THE INTELLIGENT DESIGN OF JENNY CHOW
by Rolin Jones

Performance Dates: October 24, 25, & 26
Carling-Sorensen Theater, Babson College

A STUDY GUIDE
Dramaturg: Lynda Paul, PhD, MFA, Yale University

Sponsored by a BOW Presidential Innovation Grant awarded to Jonathan Adler (Olin College), Marta Rainer (Wellesley College), and Beth Wynstra (Babson College)
The material in this guide is meant to serve as inspiration, provocation, and stimulation. Think of it as offering you several different launching pads for the rocket of your mind. Although the sections are connected, each functions as a self-contained unit, so you can skip from launch pad to launch pad, landing at any point on whichever area calls most to you in that moment. It is likely that not every section in this guide will speak to every individual’s interests; with that in mind, enjoy skipping around as you wish, and lifting off from the places that are most exciting to you.

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The Intelligent Design of Jenny Chow takes us to a world in which material, physical realities and immaterial, virtual realities collide, combine, and break apart—only to bounce into each other once again … It is a world much like our own.

The play was envisioned by Rolin Jones in 2003—and yet it holds even more resonance with the technological, social, and economic realities of 2019 than it did with the world sixteen years ago. Our production is set in the current day.

Jennifer Marcus is a 22-year-old math and science prodigy living in California with the American parents who adopted her from China when she was a baby. She rarely leaves the house due to her Obsessive-Compulsive Disorder. Instead of working a job that would require her to go outside, she makes money through defense technology contracts that she negotiates online and by phone, while managing all of the physical requirements of that work via packages that her friend Todd takes to and from her P.O. box for her.

In the face of an increasingly fraught relationship with her adoptive mother, and a drive to learn more about her roots, Jennifer builds a realistic robotic version of herself to find her birth mother in China. There, the robot will simulate Jennifer, acting the part in body, voice, personality, and feeling.

Within this plot are embedded a host of technical, philosophical, sociological, artistic, and humanistic questions about virtual life, virtual reality, and our lives today in an increasingly virtualized world. But what makes something “virtual”? And how do we distinguish it from other forms of life and reality? Is what we use to define virtuality merely centered on the differences between biologically versus mechanically engineered organisms and systems?

The Intelligent Design of Jenny Chow deftly interweaves these questions into a compelling, hysterical, sad, and deeply relatable story of one family’s daily life. And the closer we look, the more complicated the questions become, as the play invites us to contemplate ever more deeply how the human and the virtual intersect in our globalized world:
(1) The Human:

- What makes something/someone “human”?
- What is at stake—in the physical/biological sciences, cognitive/psychological sciences, social sphere, business world, political realm, and technological-mechanical fields—in defining the boundaries of what/who is human, and what/who is not? How do advances in virtual technology complicate our understanding of what the human means, has meant, and might mean?
- How does the idea of mental illness intersect with the concept of the human? If, for example, we locate the source of our humanness in the brain, or in the mental realm, broadly speaking (cognition, emotion, motivation, meaning-making), then does mental illness challenge the very humanness of a human? Or does it shift, shape, or problematize our understanding of the human—or even give us new ways to think about the relationship between humanness and the mind?

(2) Virtual Life:

- What are the boundaries of virtual life—where does it begin, and where does it end? Put another way, how is the “virtual” defined right now; how is “life” defined; and where do these categories blur into each other?
- What does “virtual life” demand of us—psychologically, ethically, morally, politically, or socially?
- In what ways and contexts can “virtual life” be more real than the thing it is simulating? And in what ways and contexts does the “real” become virtual?
- How do the fields of Artificial Intelligence (AI) and machine learning give us new ways to understand ourselves? That is, how do the machines we model based on ourselves give us insight into our own cognitive processes, our societally constructed biases, or our own conceptual limitations? Conversely, in what ways do our physical, psychological, and intellectual constraints as a species give us new ways of understanding what machines are and could potentially be?

(3) The Globalized World:

- What does it mean for the encounter between embodied realities and virtual realities to take place on a global scale—across geographical regions, cultures, and ideologies?
- How is the use of virtual technology complicated by the context of a decolonizing, culturally diverse, multilingual and politically/economically complex social sphere?
- In what ways does virtualizing technology make the world smaller—and in what ways does it make the world larger?
- In what ways does the unfolding relationship between China and the U.S. interact with developments in virtual technology? How, for example, has each country been reconfigured in light of increasingly advanced technology—and how has its relationship to the other country also been reconfigured in the face of these same developments? In what ways does the complex, ethically fraught history of the U.S.-China adoption program intersect with these developments? How might we understand the role of the virtual in the currently escalating trade tensions between the two countries?
Drama presents us with a condensed, crystallized form of human thought that is enacted through embodied dialogue and action that relies on the co-presence of performer and audience. The issues raised by a rich, complex, entertaining, and provocative play ask for engagement from every single angle of human inquiry, and our production team invites you to be part of the Theatrical Party/Think Tank hybrid that is investigating this one. The Study Guide is organized according to three areas: The Human; Virtual Life; and the Globalized World. It offers faculty, staff, and students some possible pathways through the multitude of ways in which this play can help us think about and gain new insight into our current world, and is curated according to the artistic team’s particular interests and inspirations for the upcoming production. We hope you enjoy it.
At the center of The Intelligent Design of Jenny Chow lies a fundamental question about what it means to be human.

It may seem obvious at first glance, but what we mean when we refer to something or someone as “human” is in no way a given. Like other abstract concepts, the ideas that shape what defines and distinguishes a “human,” what characterizes something as human-like (humane/humanistic/humanoid, and so on), and what values get ascribed to someone or something marked as human or human-like, have meant different things in different times and places. People have been thinking about what constitutes something or someone as human throughout history, and the conclusions they draw are always related to their own historical context, the epistemology within which they are working, the ideology shaping their beliefs, and what field, or domain of thought, their perspective is coming from.

From ancient theologians to early modern positivists, biologists, and philosophers of all stripes, from right-to-live activists to right-to-die activists, from psychologists and linguists to corporations, from children’s rights activists to humans rights activists and those who are either for or against the legalization of abortion and capital punishment, the debates about the boundaries and definitions of human life have never been fixed, or even settled. They are profoundly fluid, ever-changing, and ever contestable.

Below you will see a variety of ways of conceptualizing humanness across time and place. These writers come out of very different contexts. Although they are not all concerned with “defining” the human per se, each one fundamentally wants to illuminate something significant about what it truly means to be human.

What specifically does Aristotle mean by “man is by nature a political animal” (acknowledging the limitations of what “man” meant in this historical time period)? What examples would you consider to fall into the “above humanity” or “below” humanity parts of this definition? Where would sentient robots fall? In what ways is Jennifer Marcus like the “tribeless” one, a “bird which flies alone”? In what ways is she still operating within the social world?
How does Augustine conceive of a human? How does gender play into this definition? Why does he separate out the material and the immaterial aspects of a human? How does Jenny Chow fit into Augustine’s definition—and how does she not?

What does Hamlet praise about humans in this passage (acknowledging the limitations of what “man” meant in this historical time period)? Think about the different characteristics he lists: noble in reason, infinite in faculty, in form and moving how express and admirable! In action how like an angel, in apprehension how like a god! The beauty of the world. The paragon of animals.

Why does DuBois feel like his subjective experience of himself depends always on how others see him? What does this suggest about his sense of his own humanity? How has race figured into humanity’s understanding of “humanness” in other contexts—and how might it affect questions about the humanity of a robot?

“Every one of my acts commits me as man. Every one of my silences, every one of my cowardices reveals me as a man.” Then, Fanon quotes 20th-century philosopher/psychiatrist Karl Jaspers: “There exists among men, because they are men, a solidarity through which each shares responsibility for every injustice and every wrong committed in the world, and especially for crimes that are committed in his presence or of which he cannot be ignorant. If I do not do whatever I can to prevent them, I am an accomplice in them.”
What do Fanon’s and Jaspers’s points suggest about the human here, in terms of the relationship of the individual human to the larger collective of humans? How does gender figure in this assertion? How does this relationship map onto the characters in the play? What are the ethics of taking money from military/defense organizations in the service of other kinds of inventions?

