

Research Article

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Whimsical Bodies and Performative Machines: Aesthetics and Affects of Robotic Art

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Abstract: This article explores the ways in which robots' behaviours are designed and curated to elicit reactions from their human counterparts. Through the work of artists such as Nam June Paik, Steve Daniels, Edward Ihnatowicz and Norman White, a survey of robotic art illustrates a particular aesthetic and behavioural language that is non-threatening, animalistic, cute, quaint and *whimsical*. Considering the artists' programming of behaviours and construction of aesthetics, the use of animal behavioural modelling, and developments in social robotics, this article unpacks how meaning is inscribed onto robots and in return how affect is transmitted to human viewers. By exploring the whimsical bodies, performative machines and networked nonhumans brought forth in robotic artworks, this article draws out how aesthetic and behavioural languages of robotic art play into peoples' emotional and affective encounters with them.

Keywords: robotics, art, affect, aesthetics, whimsy

Contemporary performative interactions between humans and robots have a complex history entering the discipline of fine arts in the 1980s with the work of such artists such as Eduardo Kac, Margo Apostolos and Jean-Marc Matos. This history continued into the 1990s with the work of artists such as Stelarc, Artemis Moroni, Marcel-li Antunez Roca, and further into the present with David Saltz, Frank Garvey, Richard Maxwell, Louis-Philippe Demers, Kris Verdonck, Chico MacMurtrie and Mirja Fiorentino (Mullis 2015). Whether the robot is engaging in a performance with the artist, or another actor, in a choreographed way, or, with un-expecting audience, the resulting relationship between then fleshy and organic human body and the animate, technological and synthetic body of the robot presents an intriguing point of relationality. This relationship points to questions concerning agency, aesthetics, vulnerability and socialisation that probe at the affective states felt by the viewer/participant when engaging a work of robotic art. Affect is felt between robot and human in the midst of *in-betweenness*, as Gregory J. Seigworth and Melissa Gregg note in the introduction to the *Affect Theory Reader* (2010): "in the capacity to act and be acted upon" (1). Forces or intensities are passed from body to body in imitate encounters made possible through the behavioural and aesthetic relations between actors: the "art" robot and the human. The visceral forces of affect, including but not limited to emotions, are felt by participating bodies. Meaning is inscribed onto the robot "other" by the human, instigating new relations through an encounter. Each encounter is different, though it is curated by the artist who sculpts the robot's look and feels through aesthetics and programmed behaviours. In this article, I will address performative and affective encounters between human and robot in the context of fine art, with the aim of teasing out some of the threads of interactivity that are woven together, though whimsical bodies, performative machines and networked nonhumans.

In considering the affective encounter between robot and human it is important to delve deeper into the way aesthetics and actions may play into the construction of meaning by the human, then embedded into the art object. Steve Daniels' eight small physically identical 2-wheeled robots, *Whimsy*, 2008 (Figure

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1) were created by the artist as an experiment in AI specifically to explore one of the simple *Braitenburg vehicle* rule systems in an embodied context. The experiment in AI development is made quaint, rather than fear inducing, through the aesthetic experience of the objects for their human viewers. Daniels mounts eyes atop the machine because “[they] are strong triggers of emotional response for humans” (Daniels, “Questions regarding *Whimsy*”). The aesthetic choice to give the work “eyes” is only one aspect of Daniels’ humanising the nonhuman. He is also interested in the behavioural space of anthropomorphising objects. The actions and lively behaviours of his robots “present a crack into an inner world that people fill very fast,” Daniels “set[s] the stage so that the audience can’t help but start projecting (anthropomorphizing)—once that happens the language around a work can become very open and fluid” (Daniels, “Questions regarding *Whimsy*”). When responding to human interactions with his work, Daniels observes that “people come to speak about their relationship with the work that they would not use if it was ‘just’ technology. They speak in terms that are intimate and empathetic . . . I think it is the basis of human communication and it sets up a site to really think about ways we connect” (Daniels’ *Art that Behaves*). Many robotic installation works play with the idea of what it means for a robot to return the gaze of a human. Creating alternative modes of understanding what constitutes a face and exploring the impact of whole-body movement as *Whimsy* propels its’ entire body around the room, lead by movement sensors in the form of bobbly mechanical “eyes.” Both the aesthetic and behavioural anthropomorphising of robotic creatures creates deeper, more intimate and complex relationships between the human and the machine.

