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Chapter 7

CHIKAMATSU, MORI, AND THE UNCANNY VALLEY

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Karl F. MacDorman

Introduction

Chikamatsu Monzaemon¹ (1653–1724) is Japan’s most celebrated playwright. Dubbed the profession’s guardian deity, he wrote at least 40 plays for kabuki and 114 for *ningyō jōruri*² (hereafter, *jōruri*), a form of musical puppet theatre he transformed and popularised (Kawatake 1988, Figure 7.1). Chikamatsu’s only known work of theatre criticism is reported in an interview with a close friend and *jōruri* devotee, the Confucian scholar Hozumi Ikan (1692–1769). The interview presents Chikamatsu’s theory of realism, published posthumously, in the preface to Hozumi’s (1738/2016) *Naniwa Miyage* (Kan 2019; Pastreich 2011).

Chikamatsu’s insights can inform contemporary discourse on character and interaction design in robotics and AI, especially as it relates to the *uncanny valley*. The uncanny valley graphs how affinity for robots, dolls, and puppets plunges into eeriness when they resemble humans too closely. The concept, first proposed in 1970 by the Japanese robotics professor Mori Masahiro (2012), has taken hold in the West this century. Chikamatsu’s theory explains how to balance realism to circumvent the uncanny valley and maintain emotional engagement. The goals of today’s designers resonate with Chikamatsu’s ambition to bring soulless creations to life, which is why his advice remains relevant.

In subsequent sections, I recount Chikamatsu’s biography, translate his interview with Hozumi, reinterpret his theory of realism, and apply it to robotics and AI research. As a translator of Mori’s essay and a researcher publishing extensively on the uncanny valley, I explore new connections



FIGURE 7.1 Rō Ikkan in Chikamatsu Monzaemon's *The Battles of Coxinga*, puppeteered by Yoshida Bunshō III at the National Theatre in Tokyo, February 13–28, 1982. (Courtesy of the C.V. Starr East Asian Library, Columbia University).

between Chikamatsu's theory, human psychology, and contemporary robotics. My aim is to show the universality of Chikamatsu's insights, implicit in Mori's uncanny valley concept, in developing social robots.

The Playwright's Life and Contribution

Chikamatsu was born Sugimori Nobumori, the second son of a samurai who served as a medical doctor under daimyo (lord) Matsudaira Tadamasu (Miyoshi 2016). After losing his office, Chikamatsu's father moved to Kyoto. Chikamatsu briefly served as a page to the nobleman Ichijō Ekan, then entered *Gonshō-ji* monastery in Ōmi province, where he studied classical Japanese literature, music, court ceremony, etiquette, and Buddhism (Iwao et al. 1975).

Chikamatsu started writing *jōruri* plays at 25 or 26 and continued for the rest of his life. In 1684, he began a 30-year collaboration with the narrator Takemoto Gidayū (1651–1714). Takemoto opened his theatre in Osaka with *The Soga Heir*, which Chikamatsu had written for Uji

Kaganojō's theatre in Kyoto the year before. Beginning with Takemoto's production of *Kagekiyo Victorious* in 1685, set after the Genpei War (1180–1185), Chikamatsu innovated a new style of *jōruri* with more realistic, expressive, and riveting plots (Yoshikawa 1965). In 1706, when the kabuki actor Sakata Tōjūrō (1647–1709) retired, Chikamatsu moved to Osaka to dedicate himself to writing *jōruri* for Gidayū's theatre (Kawatake 1988).