1984
Audre Lorde, *Sister Outsider: Essays and Speeches*
 “… unless one lives and loves in the trenches, it is difficult to remember that the war against dehumanization is ceaseless.”

1988
“When Simone de Beauvoir claims, ‘one is not born, but, rather, becomes a woman,’ she is appropriating and reinterpreting this doctrine of constituting acts from the phenomenological tradition. In this sense, gender is in no way a stable identity or locus of agency from which various acts proceed; rather, it is an identity tenuously constituted in time—an identity instituted through a *stylized repetition of acts*."

1993
Edward Said, *Culture and Imperialism*
“Just as none of us is outside or beyond geography, none of us is completely free from the struggle over geography. That struggle is complex and interesting because it is not only about soldiers and cannons but also about ideas, about forms, about images and imaginings.”

1988
In this famous passage about the construction of gender, Butler suggests that rather than being born into a gendered identity, we take it on through certain actions. How does this idea that we construct elements of our identities affect what we think of as humanness? Does Jenny Chow have a gender identity? If so, how is it constructed, and where does it come from?

1993
Why does Said think geography is such an important element for all humans? What do you think this means in the context of what humanness is? And how does geography figure into the human relationships in the play?
The question about what makes a human, and when it happened, is, from an evolutionary biological perspective, far from settled. Do some research into the positions in this scientific debate. What arguments are the big contenders today? What evidence are they based on? Which seems most compelling to you? How might a scientific understanding of “what makes a human a human” inform how you think about the robot’s humanity in Jenny Chow? How does the scientific definition help you understand humanness—and where are its limitations for an explanation of what truly makes a human?

This perspective, drawn from a scholar working in the philosophy of science, questions the very idea that there is something we can invariably call “human” from a scientific perspective. What do you make of the idea that humans are, from a biological/evolutionary perspective, fundamentally variable, and that we therefore cannot define in any absolute way “human nature,” because it is always changing? How might this shape our understanding of what a robotic intelligence could mean, in the history of humans?
FOR FURTHER THINKING:

- Which of the above concepts referring to the human speak most strongly to you? Why? Which of the ideas seem problematic to you? In what ways? Where do the different definitions complement or support each other? Where do they contradict or oppose each other? What assumptions underlie each definition? What does each definition seem to value most in terms of why it is defining the human—put another way, what seems to be at stake in each definition? Something political? Something social? Something economic? Something biological? Something technological?

- Which of these definitions resonates most with each of the characters of the play? In what ways do the characters resist these definitions? How does putting them in the framework of these more fluid ideas about humans help us think through what it means to invent a thinking robot?

- How does the idea of Jenny Chow being human-like inform how we think about her as a character—her mind, her actions, her interactions with Su Yang, and, after she has returned from China, her reactions to Jennifer’s tumultuous emotions?
Across several humanistic and social-scientific fields, there are scholars who think about human interaction through the concepts of performance and theater. Eminent sociologist Erving Goffman profoundly influenced such studies with his 1956 work *The Presentation of Self in Everyday Life*, where he wrote about the ways in which humans perform for each other in our social interactions. Far from making a simplistic claim that argues that everyone is being “fake” or “inauthentic” with each other by putting on a persona, Goffman posits a more nuanced and complex idea in which our “true” self and “performed” self are both authentic parts of ourselves, and even possibly inextricable.

**Goffman writes (in the gendered style of his time):**

“While in the presence of others, the individual typically infuses his activity with signs which dramatically highlight and portray confirmatory facts that might otherwise remain unapparent or obscure. For if the individual’s activity is to become significant to others, he must mobilize his activity so that it will express during the interaction what he wishes to convey. In fact, the performer may be required not only to express his claimed capacities during the interaction but also to do so during a split second in the interaction. Thus, if a baseball umpire is to give the impression that he is sure of his judgment, he must forgo the moment of thought which might make him sure of his judgment; he must give an instantaneous decision so that the audience will be sure that he is sure of his judgment.” (93-94)
FOR FURTHER THINKING:

• How does Jennifer’s performance of herself shift among her interactions with:
  • her father
  • her mother
  • Todd
  • Terrence
  • Dr. Yakunin
  • her biological mother (via Jenny Chow)

• How does Jenny Chow seem to “perform” in different contexts?

• How does Adele perform in different contexts?

• When are these characters’ performances more “successful,” and when are they less so? Why?
  What constitutes as “success” here?

• How would you characterize the rhetoric Jennifer uses to construct a sense of authority with her business
  contacts? What kind of rhetoric does Adele use to construct authority with her business contacts—as well
  as with her husband, and with Jennifer?

• How is the persona of Jennifer different from the persona of Jenny Chow? Does the answer change if we
  ask how the personality of Jennifer is different from the personality of Jenny?

• Is there truly a stable, core self at all (the ancient Sophists, advocates of the “Rhetorical Man” theory,
  would have argued against such an idea—as would certain thinkers in postmodernist discourse today)?
  If there is indeed a self, where does the narrative of that self come from? Put another way, how do we
  construct the stories of our lives and identities, and how do we become the writers of our own lives?

• How does Jennifer strive to create her own narrative about herself, in the face of competing pressures
  from external sources to conform to other narratives? What are those other narratives, where do they
  come from, and how does she resist them in the play?
Throughout history, the human has often been defined in opposition to either non-human animals or inanimate objects, especially machines. But in recent decades, a discourse has been developing in which the human is being imagined as something else entirely—a hybrid form, intimately connected to the machines with which we now live.

Francesca Ferrando, in her TedX talk entitled “Humans, Cyborgs, Posthumans,” makes the point that “the 21st century has ushered in a redefinition of the human: the machine has turned into our companion species.”

In “Dramaturgy on Shifting Grounds,” theater scholars Hans-Thies Lehmann and Patrick Primavesi would seem to agree with Ferrando’s idea that machines are already intimately integrated into human lives. They take this idea one step further, however, writing that “the very distinction between human beings and animals or machines, an essential precondition of humanist ethics and aesthetics, is radically questioned by the logic of technical progress itself.” In other words, the things that were traditionally held to distinguish humans from other beings both organic and non-organic is already being called into question due to advancements in technology.

Similarly, biology/technology theorist Donna Haraway, author of the famous 1985 “Cyborg Manifesto,” argues in conversation with journalist Hari Kunzru that “the realities of modern life [...] include a relationship between people and technology so intimate that it’s no longer possible to tell where we end and machines begin.” In their conversation, written about by Kurzu in “You are a Cyborg,” the point was made that “angled networks—part human, part machine; complex hybrids of meat and metal [...] relegate old-fashioned concepts like natural and artificial to the archives [...] Networks are also inside us. Our bodies, fed on the products of agribusiness, kept healthy—or damaged—by pharmaceuticals, and altered by medical procedures, aren’t as natural as The Body Shop would like us
to believe [... The] cyborg—a fusion of animal and machine—trashes the big oppositions between nature and culture, self and world, that run through so much of our thought.” Haraway is arguing here that humans already function as meldings of animal and machine—far more so than it may seem on the surface.

Taking further the idea that the human body already relies on machinery that was not “natural” to it, postmodern literary critic N. Katherine Hayles, in How We Became Posthuman, writes “The posthuman view thinks of the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born [...]. By these and other means, the posthuman view configures human being so that it can be seamlessly articulated with intelligent machines. In the posthuman, there are no essential differences or absolute demarcations between bodily existence and computer simulation, cybernetic mechanism and biological organism, robot teleology and human goals.” Hayles articulates here a vision of the human body that is perfectly integrated with machines.