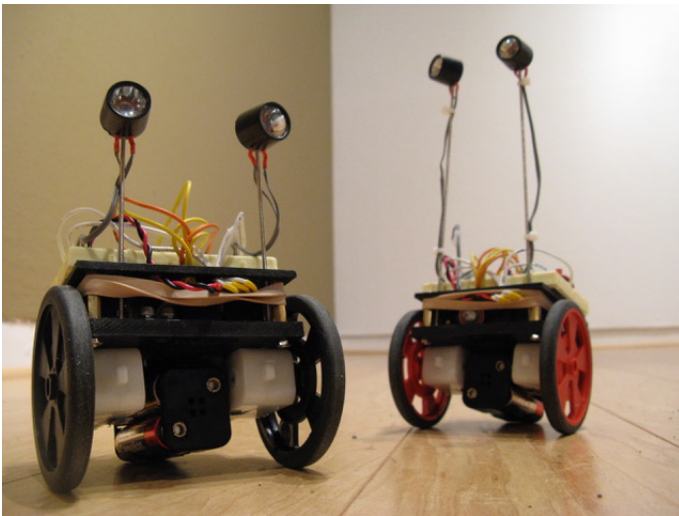


Figure 1. Steve Daniels, *Whimsy*, 2008. Image courtesy of the artist

The inner world of the *Whimsy* robots is described by Daniels as a space that humans “fill very fast” (Daniels, “Questions regarding *Whimsy*”). This space is key to the performative engagements made possible by interactive robots. Encounters between humans and automatons create a mode of relating that, according to Jennifer Parker-Starbuck, transforms the robot into an “object body” which can be inscribed and transposed with feelings, thoughts, and agency by humans (44-46). These inscriptions are based upon modes of relating that occur during a work’s performance and also through the ways in which the artist “creator” has inscribed our experience by programming and building the robot’s aesthetics and behaviours. This “object body” may also come loaded with social anxiety about technological advances and human fears of artificial intelligence (AI) surpassing human abilities. Spaces of encounter are filled with cultural and historical inscriptions during the robots’ performance.

A long legacy of automaton beginning in the 18th-century can offer some clues into how aesthetic changes in robotics may point to our social anxieties around singularity or the development of robot intelligence. Eighteenth-century designs of automaton were meant to emulate a human-like appearance that fascinated artists and engineers. However, in the twentieth century, a shift began to occur in robot

aesthetics towards the processes and functions of technology, and away from emulating humans (Stephens & Heffernan 37). For example, Swiss sculptor and painter Jean Tinguely's mid-20th-century *Metamatics*, stripped of an anthropomorphic aesthetic, paralleled the processes of industrialised mass production in their curious performances. Eduardo Kac notes a rising interest in robotics within the visual arts during the mid-twentieth century that reflects industrial society's obsession with technology (Stephens & Heffernan 35). Tinguely's sculptural works signal a point in the history of robotic art explorations in which automation and mechanisation began to focus on the absurd, rather than the anthropomorphic (Stephens & Heffernan 36). Though these automata are not mechanical copies of human or animal forms, they often remain similarly concerned with the machines' ability to replicate the physiology of living organisms (Stephens & Heffernan 37). The aesthetic becomes distanced from direct human modelling; however, behavioural system continues to replicate the physiology of living humans and animals in order to evoke a more palatable liveliness. This concern is reflected in the work of Edward Ihnatowicz and his interest in the replication of human and animal physiology.