The bulk of Chikamatsu's *jōruri* repertoire consists of 90 *jidaimono* (plays depicting historical events and figures). These period pieces include romances and epic battles involving nobles and samurai. Masterpieces of this genre include *The Snow Woman* (1705), *The Battles of Coxinga* (1715), and *The Soga Brothers at Kaikei Mountain* (1718). The remainder consists of 24 *sewamono* (plays depicting the contemporary life of ordinary people). These domestic dramas have received the most enduring acclaim (Chikamatsu 1961). Set in the present, focused on family conflicts, sometimes featuring an antihero and exposing life on society's fringes, they marked a transgressive departure from earlier *jōruri* (Gerstle 1996). A character inspired by an orphan, miscreant, or murderer could leap from the news headlines to the stage. Chikamatsu's domestic dramas include *The Love Suicides at Sonezaki* (1703), *The Love Suicides at Amijima* (1720), and *The Woman-Killer and the Hell of Oil* (1721). In *Woman-Killer*, the oil merchant's son, Yohei, falls heavily into debt and turns to blackmail and murder. Chikamatsu's portrayal of Yohei as an antihero rather than a villain resonates with contemporary audiences.

Chikamatsu elevated puppet theatre to the apex of dramatic art. His plays, the first to incorporate townspeople as a literary genre, along with similar stories by poet and novelist Ihara Saikaku (1642–1693), continue to shape Japanese literature. His domestic dramas, known for their acute insight into family and romantic relationships, explore the tension between desire and duty (Iwao et al. 1975). That this tension nearly always resolves in tragedy indicts the rigid feudal order, unable to fulfil individual needs in an urbanising society.

My translation of Hozumi's interview with Chikamatsu follows.

Preface to Naniwa Miyage by Hozumi Ikan

Some years ago, when I visited Chikamatsu, this is what he told me:

- 1 *Jōruri* differs from other forms of storytelling. As the puppets' role is paramount, every verse must spring to life through movement. Moreover, *jōruri* vies for patrons with nearby kabuki theatres and the artistry of their live actors. To move the audience, the playwright must evoke

various emotions using soulless wooden dolls. Without extraordinary effort, it is hard to write a play of great renown.

Luckily, while reading *The Tale of Genji*³ in my youth, I stumbled upon this passage: “At the time of a seasonal court feast, snow had fallen heavily, blanketing a *tachibana* tree.⁴ A guard was dispatched, but no sooner had he brushed off the *tachibana* than the pine tree beside it, still bending under the weight of snow, recoiled its branches with reproach.” With these strokes of a writing brush, the author breathed life into a soulless plant. That is because the pine tree, envying the care the *tachibana* received, shook the snow from its own branches. Does this not create the impression of a being coming to life?

This passage made me realise how to imbue my *jōruri* with soul. Descriptions of scenery,⁵ not to mention narration and dialogue, must be steeped in emotion, lest the work fail to stir deeply. This is akin to what poets call *evocative imagery*. For instance, when extolling in poetry the magnificent landscapes of Matsushima or Miyajima,⁶ unless one writes with exaltation, it would be like gazing inattentively at a beautiful woman’s portrait. That is why each phrase must be rooted in emotion.

- 2 Whatever the verse, using too many particles like *te* [and], *ni* [to], and *ba* [as for] somehow degrades it. Yet untalented writers, confusing *jōruri* with poetic forms like *waka* and *haikai*,⁷ try to fit their verses into a 5–7 syllable pattern, resulting in superfluous particles. For example, if they should write *Toshi mo yukanu musume wo* [a girl not yet come of age], they instead write *Toshiha mo yukanu, musume wo ba* [as for a girl not yet come of age, indeed]. This fixation with counting syllables makes the dialogue sound unrefined. Though short and long lines are arranged in poetry, *jōruri* consists of song with string accompaniment, so the melody determines each line’s length. Should a playwright adhere strictly to poetic metre, the verses may prove awkward to chant. As I have not attempted this, my scripts contain few particles.⁸
- 3 *Jōruri* used to be like today’s *saimon* [street storytelling and lyrical ballads]. It lacked substance and flair. After leaving Uji Kaganojō’s troupe to write plays for Takemoto Gidayū, I chose my words with great care to lift *jōruri* to a high art. For example, the nobility, samurai, and lower tiers have distinct ranks and social positions, and each must be depicted accordingly in speech and manner. Even within the samurai, the daimyo, *karō* [chief retainer], and lower ranks, whose stipends vary, must be distinguished. This ensures that the audience empathises with each character.
- 4 *Jōruri* depicts life as it happens. But in the interest of art, it also exposes hidden aspects. It is standard practice in kabuki for an *oyama* [male actor who portrays female roles] to deliver lines that a real woman would not