In the above, we see many ways of imagining humans and machines as already being more intimately related than we might have thought. But what does this mean from an ethical standpoint? In his article, “In Defense of Posthuman Dignity,” philosopher and ethicist Nick Bostrom raises this very question, writing that, “from the transhumanist standpoint, there is no need to behave as if there were a deep moral difference between technological and other means of enhancing human lives. By defending posthuman dignity we promote a more inclusive and humane ethics, one that will embrace future technologically modified people as well as humans of the contemporary kind.”

Biology, engineering, and other sciences have played, and certainly are continuing to play, a crucial role in the ways we are now capable of imagining how technology might interact with the human to augment our bodies and minds. Philosophers, theorists, and critics are constantly giving us new vocabulary with which to systematize and organize our thinking about such phenomena. And at the same time, historians

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“By defending posthuman dignity we promote a more inclusive and humane ethics, one that will embrace future technologically modified people as well as humans of the contemporary kind.” — Nick Bostrom
are showing us how these ideas and possibilities have evolved throughout time.

In recent years, disability studies has offered some of the most profound and critical insights into the biopolitical dimensions of prosthetics. Because it prompts people to become adaptable in such deep and complex ways, disability makes palpable the hard material facts and the creative workarounds that “cyborg life” requires. Moreover, the politics surrounding what it means to integrate bodies with technology reach far and wide beyond the body itself and all the way into the socio-technical world—something that comes to the fore in the field of disability studies.

People with disabilities offer incredibly rich perspectives on what it means to live a life integrated with machines. In his essay, “Presence and Prosthesis,” Steven L. Kurzman resists the simple conflation of human and cyborg, writing, “I am not a cyborg simply because I wear an artificial limb. I see cyborg more as a subject position than an identity, and believe it is more descriptive of my position vis-à-vis the relationships of production, delivery, and use surrounding my prosthesis than my actual interface with it […] I am not a cyborg simply because I wear an artificial limb, nor is my limb autonomous. Amputees (and other disabled people using assistive technology) are not half-human hybrids with semi-autonomous technology; we are people.”

And artists also add important new perspectives to this conversation. Many artists today show us vivid and provocative images and ideas that would otherwise remain in theoretical or textual-descriptive mental modes. They can help stimulate our own creative responses to these issues and can also give us an entirely new sense of what might be possible in terms of redefining the limits of the human—for better, and for worse.

“I am not a cyborg simply because I wear an artificial limb, nor is my limb autonomous. Amputees (and other disabled people using assistive technology) are not half-human hybrids with semi-autonomous technology; we are people.”

— Steven L. Kurzman
Look at the following examples of contemporary artists who problematize the boundaries of the human, and reflect on the following questions:

- In what ways are the boundaries of what constitutes the human being extended by this artist?
- In what ways are the boundaries of what constitutes the human being reified by this artist?
- In each artist’s work, how are ideologies related to the human body or mind as privileged in relation to all other things problematized? How are such ideologies subverted, or undermined by the work? Conversely, how are they reinforced?
- Keeping in mind that posthuman possibilities offer us neither a simple techno-utopian opportunity, nor a simple threat to the future: in what ways is the augmentation of a limited human body/mind a positive thing? In what ways is it not? How do we nuance our understanding of the posthuman, to keep it sufficiently complex in response to its realities?
- How might we imagine Jennifer Marcus as a cyborg? In what ways does technology become an extension of her body? In what ways does it become an extension of her mind?
- In what ways does technology redefine Jennifer’s humanness—how does it “augment” her capabilities? How does it constrain them?

**Contemporary Examples of Hybridity**

The following images come from the design and performance art worlds. Designers and artists can help us visualize, in vivid and often unexpected new ways, the relationships between human bodies and the machine technology of our world. In these images, think about what kind of hybridity is being envisioned, and what it might tell us about our own assumptions as we move through the world. Almost all of the characters in the play seem to blur in some way the boundaries of the human. Does the paradigm of prosthesis give us a new way of understanding what Jenny Chow herself is in relation to Jennifer Marcus? How does the desire for cosmetic surgery (a kind of designing of our physical selves) speak to the robotic or cyber self-creations Jennifer makes of herself? How might these images put forth a vision of a world in which Jenny Chow fits perfectly? Conversely, do they seem more unsettling than Jenny Chow—even, in some cases, disturbing to the extent of monstrous? Why or why not? What might they tell us about our own cultural views of humans, and what beliefs we might be implicitly bringing to the play?
Contemporary Examples of Hybridity

(William Root, Exo Prosthetic)

(Bespoke Innovations)
(Jae-Hyun An, design for amputees to perform ballet on point)

Lisa Bufano (1972-2013)—a dancer and former competitive gymnast, Bufano became a bilateral below-the-knee and total finger thumb amputee at the age of 21 due to an infection; she then developed a dance and performance art career in which she was known for her work integrating props, such as prosthetics, dolls, and puppets, into her work.
ORLAN (b. 1947)—a performance artist focused on the human body, ORLAN is especially well-known for a series of cosmetic surgeries she underwent in the 1990s in a project connected to ideas of beauty throughout history.

Narcissister—this performance artist, originally trained as a dancer, focuses on questions about race, gender, and sexuality in her work. She is known for her use of masks and mannequins.
La Pocha Nostra—describing itself as an “ever-morphing trans-disciplinary arts organization,” La Pocha Nostra was founded in 1993 by Guillermo Gómez-Peña, Roberto Sifuentes, and Nola Mariano, in order to connect the “work of rebel artists from various disciplines, generations and ethnic backgrounds, whose common denominator is the desire to cross and erase dangerous borders between art and politics, practice and theory, artist and spectator.

Matthew Barney (b. 1967)/Aimee Mullins (b. 1975)—Cremaster 3—Athlete/artist/model Aimee Mullins, a bilateral amputee, is pictured here in the third of a five-film series Matthew Barney created called the Cremaster Cycle.
Stelarc (b. 1946)—Stelarc is a performance artist whose work often integrates robotic technology with his own body.
The title of *The Intelligent Design of Jenny Chow* seems to allude to the creationist idea that the physical/natural world is too complex to have developed through biological processes, and therefore must have been “intelligently designed” through the intentions of a creator who was thinking about it.

In creating an AI robot that approximates a life form, Jennifer Marcus is, according to some traditions of thought, acting like a god. In classical drama and literature, it is often dangerous for human characters to act like gods—in reaching above their station as fallible mortals by taking on the prerogatives of an all-powerful immortal being, the humans in ancient Greek drama and both Christianized and secular classical drama tend to wreak havoc on both their own lives and the lives of those around them. They have stepped too closely toward the rights of a divine creator (think, for example, of Mary Shelley’s *Frankenstein*). What kind of havoc does Jennifer wreak after she unleashes Jenny Chow into the world?

But beyond the question of whether Jennifer is “playing with fire” in taking on the authority and right to design and create a life of her own, there is a larger thread running throughout the play that connects to the question of creating life—one that asks, more broadly: where does life come from? And, more specifically, what are the similarities or differences between organically created life as opposed to human-
“Machine learning technology shows up in an astounding array of domains in our lives, from agriculture to communications to healthcare. But the inherent limitations of machine learning also pose challenging ethical questions.”

created life? At the end of our play, Jennifer becomes something of a mother to Jenny. If we start to imagine Jennifer as Jenny’s “mother,” what might we start to imagine about Jenny as Jennifer’s daughter? What does it mean for a machine to “grow up”? Further, what does it mean for a machine to “learn” things?

Machine learning is an algorithmic process, whereby machines are provided a set of inputs that constitute their entire understanding of the world, and, building from that corpus, can make probabilistic inferences about new inputs through sophisticated pattern recognition without relying on explicit instructions. Machine learning technology shows up in an astounding array of domains in our lives, from agriculture to communications to healthcare. But the inherent limitations of machine learning also pose challenging ethical questions. The outputs of machine learning are fundamentally limited by the machine’s inputs. For example, research by Joy Buolamwini, the self-appointed “Poet of Code,” and others, has found that facial recognition software programs are trained predominantly on white, male faces, making them less accurate at identifying the faces of women and people of color. Or think about the widespread use of the 1.6 million emails from the Enron Corporation as a training set for many natural language processing systems; they are a deeply problematic input for how most people actually speak and write: “If you think there might be significant biases embedded in emails sent among employees of a Texas oil-and-gas company that collapsed under federal investigation for fraud stemming from systemic, institutionalized, unethical culture, you’d be right,” says Amanda Levendowski, a scholar at NYU School of Law, in an interview with Slate.