The *stickiness* of affective encounters drawn out by Sara Ahmed in her text *Happy Objects* points to how an encounter may linger and transform after intimate contact (2010). Appealing to humans' empathy and sympathy, robotic works of art may trigger this lingering sense of enchantment. Edward Ihnatowicz's *The Senster*, 1969-70 expresses the robot's inner workings and reflects a new direction in the development in robotic aesthetic and art of the period. *The Senster*, arguably the most iconic work of the Polish cybernetic sculptor, was a large hydraulically actuated robot that sensed and responded to its environment. The fifteen-foot lumbering robot was built to resemble a massive mechanical lobster claw and occupied a space of 1,000 cubic feet. Built into the structure of the head were sensitive microphones and motion-detectors that allowed the creature to sense its environment. Environmental stimuli were processed by a digital Philips minicomputer allowing it to engage playfully with those around it in real-time. *The Senster's* body was formed of six independent electro-hydraulic servomechanisms with six degrees of freedom in their movement. According to contemporary artist and theorist Eduardo Kac, this interactive, playful robot was the first instance of behavioural autonomy in art (2001). The massive metal claw was given a programmed personality through which the robot responded to humans and changing environment. The robot alludes to a liveliness that is not true agency but rather, coded programming, registering as agency, through the viewer's interpretation of the robot's quirky actions. *The Senster* would slowly and laboriously shift its head away from areas of activity towards quieter and more subdued viewers. Those who were loud and mobile saw the gentle giant shy away and protect itself from perceived threats or aggressors. This marks the beginning of a shifting mentality amongst robotic artists towards the exploration of programmed behaviour and the assignment of autonomy and some type of agency to robots. As the work of art (and robotics more generally) become more and more autonomous, human modelling of early 18th-century automaton is replaced with a more abstracted, and less uncanny, liveliness.

The massive mechanical structure can elicit a sense of recognition from viewers as they watch its self-protective and shy behaviours. One might feel sympathetic to the creature on display as it attempts to escape from the loud and noisy crowd that it simultaneously draws in through the spectacle of its massive mobile mechanical body. *The Senster* performs as an animalistic being, with its behaviours mimicking the way prey animals act in nature, positioning the human viewer as a predator. While the robot is large and lumbering and aesthetically fear-inducing upon first glance, its behavioural qualities—referring to animal instincts—expose robot's inherent vulnerability and defencelessness. The frightened creature senses its environment and responds to it in a way that creates empathic reactions in the audience. While some may seek to exploit their power or "prey drive" over the massive machine by taunting and teasing it to further incapacitate the robot, others may stop interacting with the bot because they feel sympathetic towards it, again alluding to the modelling of animal behaviour in robotic artworks.

Robotic art is characterised by an inherent performativity that is important to consider when addressing its affective import through triggering sympathy and empathy in human spectators. An early robotic work, Nam June Paik's *Robot K-456*, presents a spirit of humorous play through performance by focusing more on the behavioural spectacle of the object rather than the technical or engineering skills showcased in robotics. The robot's construction began in 1963 and was completed by Paik and engineer Shuya Abe in

1964. *Robot K-456* was a 20-channel radio controlled anthropomorphic robot, named after Mozart's piano concerto, and an ode to the Fluxus admiration for music. The robot performed simple tasks such as moving its limbs, rotating its head and eyes, and doffing its aluminium foil pie plate hat. *Robot K-456* was involved in a number of performative spectacles including its final and most dramatic, titled *The First Catastrophe of the Twenty-First Century*, in 1982. In this performance, the robot was removed from the Whitney Museum of American Art and guided by Paik down the street on a casual stroll before being "accidentally" struck by the passing vehicle of artist Bill Anastasi in the intersection of 75th street and Madison Avenue in New York City.

The spectacle of robotic objects and their performances generate a new kind of sublime. The sight of interactive machines (or "creatures" as Eduardo Kac would put it) evokes a variety of feelings—usually the sense of awe and wonder but also that of horror. There is some trickery involved in robotic art that connects with the general trickery inherent to all technology. As British science fiction author Arthur C. Clarke's has famously stated, any sufficiently advanced technology is indistinguishable from magic (1962). Therefore, for some of the audiences, "machines' shows" can be an exciting spectacle similar to turn-of-the-century new media technologies or cinema of attractions (Gunning, 2006), experienced as practical magic for their affective import.

The lure of animal instinct appears to be an important consideration for the development of intelligent, or simulated intelligent, robotic creatures. Studying the behaviours and playful engagements of animals provides robotic artists with a plethora of actions from which to draw and mimic in their development of whimsical behaving robot bodies. Animals, as the human other, present us with a counterpoint from which we can study robots as lively entities.