utter. By talking openly, the character reveals her true feelings and circumstances. If a playwright were instead to model the character on a real woman, thereby concealing her motives and intentions, the performance – in all its accuracy – would fail to delight. Lines unbefitting a woman invite criticism from those who overlook the need for this device, but such departures from realism should be viewed as art. Likewise, when a villain acts too cowardly or a fool too buffoonishly, this should be viewed as art rather than a presentation of reality, and the audience should accept it as such.

- 5 Writers, declaring melancholy essential to *jōruri*, pepper their plays with expressions like *How sorrowful!*⁹ Otherwise, they have the lines chanted in a tear-drenched voice in the *bunya-bushi* style. [Okamoto Bunya, 1633–1694, was an early *jōruri* playwright.] These methods are absent from my work. In my plays, sorrow arises solely from each character’s adherence to duty. As the plot thickens, the burdens of duty intensify. The melody and dialogue are so tightly constructed that the audience is deeply moved. To lament “How sorrowful!” distracts from its causes, diminishing the final impression. Sorrow must arise, not on command, but spontaneously.

Furthermore, to admire a landscape like Matsushima in a single breath, “Ah! What a splendid view!” gives the impression of there being nothing left to say, thus diminishing it. To praise the scenery, take instead an indirect approach: point out several of its features to let its appeal be grasped naturally. This advice holds for anything of this kind.

- 6 Hozumi remarked: I have heard it said that society these days [early 18th-century Japan] will not accept things unless they seem well reasoned, realistic, and convincing. Many aspects of old stories no longer persuade. They deem kabuki actors skilful only if their performances resemble real life. An actor portraying a *karō* must resemble a real *karō*, one portraying a daimyo must resemble a real daimyo, and so on. Audiences will not tolerate, as they had in the past, the kinds of artifice that would only fool a child.

Chikamatsu answered: This argument may sound plausible but shows no grasp of the essence of art. Art abides in the narrow gap between the flesh and the skin, the real and the unreal. With today’s preference for realism, an actor portraying a *karō* is expected to mimic the speech and gestures of a real *karō*. But does that mean a daimyo’s *karō* should smear his face with powder and paint like the actor? Or, granted that his *karō* wears no makeup, would it then prove as entertaining to watch the actor perform on stage unpainted with a bald head and unkempt beard? This is what I mean by the narrow gap between the flesh and the skin: unreal yet not unreal, real yet not real. Somewhere between the two, amusement unfolds.

This observation relates to the story of a court lady who became enamoured with a man. Their passion was mutual, but the man could not call on her, as she was secluded deep within the imperial palace. She could only catch chance glimpses of him at court by peering through slits in the bamboo blinds. She was so madly in love with him that she ordered a wooden statue to be carved in his likeness. This was no ordinary doll. Its face and body differed not a hair's breadth from the man's. The colouration of his complexion, the pores of his skin, his earholes, nostrils, and mouth, and even the number of teeth inside, down to the tiniest detail, were copied exactly. Indeed, since the man had posed beside the figure while it was being made, it differed from him only in its absence of a soul. Yet when the court lady drew near to see it, though the doll was an exact replica, her enthusiasm instantly cooled. She somehow found it vacant and eerie. Her passion for the man cooled as well. Just having the doll around proved so disturbing that she soon discarded it.

Reflecting on this, if we reproduce exactly a being of flesh and blood, even the ravishing Yang Guifei, at some point, our fondness runs out. [Yang Guifei, 719–756, was an imperial consort and one of the four beauties of ancient China.] Thus, whether painting a figure or carving it in wood, the artist must use broad strokes in places, even while aiming to stay true to its form, as it is a fabrication. Human likeness of this type is, after all, what inspires people's love. Likewise, in composing a plot, the playwright must use broad strokes in places while still following the original story, for this skill ultimately delights the audience. One should also keep this in mind when composing theatrical dialogue and the like.