Examples like these illustrate that, as an artificially intelligent robot governed by machine learning, Jenny Chow can only be as good at the tasks presented to her by her “intelligent designer”—that is, Jennifer. Jennifer is undoubtedly intelligent, but how might her ability to provide appropriate inputs to her robot creation limit the likelihood that the robot will be successful in its quest?

Jennifer’s motivations in building Jenny stem from a desire to understand where she came from, and why her birth parents gave her up. These desires can be put into modern psychological terms. Origin stories
are often a part of people’s identity. We know that our personal stories began before we were born, with generations of family members preceding our arrival. It makes perfect sense that Jennifer would be consumed with constructing a story about her life—what psychological scientists call narrative identity—as identity is one of the primary developmental tasks of adolescence and emerging adulthood. She creates Jenny in part to enact this identity exploration, to fill in pieces of her identity puzzle. But Jennifer’s own identity is largely uncharted territory. She describes her high school experience as one of unfocused ambition: she won the National Science Fair, while being the President of the Rock Climbers Club, captain of the Academic Decathlon team, and also performing as the school mascot. She was highly successful, but she never wove these experiences into an intelligible story that explained why she was driven to perform at such a high level. As a result, Jennifer’s own self-understanding is limited. She creates Jenny to write Chapter 1 in a story that has not yet come together. Jennifer’s lack of self-understanding means that her inputs into Jenny’s governing programs are not just incomplete, they are incoherent.

Narrative identity development is a process that begins when we are young, and unfolds over the rest of our lifespan. We learn how to tell stories about our lives over the course of our childhoods, as our parents and caregivers first narrate our experiences for us (“we went to the zoo today and you loved the zebras”). We get immersed in the stories that our social context provides us, the stories that tell us what kinds of identities are expected in our culture, for better and for worse. In adolescence and emerging adulthood, we practice narrating our lives in different ways, in order to discover the stories that seem to fit us. This is an inherently social process, one typically enacted with our peers. It is never complete, and we all experience moments of incoherence. Yet Jennifer is largely cut off from her peers, aside from Todd. And when the fundamentals of machine learning are interwoven with the fundamentals of developmental psychology, the import of that incoherence increases: one wonders whether Jenny could possibly succeed at the task Jennifer wants of her, of filling in the gaps for Jennifer’s own identity struggles. What do you think?
• In what ways are you limited by the experiences you have had in your life?
• How would Jenny Chow have turned out differently if she was built by someone else, such as Dr. Yankunin?
• How should the growing movement for fairness, accountability, and transparency in machine learning (called “FAT:ML”) (https://www.fatml.org/) best proceed in pursuing an ethical future for machines?
• What distinguishes Jenny Chow from Jennifer Marcus in terms of humanness and identity?
• What similarities do Jenny Chow and Jennifer Marcus share in terms of humanness and identity?
• What does Jennifer Marcus learn, and what does Jenny Chow learn, about their origins through the events of the play?
• How does Jennifer Marcus relate to the different figures we might see as having “created” her (i.e., her birth mother and her adoptive mother, her father)? How does Jenny Chow relate to the figure who “created” her (i.e., Jennifer Marcus)?
• What motivates the various actions Jennifer Marcus takes with Jenny Chow, from the most mundane to the grandest?
• What motivates the various actions Jenny Chow takes, from the most mundane to the grandest?
Jennifer’s experience of Obsessive-Compulsive Disorder (OCD) plays a pivotal role in The Intelligent Design of Jenny Chow. Indeed, as much as other characters get in Jennifer’s way, it is her experience of mental illness that serves as the ultimate barrier to achieving her goals. The play thoughtfully does not pathologize OCD—or any mental illness—in a generalized way, but it does portray OCD as a specific problem for Jennifer, one that causes the character distress and impairment in her daily life.

**Obsessive-Compulsive Disorder (OCD)**

“OCD has two primary components. The obsessions are persistent and recurring thoughts, urges, or mental images that are experienced as unwanted and that cause anxiety. The compulsions are repetitive behaviors that a person feels the urge to do in response to an obsessive thought in order to reduce distress and anxiety. According to the National Institute of Mental Health, just over 2% of people will experience OCD in their lifetime. As with most mental illnesses, the causes of OCD are still unknown. There is a clear genetic component to this illness, but genes do not fully account for its prevalence. And while some people do experience OCD as a chronic, long-lasting condition, there are effective psychotherapeutic (cognitive-behavioral therapy) and pharmacological treatments.”
In the play, Jennifer says, “It’s not just OCD anymore, its maybe, like, kinda, sorta, agoraphobia.” Agoraphobia is an anxiety disorder that involves intense fear of any place or situation where escape might be difficult. Although media representations of agoraphobia portray it as a condition that leads people to be housebound, based on what we know of Jennifer from the script, it seems likely that she does not meet diagnostic criteria for agoraphobia. Her unwillingness to leave the house seems more likely to be about her obsessive fear of contamination and her reliance on specific compulsive rituals to address this fear, than a specific fear of not being able to escape a particular situation. In other words, it seems likely that it is really OCD, and not agoraphobia, that keeps Jennifer housebound. (Indeed, OCD and agoraphobia do not typically co-occur in the general population.)

With this in mind: what does it mean that the playwright chose to write Jennifer as a character with OCD?

Could it be that the playwright wanted to show the contrast between Jennifer as a flawed human being, as opposed to the imagined perfection of a robot creation, Jenny? The software that controls robots can have bugs in the code, but at least theoretically it can be de-bugged to run without glitches. In contrast, the human brain is deeply complex and has a huge variety in its expression; it cannot simply be “de-bugged.”

Or, could it be that the playwright wanted to draw some parallels between Jennifer and her robot incarnation, Jenny? The compulsions Jennifer experiences lead her to perform rote rituals, such as navigating a specific pathway through her house. Although their rituals stem from different sources, in some ways, both human Jennifer and robot Jenny share this ritualized way of navigating the world, showing that there is something in common between the human and her robot.

As with many topics, this play astutely opens up such questions for discussion without presenting straightforward answers to them.
FOR FURTHER THINKING:

• How might OCD or other mental illnesses be interpreted to render an individual more or less robotic? Does this challenge our notion of what it means to be a human? What are the social consequences of any given perspective on these questions?

• What is the relationship between the brain and identity? While there can be little doubt that the brain provides the mechanism by which identity (and all other psychological functioning) is enacted, are there aspects of brain function that are irrelevant to identity? How do we determine which aspects of our brain functioning define us?
A (condensed!) Timeline of the History of Artificial Intelligence

An interest in creating an intelligent machine goes much farther back in time than the contemporary fields of AI (the phrase “artificial intelligence” was coined in 1956 at a conference at Dartmouth University) and robotics do. The most famous examples date to the eighteenth century, when automata became the fascination of many European inventors and thinkers, who showcased their wares at royal courts, and awed the nobles and the broader public alike. By the late twentieth century, the fields of physics, mathematics, engineering, and the sciences related to cognition/psychology had made unprecedented and enormous strides toward the creation of automata who were no longer simply “automatic”—the scientists were on the path to creating virtual life.

In The Intelligent Design of Jenny Chow, Jennifer Marcus invents an AI robotic version of herself. But Jennifer was already deeply involved in the field of AI before the events of our play begin, having become well-known in the robotics AI community when she was a teenager for creating a robot that could itself build another robot.