Norman White's *Ménage*, 1974, combines the artist's interest in spontaneous chance interactions and the behavioural study of the animal kingdom. *Ménage* was an installation of five interactive robots that played and engaged with one another. The work was inspired by Grey Walter's experimental tortoises, which were some of the first electronic autonomous robots. Walter's first set of robots, named Elmer and Elsie were constructed between 1948 and 1949. The robots were often described as tortoises due to their aesthetic appearance as tortoise-like beings as well as their slow rate of movement. The tortoises were developed to participate in a number of experiments that Walter conducted in order to study how the brain worked—through mechanical beings (Pickering 2010). One such experiment of Elmer and Elsie tested the robots' ability to become self-aware. Walter attached a light to the 'nose' of the tortoises and watched the robots as they observed themselves in a mirror. The robots flickered, jiggled and twitched like a 'clumsy Narcissus,' according to Walter, as he argued that the tortoises had displayed some evidence of being self-aware.

An interest in creating artificial life echoes far beyond Walter's tortoises. According to Edward Shanken's study of the historical legacy of new media art, "in many cases, artists have attempted to bridge the apparent divide between carbon-based organisms and silicon forms of intelligence and life, between the real and the artificial, suggesting that these distinctions are becoming increasingly blurry and permeable" (38). White's *Ménage* follows in the footsteps of Walter's intelligent behaving robot creatures as he creates experimental works that explore the potential of animal behaviours in autonomous machines.

Animal behaviours, like human's, are expressed through actions. Robert Fagen's canonical text on animal play divides these actions into five unique, though fuzzy, types of play engagement in which animals participate. The five types of play are; (1) isolated play presented through repetitive and brief movements, (2) non-contact solo play/social play of moving bodies through space, (3) social play (with or without contact) that involves chasing or sparring/wrestling, (4) complex social play that involves the inclusion of objects and features of the landscape and finally (5) mother-infant games such as peekaboo or building and breaking structures composed of smaller objects (Fagen 1981; Sutton-Smith 1997). He also asserts that only a small number of animal types have the capacity for play, "mammals and birds, and perhaps a few fish and reptiles are the only kinds of animals known to play" (24). Their ability to play is expressed through "specific movement qualities and signal patterns" (24) which enable us to see that they are playing.

Ménage's five light-sensing robots played and engaged with one another through their sensory perceptions and programmed desires to interact. Four of the robots were mounted to ceiling tracks from

which they could move back and forth around the room, across paths limited by the tracks. The fifth robot was positioned on the floor and could move around more freely. Each of the five creatures was equipped with a scanner that was able to sense strong light-sources and communicate the sense perceptions to a computer controlling the robots' behaviours. Each robot was also equipped with a spotlight mounted to their centre body. The robots would lock onto each other's 'gazes' as their spotlights would intersect and compel the robots to move together. The autonomy of the ceiling robots was somewhat compromised in that they could be controlled and pulled apart by non-responsive track-motors. The simplistic response and control systems of the robots created unique and complex behaviours amongst the creatures as they locked 'eyes', connected for a brief moment before being pulled apart and again beginning their search for a new light source to capture their attention. The robots have a lively quality that pushes and pulls them to act, behave and play amongst one another.

As they perform, the *Ménage* robots present much of animal's social behaviour, specifically Fagen's third form of animal behaviour, that of social play. As the robots chase one another around the room, they seem to be modelling the behaviours of most primates and carnivores, pinnipeds, marsupials and some birds through their participation in the social play of chasing (Sutton-Smith 23). For Fagen, the characteristics of animal play, related to the social play interaction of chasing, are; repetition, reversal, fragmentation, exaggeration, inhibition and unpredictability. For Norman White, the unpredictability of the robots' playful interactions would likely be most important, however, the robots also participate in an engagement that is repetitive (through the ongoing quest to move towards one another), reversed (as their actions to draw together are denied by the track's integrated programming to pull them apart), fragmented (as their playful engagement may be interrupted by human interlopers), exaggerated (by their mechanical bodies as they whizz and whur around the gallery space) inhibited (by their programming to play above all else) and of course unpredictable as their multiplicity of possible movements and interactions make manifest the randomness of their performance. It is through the narrative of animal interaction that *Ménage*'s performance is born.

