

[00:02] **MARY FELLIOS**

Hello, everyone. We're going to get started, and I'll begin by reading a short bio and intro for Ani. So, Ani Liu is an internationally exhibiting research based artist working at the intersection of art and science. Her work examines the reciprocal relationships between science, technology, and the influence on human subjectivity, culture, and identity. Recurring themes in the work include gender, politics, biopolitics, labor, reproduction, simulation, and sexuality. Ani's work has been exhibited internationally at the Venice Biennale, the Architecture Biennale 2021, Ars Electronica, the Queen's Museum Biennial, among many others. Ani is the winner of numerous awards and has previously taught at the Harvard Graduate School of Design, Princeton University and Columbia University. Among other academic engagements, she received her BA from Dartmouth College, a Masters of Architecture from the Harvard Graduate School of Design, and a Master of Science from the MIT Media Lab. Ani is passionate about integrating multidisciplinary approaches to art making and is currently an Associate Professor of Practice at the University of Pennsylvania. Ani continues to discover the unexpected through playful experimentation, intuition, and speculative storytelling. Ani's studio is based in New York City. I first came across her work only this summer, when I visited her exhibition "Ecologies of Care" at Cuchifritos Gallery and Project Space. After this encounter, I became immediately excited to bring her voice to CCS. Ani's ability to teach reverse discourses, both personal and technical, to confront the language of technology and material culture through the messy, and pressured, and ultimately mediated experience of contemporary motherhood, is a vision for feminist practice that will continue to stick with me indefinitely. Without much further ado, I will hand it over. Thank you so much for being here with us today.

[02:00] **ANI LIU**

Thank you so much, Mary, for such a wonderful introduction. And thank you for having me here. I'm super thrilled. So today I'm going to talk about my work through the lens of research. I call myself a research based artist, but that might sound kind of vague. So I'm going to show both my works and the process of thinking behind them, but just to zoom back a little so you get a sense of where I'm from. I wanted to show a few photos

of spaces I've lived in and made things in. So this is Flushing, Queens, in New York City, where I grew up. My entire youth, I spent in various Chinatowns surrounded by immigrants and people who built things, worked with their hands, worked in the service industry, my parents included. I think constantly translating for them is a practice in creativity. And I think somehow I always just knew I wanted to be an artist. But growing up in the neighborhoods that I did, it just seemed impossible to become an artist. So I studied architecture. This is the interior of the architecture school that I attended where I spent many years, and I think you could tell from my desk that I probably wasn't going to become an architect.

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I did my thesis project on wearable tech, and I was really interested in virtuality simulations and the augmented body. This work led me to the MIT Media Lab, which looks like this. There, I did work in synthetic biology and perfumery, in a way an extension of my interest in the cyborg body, but at a cellular level. This is a photo of one of the studios that I had in New York City. Pre pandemic. My workspace is always part making space, part research space and part laboratory. And then this is another image when the rent went up and I had to move my studio to a room with no windows, much smaller one, keeping it real. So in my journey, I worked in architecture, technology, biological design. The nerdy part of me is interested in how things work and how knowledge is made, and the feeling part of me has its pulse on the body politics of emerging technologies. Like many of you, I wear many titles. But today I wanted to speak to you as a mother and how my journey into parenthood changed my relationship to my work. I was lucky enough to give birth twice, and in life, I feel like motherhood feels more like this.

[04:14]

Children don't really fit tightly on timelines, and my rhythms of life adapted to rhythms of care. And when I first got pregnant, I wanted a science based pregnancy. I looked for data driven answers to simple questions like can I drink coffee? What about wine? I'm a research based artist, so I thought the answers to these questions could be found

through data. But actually there were a few hurdles. Despite the fact that 8.6 out of ten women and persons with uteruses will give birth at least once, research around women's reproductive bodies is steeped in histories of sexism and racism, resulting in biased and incomplete knowledge. I'm not going to go into depths of it. It's not the foundation of my talk today, but epistemologically, once we started medicalizing birth, everything from the process, language, and the naming of the reproductive system became problematically filtered through a male gaze. And this is not to say that I don't love data, and science, and knowledge. I think we actually need more research in this domain. For instance, in PubMed, there are twice as many papers about erectile dysfunction than there are about breast milk. I'm giving an artist talk today, but my talk also deals with topics of reproductive health and care, pregnancy, lactation, childcare, domestic labor.

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And while I'll refer to my experiences with pregnancy and parenthood on feminine terms, I just want to acknowledge that there are plenty of men and nonbinary bodies who also give birth. And this is why I'll also refer to birthing bodies as person with uteruses. There are some topics that may or may not hit close to your immediate lived experience, depending on where you are in your life cycle. And I just wanted to address that. Not everyone wants to or will give birth, but I would say that everyone in this room has been birthed by someone. Birth has impacted our lives personally, at one point or another, and everyone has stakes in this game. To quote Erica Chidi, who's a doula and health educator, "All reproductive experiences are part of a continuum. They are inextricably linked— fertility and birth control, pregnancy and abortion, periods and menopause, sex and pleasure." And so, as a corollary, all of these topics are deeply political.