Chikamatsu's Divisions of Realism

Chikamatsu is often admired in film circles for proposing a theory of realism (Kan 2019). On this view, the scriptwriter should not aim for surface realism – a set free of fancy costumes, wigs, and makeup – but for conceptual realism: The characters should be separated and ordered to show their role and status by depicting their differences through demeanour, gesture, and attire.

Conceptual realism, according to Chikamatsu, can enable the audience to identify with the characters and empathise with them. A play with conceptual realism – combined with expressive imagery and a compelling plot – will evoke the right feeling at the right time (Mangan 2015). Joy and sorrow will arise from what the events unfolding on stage mean for each character, as the character's hopes and desires are aroused and thwarted. This progression of plot-driven emotions holds the audience in suspense

and transforms the cast's actions into art. The performance need not be highly realistic, but the audience must experience it as meaningful because meaning makes the performance *feel* real.

Chikamatsu's theory states that art dwells in a narrow gap between the unreal and the real, the inauthentic and the uncanny. However, this metaphor should not be taken literally (Lee 2000). It reflects one powerful style of art. With the benefit of hindsight, we see that other styles do not abide in a narrow gap but in a wide expanse, from the abstract, geometric patterns of Oskar Fischinger's *An Optical Poem* (1937, echoed in Disney's *Fantasia*, 1940) to the gritty realism of Vittorio De Sica's *Ladri di Biciclette* (1948), shot on location with ordinary townsfolk. At the low end of realism, the movements of two triangles and a circle tell a story that exhibits their different personalities and allows viewers to feel empathy for them (Heider and Simmel 1944); at the high end of realism, security camera footage amuses viewers on social media. None of these examples feels fake; none feels eerie. Thus, we can experience art and meaning at any level of surface realism – even when venturing into the uncanny.

Nevertheless, Chikamatsu's theory of realism rings true for *jōruri*, kabuki, and social robotics for two reasons. First, Chikamatsu's aim was not just to create art but *popular* art. To this end, he employed conceptual realism to stir the passions. Unlike *nō*, *jōruri* and kabuki were the popular theatre arts of his day. The stage was ablaze with action and drama, which, for kabuki, sometimes sparked a riot (Mezur 2005; Ortolani 1995). While Chikamatsu's new *jōruri* exhibited artistic merit, evidenced by its critical acclaim, he also multiplied the art form's popularity. Consider, for example, *The Battles of Coxinga*, which depicted Prince Coxinga's resistance against the Manchu conquest. At a time when a play might typically run for a few weeks, it ran for an unprecedented 17 months. Shakespeare, whose plays were also hugely popular in his time, similarly used conceptual realism in characterisation: "Shakespeare does not paint individuals but individualises classes. [He distinguishes in each character] the signs of a class of nature, midway between his general nature and his individual peculiarities" (Whipple 1888, 49). Both Chikamatsu and Shakespeare were popular because they used conceptual realism to create archetypal and relatable characters and holistic and moving stories.

Second, Chikamatsu's theory rings true for *jōruri* and kabuki because conventions of symbolism and stylisation are integral to these art forms and limit their surface realism. To a contemporary audience, these conventions may obscure meaning, especially when combined with situations, social norms, and language made alien by the passage of time. In the U.S., *kabuki theatre* is a metaphor for elaborate but empty political posturing that leaves matters unresolved. Ironically, this is the opposite

of how kabuki – or *jōruri* – would have been experienced during the Genroku period (1688–1704) and successive decades. Conflicts on stage were resolved, often tragically, by the action and dialogue, which the audience could follow because the situations, social norms, and language were still contemporary. Conventions clarified a play’s meaning. By supporting conceptual realism, *symbolism* and *stylisation* enhanced the play’s popular appeal.

Symbolism and stylisation have also been used to this effect in robot performances in Japan and the U.S. (Sone 2017). For example, R2-D2 from *Star Wars* employed distinctly non-human sounds, movements, and visual cues to convey personality and emotion.