Ménage's liveliness is enacted outside of human interaction or performance. The audience contributes it as observer, not participant, challenging art traditions by way of an aesthetics of behaviour that shifts performative ontologies away from the human and into new zones of materiality and embodiment. This work is deliberately non-anthropomorphic and as such it shifts the focus from representational issues to questions of agency and behaviour (Jochum & Goldberg 163). *Ménage* is an illustration of the *experiential uncanny*, which is a type of uncanny interaction triggered by the spectre of uncertainty arising from blurring the lines between the animate and the inanimate, the authentic and the fake (164).

The legacy of Norman White's lively and interactive robotic beings has carried though to other robotic works that similarly seek to model animal behaviours to stimulate feelings of wonder and whimsy in audiences. Jim Pallas' fuzzy and furry interactive robot *Nose Wazoo*, 1990, (Figure 2) appears as an object pulled from a children's novel. To quote Pallas' webpage from the *Nose Wazoo*, "in the Frankenstein myth, man created a being that destroys him. While the myth is often associated with technology, I'm more interested in Pygmalia who creates something to fall in love with." The five-foot-tall furry creature certainly appears as an object of love rather than fear. The *Nose Wazoo* is equipped with four photocell eyes and an infrared sensor enabling it to observe its surrounding environment. The creature seeks out and responds to humans as it flexes its long neck and extends its nose up to 20 inches towards a person as it attempts to nudge them to get some attention. Its lower body is covered in sisal fibres, beads and wires while its head, though also furry, is much more mechanical looking except a moulded human nose at the tip of an extendable metal pole. The *Nose Wazoo* gathers viewers through its silly performances as it flings its body around with "back flips" and "floorscapes." Once it has accumulated an engaged crowd with its enchanting performance, the creature will try to nudge humans nearby with its extendable nose. The *Nose Wazoo* is unexpectedly temperamental and can easily retreat from its peacocking display to sulk if it is teased by a human through an excess of stimuli. The *Nose Wazoo* is playful and engaging and can enthrall viewers through its seemingly humanistic and lively behaviours. According to zoologist Konrad Lorenz, infantile or cute features trigger a nurturing response in adults; these are cross-cultural phenomena that are triggered by certain stereotypes of cuteness which include smallness and furriness.



Figure 2. Jim Pallas, *The Nose Wazoo*, 1990. Image courtesy of jpallas.com

It is important to note that these robotic creatures often take the role of prey as opposed to predator or cute as opposed to frightening or unpleasant. Works such as the *Nose Wazoo* and *Ménage* are non-confrontational, cute and even cowardly. These robots do not impose themselves on the viewer but are somewhat friendly bodies that enter in the sphere of liveliness in such a way as not to induce fear. Robotic art, in the survey presented thus far, is allowed to become lively, behavioural, playful and agentic due to non-threatening status. The smallness, cuteness and quaintness of whimsy are represented in the aesthetic and performative behaviours of the *Nose Wazoo*, its mischievous movements draw the focus to endearing attempts to gain attention. The creature is lovable and sweet as it compels the viewer to engage and even nurture the misbehaving machine. Even the name *Nose Wazoo* triggers a sense of silliness for the human viewer.

The Japanese phenomena of *Kawaii*-a tool used to soften the hardness of Japanese technological culture with the cuteness of kitties, bears and puppies and their large heart-melting eyes and rosy cheeks-can be an entry point for further analysis of the aesthetics of this and other works of robotic art. The Japanese style of “*Kawaii*” embodies a special kind of cute design that could be used to inform designers of interactive media how to engage users in a way which reduces fear and makes dreary information more acceptable and appealing, “an analogy could be thought of as the bitter pill with a flavoured layer that makes the consumption of the medicine more agreeable” (Cheok 299). Adrian Cheok expands upon this analogy to address a parallel between the “cold, digital, electronic, and unsettling internal components of a system and the bitter pill” while on the other hand “the ‘flavoured coating’ is the cute user interface, which is made more agreeable by establishing a relationship with the user and delivering the content of a system in a more friendly and attractive way” (299). In this way, the content, or message, of such appropriated robotic art is softened and made more palatable to the human spectator.