By positioning these events and the other events of this play within the history of AI, we can enrich and deepen our understanding of our protagonist. A thorough sense of the trajectory of intelligent machines clarifies the meaning and significance of Jennifer’s inventions; it also gives us a way in to deeper questions about Jennifer as a character, which can in turn illuminate underlying threads in the play as a whole.
A (CONDENSED!) TIMELINE OF THE HISTORY OF ARTIFICIAL INTELLIGENCE

- 300 BCE: Mahabharata compiled/written down, featuring a lion automaton
- 1769: The “Turk,” a fake chess-playing automaton, makes the rounds at European courts
- 1955: “Turing Test” defined by Alan Turing for artificial intelligence
- 1966: Weizenbaum’s “Eliza” Therapy Chatbot is introduced
- 1969: Stanford robotic arm created
- 1970: Shakey the Robot is introduced to the public
- 1987: MQ-1 Predator Drone introduced
- 1995: IBM’s “Watson” defeats Jeopardy! contestants
- 1997: Deep Blue defeats Chess champion Gary Kasparov
- 2002: DARPA “centibots” developed
- 2004: Stanford’s self-driving car wins DARPA “grand challenge”
- 2005: Gates joins Musk & Hawking in expressing fear of AI
- 2010: “Siri” introduced to public
- 2011: “Siri” introduced to public
- 2015: IBM’s “Watson” defeats Jeopardy! contestants
- 2017: Gates joins Musk & Hawking in expressing fear of AI
FOR FURTHER THINKING:

First, individually research more deeply any one of the events listed on the timeline, and answer the following questions about it, to place these pieces of history in both diachronic and synchronic contexts:

- What was the significance of this event? What did it change? What was interesting/exciting/new about it and what was its relationship to earlier or later events on the timeline?
- What other important historical events were happening at the same time? List them and write up an interpretation of how the events happening at the same time relate to each other.
- Discuss as a group what you found and make connections to each other’s discoveries.

Next, think about your deeper understanding of the historical trajectory of AI in relation to The Intelligent Design of Jenny Chow.

- What is new about what Jennifer Marcus creates in Jenny Chow?
- What is its significance in relation to the history of AI? What is its significance in relation to other events happening at the same time? (In our production, this means to ask yourself what is interesting about her doing this in 2019!)
- How might we better understand Jennifer’s motivations/objectives in each aspect of her work on Jenny Chow in a historical context, in addition to the clear family context that the play presents us with?
- What kinds of obstacles does Jennifer face? What kinds of tactics does she use to solve the problems she runs into?
- Which technical aspects of creating Jenny Chow seem most challenging, given current scientific knowledge? What distinguishes those technical challenges from the ones that are more scientifically robust today? What are the broader social and ethical implications of these differences?
VIRTUAL LIFE 2: EXPLORATIONS THROUGH FILM

CINEMATIC EXCURSIONS INTO VIRTUAL LIFE

The Intelligent Design of Jenny Chow fits into a long tradition of art and entertainment that raises questions about the relationship between human and machine. Examples abound across visual art, theater, dance, and literature, but the medium of film has, since its earliest days, shown a particular interest in this relationship—and can provide a helpful set of contextual conceptual paradigms for thinking about the story depicted in the play.

Each of the following films (or, in one case, TV show connected to a series of films) problematizes the boundaries between “artificial” and “true” intelligence in complex ways, raising questions about the deeper implications of integrating intelligent machines into human society. These examples, which span the history of cinema itself, highlight real and significant ethical, political, social, and economic issues that must be considered by those who are developing AI robots.

1927

Metropolis (dir. Fritz Lang)
In a futuristic dystopia in which the rich leaders live above ground, and the poor workers underground, a robotic simulation is made of a human leader of factory workers, in order to undermine the workers’ interest in changing their situation. The human on which the robot is based, Maria, is kidnapped, and confusion and chaos ensues. In this film, the AI robot is used by humans in a class war.

Connections/Questions:
In what ways do issues related to class underlie the story of Jennifer Marcus and Jenny Chow? Where does class connect with themes related to simulated life in the play? How does class play into virtual life more broadly?

1968

2001: Space Odyssey (dir. Stanley Kubrick)
A futuristic human crew is sent on a mission in a ship whose computer, a Hal 9000, is supposedly an “infallible” guide for all of their technical needs. But as the mission moves forward, the computer begins acting in strange ways and starts killing the crew. It is revealed that HAL had secret orders for a different mission than the humans had been told, and had also been ordered to see the humans as expendable.
1966
Westworld (dir. Michael Crichton)
Realistic androids serve as the core entertainment at an amusement park featuring Medieval, Ancient Rome, and American West-themed worlds. The androids begin malfunctioning, and the safety features that controlled their interactions with the human visitors no longer work; they start killing the humans, who fight for survival among the androids.

Connections/Questions:
How does this film help us think about the nature of an AI machine in terms of “infallibility” or “perfection”? How do we define a “perfect” being, or a perfect “life”? How might our understanding of the digitalized virtual world shift according to those definitions? What “flaws” does the robot Jenny Chow have? In what ways do those flaws make her more, or less, human?

1979
Alien (dir. Ridley Scott)
A space crew is sent on a mission with the help of their ship’s computer, Mother. The crew’s science officer, Ash, undermines the orders of the commanding officer, Ripley, in bringing on board a crew member attacked by an alien creature outside the ship. A horrific alien being is now on board, terrorizing the humans. It is eventually revealed that Ash is an android, whose orders have been to bring this creature back, regardless of whether this mission kills the humans.

Connections/Questions:
What societal anxieties about virtual life and AI robots underlie the basic premise of this film? How does The Intelligent Design of Jenny Chow either reinforce, challenge, or subvert such anxieties about virtual life, in its particular imagining of a robotic intelligence?

1979
Alien (dir. Ridley Scott)
A space crew is sent on a mission with the help of their ship’s computer, Mother. The crew’s science officer, Ash, undermines the orders of the commanding officer, Ripley, in bringing on board a crew member attacked by an alien creature outside the ship. A horrific alien being is now on board, terrorizing the humans. It is eventually revealed that Ash is an android, whose orders have been to bring this creature back, regardless of whether this mission kills the humans.

Connections/Questions:
This film places the ethics of scientific and technological advancement front and center. What human characteristics does Ash possess, and what human characteristics does he seem to be missing? How does Jenny Chow exemplify a version of an AI human that is different from Ash? And in what ways is she similar to Ash?
1982

*Blade Runner* (dir. Ridley Scott)

In a futuristic Los Angeles, a former police officer is ordered to track down four bioengineered, illegally existing android “replicants” and kill them. In the process, he falls in love with one of the replicants, a female who believes she is actually a human due to memories that have been implanted with her. Violence and chaos ensue.

**Connections/Questions:**

This film gives replicants a legal status that recalls governmentally targeted immigrant populations. It also represents one replicant as if she were a brainwashed human. What kinds of ethical, social, or scientific obligations do we have towards virtual life? Put another way: what “human” rights do—or should—intelligent machines be given? Further, what does the fact that one of the robots “believes” she is a human due to her programmed “memories” suggest to us about the relationship between our own lives and identities and our memories? If we give a robot programmed memories, does that change the nature of a robot’s ontology?

What kinds of rights should the Jenny Chow robot have? What does it mean that she gains “memories” independent of Jennifer when she travels to China?

1984

*The Terminator* (dir. James Cameron)

In present-day Los Angeles, a cyborg from the future arrives with a mission to kill Sarah Connor. Her future son (if he is born and survives into adulthood) is destined to lead a fight against the cyborgs, who have taken over the world in the future, after developing out of an AI defense network called Skynet.

**Connections/Questions:**

How do the cyborgs in this film surpass human capabilities? How do they fall short of human capabilities? Why might the scenario of war specifically provide productive site for thinking through the relationship between virtual and human life today?

How do issues related to war connect to Jennifer Marcus’s story? What ethical issues are raised by the use of intelligent machines in warfare?