The juxtaposition Chikamatsu makes between conceptual and surface realism, both of which he placed between the unreal and the real, may be interpreted as forming a graph (Figure 7.2). As indicated, the old *jōruri* was unrealistic and unconvincing. It lacked authenticity, relying on graceless theatrics. The narrator would *tell* the audience what to think and feel about a landscape instead of allowing the audience to draw its own conclusion.

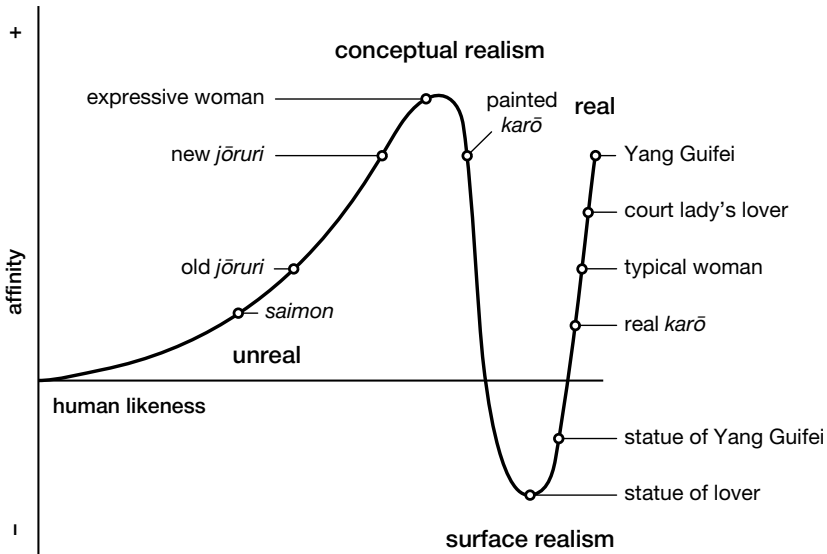


FIGURE 7.2 Chikamatsu’s theatre criticism implies that conceptual realism increases affinity through characterisation and plot-driven emotions. Surface realism employs exact reproductions of reality, which are eerie. The audience will often prefer conceptual realism because its departure from reality can heighten a play’s artistic merit. (Credit: MacDorman).

Then, from the story of the envious pine in *The Tale of Genji*, Chikamatsu learnt how to enliven his puppets with emotion. Movement, dialogue, and evocative imagery would *show* events unfolding. The drama would hold the audience under its spell, free of the jarring proclamations of an overwrought narrator. In essence, the dramatic technique “show, don’t tell,” attributed to Anton Chekhov (1860–1904), had been proposed by Chikamatsu two centuries before it was popularised in the West (Lubbock 1921). This technique was essential to his new *jōruri*.

Chikamatsu also contrasts real life with kabuki’s conceptual realism: During the Edo period, a real woman was expected to keep her feelings buried, while a female character could express them openly, thus advancing the plot. Like a Shakespearean soliloquy, though unrealistic, this openness allows the audience to understand the character’s state of mind. As is common in drama, the audience is expected to suspend disbelief. Similarly, though a real *karō* presents his face without makeup, a kabuki actor could use makeup to portray the *karō*’s disposition and state of mind. For example, the colours red and blue represent good and evil, respectively; lines on the face, hands, and forearms represent blood vessels throbbing with anger or passion; makeup shows whether the character is bold or reticent, thoughtful or reckless; and clothing indicates the character’s social status. Though one might think the stylised kabuki versions of the woman and *karō* were false, Chikamatsu affirms that such departures from reality are art. Thus, a woman and *karō*’s role are placed near the first peak in the graph.

Chikamatsu then sets up another contrast – this time between surface realism and real life: The court lady is unnerved by the statue of her lover, rendered with uncanny accuracy. Even a statue of Yang Guifei, whose beauty was legendary, would quell the viewer’s affection if reproduced precisely. With these parables, Chikamatsu reaffirms that art sometimes demands departures from reality.

