? Or is it the way Ted has programmed her that determines her humanizing turn? As she remarks to Jamie "...I am programmed to be an average 10-year-old girl, Average 10-year-olds make mistakes" ("The Sitter" 10:17). Is it ultimately a human that directs the sub-human or posthuman? Do emotional interactions have an upper hand in the creation of reasoning and a conscience? These questions remain open for further research.

Small Wonder critiques the illusion of human supremacy, urging a reconceptualization of ethical responsibility in an interconnected world. This posthumanist impulse finds a striking contemporary parallel in debates on artificial intelligence, particularly in the existential dilemmas posed by AI ethics. Nick Bostrom's *Superintelligence* (2014) warns of the control problem—the challenge of aligning AI's goals with human values once it surpasses human intelligence. Kingsolver's essays, while grounded

in ecological discourse, similarly expose the arrogance of human attempts to manipulate complex systems, whether ecosystems or intelligence itself. Both warn against the hubris of intervention without foresight, suggesting that misalignment between intent and outcome can have irreversible consequences.

Beyond existential risk, recent AI ethics scholarship, such as Kate Crawford's *Atlas of AI* (2021), dismantles the myth of AI as an abstract, immaterial intelligence, revealing its dependence on exploitative labour, energy-intensive computation, and the extraction of natural resources. Crawford argues that AI is less an autonomous force and more an extension of human industrial ambition—one that consumes landscapes, depletes resources, and entrenches power structures. Nick Bostrom's *Superintelligence: Paths, Dangers, Strategies* (2014) famously articulates the control problem: the challenge of aligning AI's goals with human values once it surpasses human intelligence. Bostrom warns that the assumption of human dominance over AI could lead to catastrophic misalignment, with unintended consequences spiralling beyond control. Bostrom highlights a paradox: the more humans attempt to impose control over non-human systems, the more they risk destabilizing them. AI, like nature, resists simplistic governance, demanding an ethical framework that moves beyond anthropocentric control.

Recent AI ethics scholarship also exposes the material and ecological costs of artificial intelligence. Shannon Vallor's *Technology and the Virtues* (2016) adds another layer to this discussion by advocating for a virtue ethics approach to technological development. She argues that the ethical dilemmas posed by AI require not just regulation but a fundamental rethinking of human values, emphasizing humility, adaptability, and responsibility. Kingsolver's writing embodies this philosophical shift, urging readers to adopt a relational ethics—one that recognizes the interconnectedness of all forms of intelligence, whether organic or artificial. By linking ecological ethics with AI ethics, *Small Wonder* offers a broader posthumanist critique: the need to relinquish the illusion of human supremacy and embrace an ethics of coexistence.

By juxtaposing *Small Wonder* with contemporary AI ethics, a deeper posthumanist argument emerges: the need to relinquish anthropocentric control, not only in our relationship with nature but also with the technologies we create. Both Kingsolver and AI ethicists caution against the illusion that intelligence—whether biological or artificial—can be neatly contained within human-designed systems. In doing so, *Small Wonder* remains powerfully relevant, reminding us that true survival lies not in domination, but in humility and adaptation.

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