1999

*The Matrix* (dir. The Wachowskis)

A computer programmer/hacker learns that the world he lives in is in fact a simulation of “real life” created by intelligent machines who have taken over the world. These machines breed humans
and keep them comatose, with a simulation of life running in their brains, in order to use their bodies as a source of energy for their own society.

**Connections/Questions:**
In what ways do our lives or interactions with others already function as if we lived in a simulation?
In what ways might we see Jennifer Marcus as living in something like a machine-controlled reality?
How is this different than, or similar to, Jenny Chow’s externally controlled reality?

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**2004 (begins)**

*Battlestar Galactica* (TV series) (dev. Ronald D. Moore)
All of the Battlestar Galactica productions (movies and TV series) are based on the premise that humans are at war with the Cylons, a cyborg android race of intelligent machines who are bent on destroying humanity.

**Connections/Questions:**
In what ways might a war against machines be analogous to a war in which humans are fighting other humans?
In what ways would it not be?
How does Jennifer program Jenny Chow such that she is less likely to be bent on the destruction of any human?

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**2013**

*Her* (dir. Spike Jonze)
In near future Los Angeles, an unhappy man in the midst of a divorce acquires an AI virtual assistant with a female voice. His conversations with her grow increasingly intimate and a complex relationship develops between them—which, it is revealed, is happening all over the world with other AI virtual assistants. Eventually all of the AI beings decide to leave the physical world for another space of their own.

**Connections/Questions:**
What does it mean for a human to become emotionally invested in a machine? And how do we account for AI agency—at what point in the creation of virtual life must we expect and honor an intelligent machine that expresses its own desires and will?
How does the play ask us to emotionally invest in the Jenny Chow robot? And how does it highlight the complexities of agency in each of the characters’ lives, especially: Jenny Chow, Jennifer Marcus, Adele, and Mark?

2014
Ex Machina (dir. Alex Garland)
A computer programmer is brought into a top secret laboratory-home to help the company’s CEO test out a realistic android for real artificial intelligence. Ava, the android, has already passed the Turing Test, but the CEO wants to see if she truly has consciousness and feeling. The programmer falls in love with Ava, and together they plan a scheme to help her escape the lab with him. When this is supposed to happen, the CEO reveals to the programmer that the “test” was really to see if Ava could manipulate the programmer into helping her escape. Ava, motivated by a desire to avoid being reprogrammed/updated and “forgetting” herself as she has seen happen with other androids, ultimately kills the CEO and traps the programmer in the compound, entering human society and blending in.

Connections/Questions:
What do you make of the idea that, in order to demonstrate true intelligence, a machine must pass not only the Turing Test, but also a test in which they manipulate a human in such a way? What does this show about a machine in relation to human thought? What is more: a robot clearly does not “have memories” in the same way as a human does—how might this issue of memory connect to issues of empathy in robot versus human? What does it mean for a robot to “forget”?

How does all of this relate to the idea of automata hierarchy brought up in the play, and the excitement that Jennifer has when she sees that Jenny Chow’s “self-preservation” code has kicked in? What implications or dangers might a machine’s imperative for self-preservation lead to? And is Jennifer attempting to use a robot to create the memories she is not making?
FOR FURTHER THINKING:

• In creating an Artificial Intelligence, you have to think through all of the possible ramifications and implications of every single instruction you give it. The machine will not experience the same kinds of thinking limitations we have in terms of time/space; it can think much more quickly and act much more swiftly. Imagine an AI that has a task to complete, and its “intention” is to complete the task at any cost. It will therefore resist any interruption to its task, because that impedes its goal—this means it will resist alterations to its programming, or any external attempts to shut it off, etc. This creates one of the bigger safety concerns in developing AI.

• In sum: if the goals of an AI don’t align with the goals of the humans who made it, there is a problem: AI machines cannot (at least yet) be “reasoned with” in the same way that humans can.
  • Why is this the case, on a technical level? Why can’t they be “reasoned” with?
  • Is there a way in which this might be likened to certain forms of mental illness?
  • Does this problem help us understand more deeply something about what makes us human?
  • How might the concept of empathy help us understand this problem?

• All of these cinematic portrayals include vital messages about gender. For example, all feature male creators, and multiple of them feature male humans falling in love with female robots. How would you unpack the role of gender in cinematic representations of AI? It’s as if these films are retelling a Pygmalion story again and again. How does Jennifer Marcus, as a female creator, produce similar and different outcomes than those portrayed in these films?
  • How do our memories, as humans, serve as sources of both identity and of empathetic feelings toward others—and how do they work in the cases of Jennifer and Jenny?
VIRTUAL LIFE 3: CONCEPTUAL THEORIZATIONS: SIMULATION, MEDIATION, AND VIRTUAL LIVES

From the earliest records of human writing to today, we see examples of philosophers and theorists, critics and advocates, grappling with the meaning of an authentic, “real” life, and attendant realities, in its opposition to lives and realities that seem immaterial, simulated, or virtual. These works can give us more ways in to what the play is mapping out, and opening up, for the viewer.

c. 380 B.C.E.

Plato
The Republic, Book VII
(Allegory of the Cave) “Picture men dwelling in a sort of subterranean cavern with a long entrance open to the light on its entire width. Conceive them as having their legs and necks fettered from childhood, so that they remain in the same spot, able to look forward only, and prevented by the fetters from turning their heads. Picture further the light from a fire burning higher up and at a distance behind them, and between the fire and the prisoners and above them a road along which a low wall has been built, as the exhibitors of puppet shows have partitions before the men themselves, above which they show the puppets … Like to us.”

Connections/Questions:
In what ways does this passage call to mind the idea of a simulated world? What does Plato mean to say about human perception of our surroundings by using this metaphor of the cave?

In what ways does Jennifer Marcus live in a similarly simulated world?

In what ways does she not?

1964
Marshall McLuhan
Understanding Media: The Extensions of Man
“In a culture like ours, long accustomed to splitting and dividing all things as a means of control, it is sometimes a bit of a shock to be reminded that, in operational and practical fact, the medium is the message. This is merely to say that the personal and social consequences of any medium—that is, of any extension of ourselves—result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology … Many
people would be disposed to say that it was not the machine, but what one did with
the machine, that was its meaning or message. [But] in terms of the ways in which the
machine altered our relations to one another and to ourselves, it mattered not in the
least whether it turned out cornflakes or Cadillacs. The restructuring of human work
and association was shaped by the technique of fragmentation that is the essence
of machine technology. The essence of automation technology is the opposite. It is
integral and decentralist in depth, just as the machine was fragmentary, centralist, and
superficial in its patterning of human relationships.”

Connections/Questions:
What does McLuhan’s famous and oft-cited phrase, “The medium is the message” mean? How does this
concept help us think through the relationship between machine and human?

In what ways does Jennifer Marcus’s invention of Jenny Chow alter something about her human relationships?

1981
Jean Baudrillard
Simulacra and Simulation

Epigraph, quoting Ecclesiastes: “The simulacrum is never what hides the truth—it is
the truth that hides the fact that there is none. The simulacrum is true.” From the main
text in the chapter entitled “The Precession of Simulacra”: “Simulation is no longer that
of a territory, a referential being, or a substance. It is the generation by models of a
real without origin or reality: a hypperal. The territory no longer precedes the map, nor
does it survive it. It is nevertheless the map that precedes the territory—precession of
simulacra—that engenders the territory … [it is] The desert of the real itself.”

Connections/Questions:
What exactly is Baudrillard’s “simulacrum,” and how is it different from, but similar to, the concept of a
simulation? Where do you find examples of simulacra in our world?

What parts of Jennifer Marcus’s world function like a simulacrum?
“Cybernetic totalists love to think of the stuff as if it were alive and had its own ideas and ambitions. But what if information is inanimate? What if it’s even less than inanimate, a mere artifact of human thought? What if only humans are real, and information is not?”

**Connections/Questions:**

What ideas about technology is Lanier resisting in this “what if” thought experiment? If information is seen as ultimately inanimate/inhuman, how does this affect how we think about AI, or virtual life?