Conceptual Realism in Mori’s Uncanny Valley

In today’s Japan, *jōruri* and kabuki have been crowded out by other forms of entertainment. Puppet theatre is a dying art in the West as well.

Chikamatsu, however, is making broader observations about visual storytelling and the aesthetics of anthropomorphism. These observations apply to new forms of media like computer animation and virtual and augmented reality. Given Chikamatsu’s goal – to create emotional engagement by breathing life into soulless puppets – his observations on *jōruri* apply especially well to social and humanoid robots. Their aesthetics were addressed in a 1970 essay by Mori Masahiro (2012), then a professor at the Tokyo Institute of Technology. Chikamatsu’s theory of realism

foreshadows Mori’s uncanny valley concept, aligning with it in thought-provoking ways (Poulton 2014).

Mori’s essay describes how our affinity for robots varies with their human likeness. Industrial robots, designed only to perform specific functions, do not resemble the factory workers they replace, and most people feel little affinity for them (Figure 7.3). By contrast, toy robots, which have a head, torso, and limbs, delight children. Humanoid robots, which imitate human interaction using sophisticated sensors and actuators, can be even more engaging. Thus, with each human feature added, should we not expect our affinity for robots to increase?

Presumably, if a robot could be built that appeared – in every aspect – identical to a healthy, active person, it would engender even greater affinity. But Mori observes that this goal is perilous. As the robot approaches but fails to become indistinguishable from humans, our response abruptly turns from affinity to revulsion. Mori presents two thought experiments. In the first, a woman reaches out to shake what looks like a human hand but is, in fact, a myoelectric hand. The discrepancy arouses uncertainty about whether a living being is animate. In the second, a man rummages around lifeless mannequins that suddenly awaken. This aberration sparks uncertainty about whether non-living objects are inanimate. Jentsch

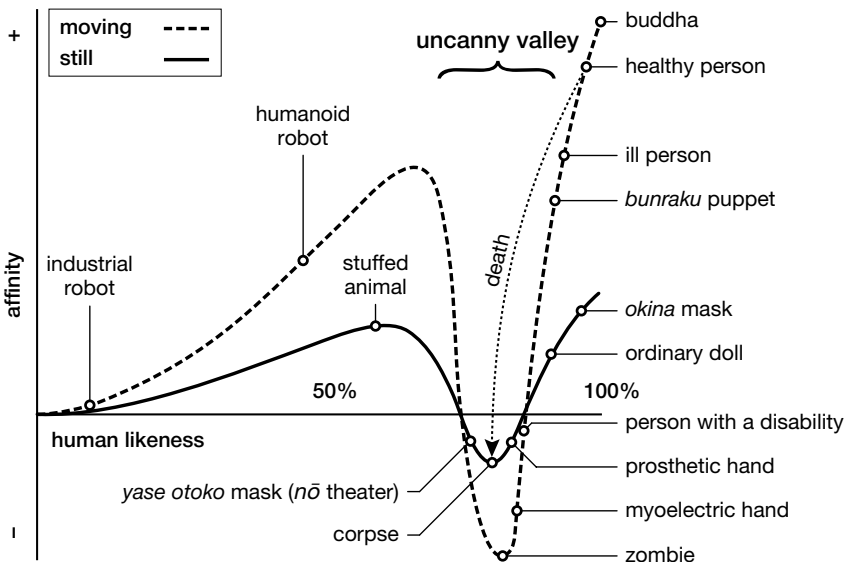


FIGURE 7.3 Mori’s uncanny valley plots the relation between an entity’s human likeness and the affinity it evokes. Movement steepens the slopes. In 2005, he added *buddha*. (Credit: MacDorman).

(1906/1997) identifies uncertainty of either kind as eliciting an uncanny sensation.¹⁰ Mori attributes this to the “uncanny valley phenomenon,” the title of his seminal essay.