Robotic art may also fall under another element of *Kawaii* due to the fact that the viewer is often presented with a “trick” or surprise. Interactivity is essential to *Kawaii* as the surprise presented “to the user

plants the initial emotion through which the continuing experience is colored,” which, beings the “micro-relationship” between user and object. (Cheok 300). Creatures such as the *Nose Wazoo* present the viewer with an interactive surprise, here through the object’s performativity, and, its quest to reach out and tap humans with its extendable nose. This micro-relationship is a short-lived superficial relationship between the cute object or creature and the human. It is not likely to last and may lack critical depth; however, it may be extremely impactful as a memory, a mode of provoking thought or a highly emotional and possibly even loving engagement.

For Kawaii, and cuteness more generally, the defining characteristics of the aforementioned creatures are “the feelings and emotions that are caused by experiencing something that is charming, cheerful, happy, funny, or something that is very sweet innocent or pure. It can stimulate a feeling of adoration, sympathy, or stimulating the care response” (Cheok 301).

An example of this more visceral emotive connection to cute robotics is Cynthia Breazeal social robot, *Leonardo*. Breazeal’s work on social robots with the MIT lab has brought forth a number of cute and interactive robot creatures such as *Kismet*, the world’s first social robot. However, one of the most traditionally “cute” social robots to come out of Breazeal’s lab is *Leo*. *Leonardo* is a 2.5-foot tall, highly expressive sensing and interactive robot. He is responsive to environmental cues and can be taught to mimic human reactions, responses and feelings. He is able to reflect human emotions and console through mimicry. *Leonardo*’s soft fur, small stature, large brown eyes and big floppy ears fall within the parameters of cuteness that appeals to human’s desires and embedded emotional responses. For Breazeal, robots can be used as tools for social technology, as companions, friends, pets, etc. that aid in human’s social interactions with the world. Social robots have become ubiquitous in recent years, for their ability to extend life expectancy of humans and generally improve health. Most often used by elderly people as robotic caregivers these robot creatures are able to act as stand-ins for human or animal interaction.

Through studies conducted in Breazeal’s MIT lab and other research have shown that humans’ innate response to robotics does depend on their aesthetics and behavioural cues. While ultra-human robots that seek to mimic real aesthetic and behavioural traits of humans present us with an uncanny feeling, social robots are so successful in fostering loving and caring relations with humans because of their non-threatening look and feel. Social robots such as *Leonardo* and *Kismet* are companions or assistants that occupy a childlike sentience that does not threaten their human users. Thus, allowing humans to fill in the gaps and transpose meaning onto *Leo* as the robot reflects back human emotions and feelings. A key aspect of the acceptance and even love for robots lies in their ability to elicit sympathy and empathy (Sundar, Waddell and Jung). While a human-esque anthropomorphic robot that is prescriptively human will be scrutinised for any deviation from “normal” behaviours, soft, sweet and ineffable robot creatures enjoy a greater freedom in their abstractness (Kroos 24). By way of cuteness, innocence and animal-like behavioural patterns art-bots made to interact with humans are able to interact in complex ways with their spectators/companions.

Robot’s behaviours are designed and curated to elicit reactions from their human counterparts; aesthetics play a large role in how these behaviours are conceived and perceived. Within the network of human and nonhuman actants in a particular gallery or exhibition featuring works of robotic art, affects are being passed from and to bodies by way of reciprocal interactions and engagements. By way of addressing the whimsical bodies, performative machines and networked nonhumans brought forth in robotic artworks this article has sought to draw out how aesthetic and behavioural languages of robotic art play into our emotional and affective encounters with them. Enmeshed in a dense network of relations humans and nonhumans share forces of intensity across bodies to engage us in affect and propose particular directions for encounters that prioritise the non-threatening, cute, quaint, sad, quizzical and *whimsical* creatures surveyed through this text. Whimsicality seems to cut across the works presented and may stand in as an evocative descriptor for the playful ecology and creations of robotic art and the feelings they inspire in humans. The term seems to embody the kind of small, humorous, lively, unwieldy (though still unthreatening), playful and behaving qualities of robotic creatures that are reoccurring throughout my historical and contemporary surveys of the field. Whimsicality seeks to move beyond liveliness to address something more particular about how robotics are being produced and modelled by humans/artists.

Reflecting upon the networks of hardware and software pulsing through each work of robotic art thus far explored, I see they are emblematic of biological and organic behavioural systems made palatable as cold metal creatures through their aesthetic and affective modelling of *whimsy*.

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