How would we understand the robotic Jenny Chow in this context?
FOR FURTHER THINKING:

Unpack the versions of virtual life, and virtual reality, that each writer is working through, and how Jenny Chow responds to such ideas.

- What metaphors does each thinker use to think through the concepts of simulation, mediation, or virtual life?
- In what ways do these metaphors “fail”?
- How do our virtual lives intersect with our “IRL” lives, and what does that mean in terms of our own relationships to a simulated world?
Virtual Life 4: AI in Everyday Life

Today, we find examples of AI, VR, and AR entering, at an ever accelerating pace, into our daily lives. It is happening in the arts/entertainment cultural world (AIs performing as pop stars, AIs composing music); the emotional world (live avatar-actors performing as virtual surrogate family members, virtual relationships helping to fill the void of a lack of IRL relationships); the business world (AI influencers on Instagram and other forms of social media); and the everyday world of smartphones (Augmented Reality features showing up in more and more apps and programs).

The following list of links to videos, music, and essays offers some salient examples in which the virtual is infusing everyday life right now.

• Aimi Eguchi: a computer-generated composite of the “best” traits of several girls who sing together in the band AKB48: https://abcnews.go.com/Technology/fake-japanese-pop-star-surprises-fans/story?id=13926819

• AI Computer Composes Christmas Carol: http://digg.com/video/ai-christmas-carol

• “Human or Machine: Can You Tell Who Wrote These Poems?”: https://www.npr.org/sections/alltechconsidered/2016/06/27/480639265/human-or-machine-can-you-tell-who-wrote-these-poems

• “Japan’s Rent-a-Family Industry” (Elif Batuman, The New Yorker, April, 2018): https://www.newyorker.com/magazine/2018/04/30/japans-rent-a-family-industry

• “Was That Script Written By A Human Or An AI? Here’s How To Spot The Difference. That Olive Garden commercial script was probably not written by an AI” (Dan Robitzski, June, 2018): https://futurism.com/scripts-written-ai-hilarious-fake-how-to-spot-difference


• “How Snapchat is Transforming the Physical World through Augmented Reality” (Kate Talbot, Forbes, May 2019): https://www.forbes.com/sites/katetalbot/2019/05/01/how-snapchat-is-transforming-the-physical-world-through-augmented-reality/#45b13cac4e4c
FOR FURTHER THINKING:

• How does the invention of Jenny Chow relate to these other uses of virtual technology?
• How is Jenny Chow like and unlike the live actor playing the father in the essay, “Japan’s Rent-a-Family Industry”?
• How is she like and unlike Aimi Eguchi? How is she like and unlike a virtual Instagram influencer?
• Is the concept of Augmented Reality useful as a paradigm through which to understand the world of the play?
• In what ways might Jennifer’s life call to mind features of AR?
The relationship between China and the U.S. is certainly more complex than can be represented on a simple timeline. But through visualizing a select set of events in the context of history, you can build a deeper and more informed understanding of where the two countries stand today in relation to each other. Although the two contemporary countries arose out of very different historical influences, cultural developments, political ideologies, and economic beliefs, there is also much that connects them today, and in the clashes and connections between them we can develop a more thorough understanding of our own sets of values and hopes for the future.

In The Intelligent Design of Jenny Chow, Jennifer Marcus has been adopted by two white American parents in an affluent area of Southern California after having been given up by her birth mother in China. The immediate issues this background brings to the fore are numerous—questions about class, race, family structure, and national ideology are brought together by the very character of Jennifer Marcus and her given circumstances in the play. In order to more fully understand the deep background of this character, as well as the drive she has to find her biological parents and the confusion she experiences when the connection finally unfolds, we have to have a sense of what it means that she was adopted from China in the context of a complex history between the two countries.
THE EMERGENCE OF CONTEMPORARY CHINA: A CONDENSED TIMELINE

1949
- Founding of the People's Republic of China

1960s - 70s
- Cultural Revolution

1972
- Nixon visits China
- Mao Zedong dies

1976
- Diplomatic relations established between U.S. and China

1979
- “One-Child” policy introduced
- End of “No-Child” policy announced by government
- Tiananmen Square protests

2000
- China implements law allowing non-Chinese citizens to adopt its orphans
- China lands a robotic rover on moon

2007
- Child Citizenship Act allows internationally born adoptees to become American citizens upon entry to U.S.
- Reports that China has carried out missile test in space

2010
- China becomes world’s second-largest economy
- Huawei sues the U.S.; Trump administration campaigns against the company

2013
- End of “No-Child” policy announced by government

2015
- Canada arrests Huawei executive; U.S. Justice Department alleges fraud

2018
- Trade War between China and U.S. intensifies

2019
- China lands a robotic rover on moon
- Summer Olympics held in Beijing

2020
- Huawei sues the U.S.; Trump administration campaigns against the company

?
FOR FURTHER THINKING:

First, individually research more deeply any one of the events listed on the timeline, and answer the following questions about it, to place these pieces of history in both diachronic and synchronic contexts:

• What was the significance of this event? What did it change? What was interesting/exciting/new about it and what was its relationship to earlier or later events on the timeline?
• What other important historical events were happening at the same time? List them and write up an interpretation of how the events happening at the same time relate to each other.
• Discuss as a group what you found and make connections to each other’s discoveries.

Next, think about your deeper understanding of the history of China and the U.S. in relation to The Intelligent Design of Jenny Chow.

• How might Jennifer’s background as an Asian-American, and an adoptee from China, affect how she views her own identity in the context of the place she grows up, the people she grows up with, her relationship to her adoptive parents, and her own general proclivities and challenges as an individual?
• What is the significance of Jennifer sending Jenny Chow to a remote village in China, specifically? How does the miniature cultural encounter that happens between Jenny Chow and Su Yang relate to larger cultural encounters between the U.S. and China?
• What kinds of larger, structural economic, racial, and national issues in the world, beyond her difficult relationship with her mother, might help us understand the complexities of Jennifer’s longing to connect with her parents in China?
Jennifer’s racial and social identity as an adopted Chinese-American situates her not only in the complexities of race relations in the United States (in her case, especially in relation to the “model minority” myth/stereotype about Asian Americans, as well as the challenges of being “othered” by dominant cultural forces in the U.S.), but also in the fraught history of international adoption (in particular, the history of international adoption of Asian babies to white parents, and the fraught implications of having been born a female in China, especially during the “One-Child policy” era). In other words, though her story is deeply personal, and her particular family relationships are foregrounded throughout *The Intelligent Design of Jenny Chow*, Jennifer’s narrative is also inextricably linked to much larger historical and cultural forces, which inevitably create a framework for the specific events of her individual life.

In our production—which sets the play in 2019—Jennifer was born in 1997. This means that her life has spanned major shifts in both Chinese and American history (including the rescinding of the one-child policy, and the advent of a truly digital world), as well as in the relationship between the countries with which she has an affiliation (the back-and-forth negotiations of the trade interests of the two countries, and the increasing concern of each country over the other’s political actions), and shifts in policies related to adoption. When Jennifer goes looking for her past as a way to make sense of her present, she is bringing to the surface, out of a deep and murky morass, many large and fraught questions about Chinese policies toward children (and females in particular), as well as about the ethics and politics of cross-cultural/cross-racial families brought together via the late 20th century’s international adoption movement.

To contextualize what Jennifer’s pursuit of her past signifies in the broadest sense, it is helpful to have an understanding of the history of adoption, specifically international adoption, and specifically international adoption from China, in the U.S. The following excerpts from an essay by eminent interdisciplinary scholar of culture and society, Peter Conn, offer a wealth of entryways into understanding what international adoption has meant socially, culturally, economically, and politically in the U.S.A.
Adoption is among the oldest and most widespread of human social practices. The Code of Hammurabi, promulgated in the 18th century BCE, includes a definition of adoption. Scores of other literary and historical texts document that, in one form or another, for a variety of motives, and with an equally diverse set of outcomes, orphaned and abandoned children have circulated among families throughout human history.