To interpret Mori’s essay, Chikamatsu’s distinction between conceptual and surface realism is invaluable. We find a blending of these concepts in Mori’s placement of items along his graph’s human likeness dimension. For example, the *okina* (old man) mask from *nō* theatre is highly stylised – with a broad nose, closed eyes, and evenly spaced wrinkles, symbolising wisdom, longevity, and prosperity. In its *surface* realism, it does not appear more human than the *yase otoko* (emaciated man) mask. Nevertheless, Mori’s graph presents the *okina* mask as almost human, much more so than the *yase otoko* mask (Figure 7.3). The placement of the masks only makes sense when one considers their degree of *conceptual* realism: The *yase otoko* mask represents a ghost from hell, which is indeed less human and more eerie than an old man.

In 2005, Mori indicated that a statue of the Bodhisattva Maitreya, considered our world’s next buddha, could be placed above and to the right of the healthy person in his graph (Mori et al. 2012). In placing the statue at the pinnacle of human likeness, Mori prioritises the *concept* the statue embodies – buddha as the *ideal* human – over its physical appearance. Again, his graph reflects conceptual realism more than surface realism.

A similar blending of conceptual and surface realism occurs on the curve for moving entities. Mori (2012) observes that on close inspection, *bunraku* puppets appear less real than prosthetic hands. However, when animated on stage, their performance in its aesthetic mastery appears so human as to captivate the audience. Thus, his graph plots a *bunraku* puppet as more human than the prosthetic hand – or even its limbless user. As Chikamatsu surmised, the puppets are engaged in art, which is more beguiling than reality. I depict this interpretation in Figure 7.2 by making the first peak higher than the second. The audience feels an affinity for the puppets, not just because their movements appear human but because each puppet embodies an individual identity (LePage 2021). The puppet achieves this by portraying its character and the character’s relationships in a meaningful story (MacDorman and Cowley 2006).

How Narrative Empathy Falls Apart

I have proposed that an artificial entity’s surface realism disrupts emotional empathy for characters and, thus, the enjoyment of visual narratives (MacDorman 2019). As Chikamatsu observed from the court lady’s encounter with her lover’s statue, surface realism can turn affinity into eeriness. Although affinity tends to increase with an artificial entity’s human

likeness and perceived sentience, when a human-looking entity violates human norms, this elicits the uncanny valley effect (MacDorman 2024).

Zillmann and Cantor's (1977) affective disposition theory predicts that a viewer's emotional responses to a character are shaped by moral judgements about the character's actions. If the character's actions are deemed benevolent or justifiable, the viewer will come to regard the character favourably, and the viewer's emotional responses will align with the character's emotions (Raney 2004). Conversely, if the actions are deemed malevolent, the viewer will come to regard the character unfavourably, and the viewer's emotional responses will misalign with the character's emotions.

I proposed empathy disruption theory, which predicts that heroes will be most vulnerable to the uncanny valley's effects (MacDorman 2019). In addition to traditional heroes, we can feel an affinity for antiheroes, even a rogue like Shakespeare's Falstaff or a murderer like Chikamatsu's Yohei, both of whom fell victim to circumstances (Gerstle 1996; Raney 2004). Because context determines our affinity for a character, it also determines the character's vulnerability to the uncanny valley and, in turn, our feelings about the performance. The impact of context can be generalised beyond the dramatic arts to any relatable character, whether in computer animation, virtual and augmented reality, social and humanoid robotics, or real life.

In sum, affinity depends on many factors apart from human likeness: Whether the entity embodies an individual identity, enacts a story, or qualifies as a hero, antihero, or villain, the particulars of the story, whether it makes sense, has artistic merit, etc.

Applying Chikamatsu's Theory to Social Agents

To test empathy disruption theory, we set up an online interactive scenario where participants role-played as a patient interacting with a doctor (MacDorman 2019). The theory predicts that an artificial entity's surface realism can disrupt emotional empathy, particularly for heroes, by eliciting the uncanny valley effect, thus reducing narrative enjoyment. The experiment has a $2 \times 2 \times 2$ between-groups design where the doctor is either a hero or villain, the narrative has either a happy or sad ending (the doctor is awarded a fellowship or sued for malpractice), and the doctor and his office are either depicted using computer animation or a real actor. The computer-animated doctor and office were digital doubles of the real ones.