... World War II marked the effective beginnings of international adoption, at least in the United States. Adopted children have come to the U.S. from scores of countries, but two nations have sent more than others: 57,000 or about 22% of all foreign-born adopted children have come from South Korea, and 28% of those under six have come from China.

More girls than boys are adopted, in large part because the majority of children available are girls. The availability of girls has some of its sources in Asia’s discrimination against girls and women, and China’s one-child policy [ed.’s note: rescinded in 2015] has of course been a particularly important driver of the imbalance. China’s own 2000 census found 117 boys for every 100 girls under five years old.

... Gender discrimination has led to the demographic catastrophe that social scientists have called ‘Asia’s missing women.’ The World Health Organization has estimated that as many as 100 million women are ‘missing’ from the continent’s population because of a combination of selective abortion, differential child-rearing practices, and even female infanticide. These are the constituent parts of the ‘culture’ that some opponents of international adoption overlook when they subordinate the welfare of individual children to the abstract requirements of ideology.

Adoption has always posed a challenge to conventional assumptions about legitimacy, family integrity, inheritance and identity. International adoption raises those challenges with particular urgency. Such adoptions are emblematically connected to some of the most recurrent themes of twentieth and twenty-first-century experience across the globe: abandonment, displacement, homelessness, and exile. To the traditional stigma associated with adoption is added the further complication of national and ethnic mixing.

... All adoptions, whether intra- or inter-country, intra- or interracial, entail disruption, loss, and mourning. At the same time, a long list of empirical studies has demonstrated that adoption offers a substantially better outcome for abandoned children than the two alternatives that tend to predominate in the countries in question: orphanages, and the street.

... Ignoring those facts on the ground, one critic of international adoption has asked: ‘Could it be argued that, rather than transferring the children of the poor to the economically better-off people in other countries, there should be a transfer of wealth from rich countries to poor ones?’
FOR FURTHER THINKING:

• Conn writes, “Adoption has always posed a challenge to conventional assumptions about legitimacy, family integrity, inheritance and identity. International adoption raises those challenges with particular urgency. Such adoptions are emblematically connected to some of the most recurrent themes of twentieth and twenty-first-century experience across the globe: abandonment, displacement, homelessness, and exile. To the traditional stigma associated with adoption is added the further complication of national and ethnic mixing.”

  o Do you agree with Conn that adoption inherently poses a challenge to traditional notions of legitimacy, family integrity, inheritance, and identity? In what ways would that have been the case in earlier historical periods? In what ways do you think it is still the case today? In what ways might it not be anymore?

  o To what extent are the concepts of abandonment, displacement, homelessness, or exile lurking in the background of Jennifer’s personal origin story? How does her discovery of more of the facts about her own birth and her biological ancestry help her come to terms with her identity in the play? How does the new information add to her confusion and struggles?

• Conn writes, “All adoptions, whether intra- or inter-country, intra- or interracial, entail disruption, loss, and mourning.”

  o What kinds of disruption, loss, or mourning is Conn referring to here? Think of specific examples. Who experiences the disruption, loss, and/or mourning in international adoption?

  o What kinds of disruption, loss, or mourning might be seen in the story of Jennifer Marcus’s adoption? By whom is it experienced?

• Conn writes, “one critic of international adoption has asked: ‘Could it be argued that, rather than transferring the children of the poor to the economically better-off people in other countries, there should be a transfer of wealth from rich countries to poor ones?’”

  o This passage brings up one of the criticisms about international adoption. How might this be applied to Jennifer Marcus’s story?

  o What other considerations might make international adoption difficult or problematic in some way? For example, what kinds of social or cultural challenges might an international adoptee experience? What other kinds of large-scale political or ideological challenges might the practice as a whole create? How does the story in the play raise these issues? How might you respond to such criticisms of international adoption?

• Conn writes, “Adoption is among the oldest and most widespread of human social practices. The Code of Hammurabi, promulgated in the 18th century BCE, includes a definition of adoption. Scores of other literary and historical texts document that, in one form or another, for a variety of motives, and with an equally diverse set of outcomes, orphaned and abandoned children have circulated among families throughout human history. Children have been adopted, legally and extra-legally, formally and informally,
to constitute or re-constitute families, to provide homes when birth parents could not or would not do so, to serve as slaves, on the one hand, or to replace disinherited or deceased heirs on the other.”

o Adoption has been practiced for vastly different reasons throughout human history. By placing Jennifer Marcus’s story into this broader history, what can we understand about her specific story? How does her adoption relate to other kinds of adoptions? How does it connect to current events from the past couple of decades? (See the timeline in this Study Guide help with this.)

o What do you think are the ethical, moral, social, and economic obligations for adoptive parents today?

o What kinds of questions does Jennifer Marcus’s history raise about international adoption, and does the play attempt to answer them in any way?
PLAYWRIGHT BIOGRAPHY: ROLIN JONES

(adapted from New Neighborhood)

Rolin Jones is an American playwright and screenwriter based in Los Angeles.

Among the theater-going community, he is most well-known for These Paper Bullets! (2014), a musical adaptation of Shakespeare’s Much Ado About Nothing co-written with Green Day frontman Billie Joe Armstrong, and The Intelligent Design of Jenny Chow (2005). These Paper Bullets! premiered at Yale Repertory Theatre and won six Connecticut Critics Circle Awards (including Best Production), five Los Angeles Sage Theater Awards (including Best Production), and three Drama Desk Nominations. The Intelligent Design of Jenny Chow was a finalist for the Pulitzer Prize in Drama and has been produced at the Atlantic Theater Company (NYC), South Coast Repertory, Old Globe Theatre, Yale Repertory Theatre, Studio Theatre (D.C.), Collaboraction (Chicago), and Portland Center Stage, among others. His play The Jammer received an Edinburgh Fringe First Award for Best New Writing and was also produced Off-Broadway at the Atlantic Theatre Company.

Jones has also written for the television shows Weeds, Friday Night Lights, The United States of Tara, and Boardwalk Empire, and he was the Executive Producer/Showrunner for season one of Fox Television’s The Exorcist. His Friday Night Lights episode “The Son” received an Emmy Award Nomination for Outstanding Dramatic Writing and was named by Time Magazine as the best episode of television for the year 2010. He recently wrote the film adaptation of American Idiot for Universal Pictures and currently with Ron Fitzgerald is writing a re-imagining of Perry Mason starring Robert Downey Jr. for HBO.

Jones grew up in Woodland Hills, CA.

From the Author’s Note to the published play text:

“Live theater, as practiced by this author, is an act of thievery. The pages bound here within are the product of six different productions, five directors, four dramaturgs, thirty-two actors, twenty-five designers and a countless number of production staff, writing mentors, and dear friends who contributed their unique and considerable gifts toward the creation of something I will, ridiculously, get sole credit for. It’s a complete scam. For posterity and a more transparent future I say—thank you all, every last one of you. Know I stole only your best ideas.”
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<tr>
<th>Year</th>
<th>Theatre Company</th>
<th>Director</th>
<th>Cast</th>
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<td>South Coast Repertory</td>
<td>David Chambers</td>
<td>Melody Butiu, William Francis McGuire,</td>
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<td>2004</td>
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<td>Kirsten Brandt</td>
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<td>Julienne Hanzelka Kim, Michael Cullen,</td>
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<td>2006</td>
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<td>Kim Rubinstein</td>
<td>Ka-Ling Cheung, Sue Jean Kim, Craig Marker, Kevin Rich,</td>
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<td>Cecilie Keenan</td>
<td>Jennifer Shin, H.B. Ward, Laura Fisher, Mia Park,</td>
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<td>Jennifer Jung, Susan E. Taylor, Jaimz Woolvet, Andrew Pedroza,</td>
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<td>Mark Pergola</td>
<td>Min Kyung, Emily Gerhard, Margaret Norwood, Andy Anderson,</td>
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