Many effects were as predicted: Participants had greater emotional empathy for the hero than the villain. They also had greater sympathy,

cognitive perspective-taking, and narrative enjoyment. Participants preferred just endings (hero rewarded, villain punished) to unjust endings (hero punished, villain rewarded).

Some effects were counter to prediction. Participants enjoyed the computer-animated scenario more than the real one, even though the computer-animated doctor rated eerier. Eeriness ratings were influenced by the story, resulting in the villain being rated eerier than the hero. Nevertheless, narrative enjoyment operated somewhat differently for the tragic hero, depending more on the participant's transportation to the virtual world than emotional empathy for the doctor. Eeriness may disrupt narrative empathy more in a different genre, like romance, or using a different medium, like a physical robot.

Lessons for Social Robotics

Chikamatsu's principles for *jōruri* can be adapted to the experience design of social robots:

Anthropomorphism's value to *jōruri* was illustrated in the passage about the envious pine. In social robotics, Paro, modelled after a baby harp seal, leverages its zoomorphism to engage users (Sone 2017). The robot turns its head towards sources of sound, feigning attention. This trick enables Paro to tap into psychological mechanisms that cause us to attribute human intentions to this mindless robot (Turkle 2007).

Empathy for a character is elicited in *jōruri* and social robotics by aligning the character's actions to the viewer's values (MacDorman 2019).

Individuation of character types and roles in *jōruri* translates into social robots that exhibit context awareness when interacting with different types of people (e.g., customer vs. employer or adult vs. child). They express their identity, purpose, and function through their overall performance (LePage 2021; Sone 2017).

"*Show, don't tell,*" according to Chikamatsu, indicates meaning should arise through the story, not its narration. Thus, a social robot should reveal its inner state through its deeds and relationships, not just its statements (MacDorman and Cowley 2006).

Simplicity is essential to creating an interaction flow that feels organic. In *jōruri*, that involves the words following the melody, and in social robotics, it could involve the melody following the emotional prosody of speech (Savery, Zahray, and Weinberg 2021).

Symbolism in kabuki is exemplified by coloured grease paint, indicating a character's nature, status, and emotions. Similarly, the original Sony Aibo, a robotic pet dog, uses coloured LEDs, tail wags, and body movements. Kabuki and *nō's* symbolism and stylisation appear in robot

performances in Japan; they encourage audiences to suspend disbelief and perceive the robots as magical, more than machines (Sone 2017).

The *uncanny valley* warns contemporary designers not to aim for perfect human likeness but instead for stylised, emotionally engaging designs (Mori 2012).

Though three centuries have passed since Chikamatsu shared his criticism of *jōruri* and kabuki with his friend Hozumi, his views can inform how we design robots and other technologies that present themselves as social agents. The goal, to breathe life into a soulless contrivance, remains the same. As does the path forward, to design robots that enact compelling, conceptually realistic stories, whether these robots appear human or not.

Notes

- 1 The family-name-before-given-name convention in Japanese is followed throughout.
- 2 Macrons indicate long vowel sounds.
- 3 *The Tale of Genji*, the world's first novel, describes life at the Heian court (Murasaki 2008).
- 4 The blossoms of this citrus tree are fragrant, and the fruit resembles mandarin oranges.
- 5 This refers to *michiyuki*, lyrical descriptions of scenery during a journey.
- 6 Matsushima Bay's pine-covered islands and Miyajima Island's shrine and floating *torii* gate are among the three most admired views in Japan.
- 7 *Waka* and *haikai* are classical and comic Japanese poetry.
- 8 Despite this claim, Chikamatsu often followed the 5–7 pattern.
- 9 In classical literature *aware* denotes any moving experience (Motoori 2013).
- 10 Mori conceived the uncanny valley independently of Jentsch (1997) and Freud (2003; Jochum and Goldberg 2015).

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