[06:28]

I wanted to pause for a minute and talk about this word biopolitics. The term biopolitics and biopower is often attributed to Foucault, and the term can be understood as a political rationality to ensure sustain and multiply life, to put this life in order. Biopolitics,

of course, is deeply intertwined with issues of reproduction. If we consider the state that governments have in the production of bodies—bodies meaning workers, laborers, consumers and soldiers—we can quickly trace a path from the control of population production to the control of bodies with uteruses. Such examples of systemic gender inequality might include wage disparity, educational attainment, the right to vote, to own property and other assets, and even lack of legal protection over rape and domestic violence.

[07:19]

So I'm sure you're very aware of the recent overturn of *Roe v. Wade* in America, which ends the constitutional right to abortion in the USA, today, in 2022. And immediately abortion has become banned in 13 states, and soon to be 14. And I wanted to talk about what happens after. What happens after someone has a baby? After all, there's other ways to encourage the birth rate. Governments could, for instance, offer better maternity and family leave after having a baby, or they could offer free childcare and subsidize the cost of raising children by lowering the cost of diapers and formula. But of course, instead, this year we found ourselves in the midst of a recent formula shortage.

[07:59]

We have no paid family leave policies in the US. And I think that the pandemic revealed that mothering is essential work, and without childcare, families were pushed to crisis. And that's the backdrop of where we are right now, in the state of things and where I'd like to segue into my work. Paid family leave is especially important in the postpartum period for medical reasons. I recorded how often my daughter was fed and changed in the first 30 days after she was born. So you can see from left to right the 30 days from the top to the bottom, the 24 hours a day. And so every pink block is either a breastfeeding session or a session in which she was fed formula through a bottle. And every blue dash is where her diaper was changed. No sleep here at all. And there's this cartoonist I really love, Liana Finck. She captures it best with this caption, "my amazing vacation from emails." So this is a sculpture that I made based on the data you saw in the previous slide. Each vial represents a diaper change and each one is filled with

either fragments of a diaper or filled with breast milk or formula.

[09:10]

And so as an artist, I've been recording and trying to make sense of my own transition into parenthood through the material culture of my motherhood, through breast milk and diapers and breast pumps. In the sculpture. I mentioned already they're filled with milk. I did a lot of experimentation to make breast milk shelf stable. And because breast milk was so precious, I also experimented with different types of milk, like cow's milk. I even tried to do things like tempera, or watercolor formula. In the end, breast milk has a really unique texture. And I think I was so obsessed with bringing breast milk into the gallery because these domestic materials are often relatively rare to see, both because exhibition spaces were historically dominated by men, and because breastfeeding is an invisible labor and it's made to be invisible labor. It actually wasn't until 2018 that it was legal to breastfeed in public in all 50 states, and in parallel, Facebook censored breastfeeding as recently as 2014, its algorithms still occasionally censor breastfeeding images.

[10:19]

Breastfeeding, of course, is ancient. We're considered mammals, one of the defining characteristics, which is to have mammary glands to produce milk. There's a lot of health benefits to infants drinking breast milk, and I think it's fairly well scientifically understood as one of the best foods for infants. Not to geek out too long about this, but breastfeeding is really interesting because it's not just food, it's also a form of communication. So when a baby latches onto the nipple, some of their saliva actually enters the nipple through a vacuum and your body learns what the baby needs. So for instance, when I'm breastfeeding, my body learns the types of antibodies to create for my baby specifically. The baby also tastes the different molecules from what I eat. So if I eat a lot of kimchi, flavor molecules from kimchi will enter my milk. So it's also a cultural substance. I found all of this super fascinating and sadly understudied. I just also wanted to be clear that not everyone breastfeeds, for all kinds of reasons. For medical, financial and personal reasons. I think that whether or not a person decides to breastfeed is a

personal choice, that we should support. But, as an artist, I'm interested in the social attitudes to, and the legal status of breastfeeding, that ladders up to bigger political and economic factors.

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I became really interested in the history of feeding—both breast milk and formula. So formula has a long history, and has really intense marketing campaigns in the US. Due to a lot of factors, including the marketing regimes, by 1970, breastfeeding in the US fell to an all time low of 25%. And part of this is because they were heavily used in hospitals in postpartum wings like this. And actually it still persists today. A lot of postpartum wings actually place babies separate from their mothers, separated by a plane of glass, which makes it much harder to establish a strong breastfeeding relationship. So looking at this kind of commercial relationship to feeding, and the kind of life changes that it made.

[12:21]

I mention this because there are design and systemic reasons why women end up breastfeeding or not, including hospital design, but more importantly, access to paid maternity leave. So you can see here that maternity leave is very correlated to how often and long you breastfeed. And what ends up happening is that in the US today is that mostly wealthy white women end up breastfeeding, and people of color and people in lower income statuses do not.

[12:48]

And those have long term health risks for both the parent and the child. And so I think part of it is just making the labor related to feeding explicit. It's hard to breastfeed because it's real labor and it takes time. In the sculpture, I calculated the amount of milk that I produced in a day, a week and a month. So in a month, I produce almost six gallons. Shown here is the amount produced in a week, approximately one and a half gallons. And the milk in the sculpture runs in the rhythm, the rhythm of my breast pump. And besides working as an artist, I also teach. And I myself did not get paid maternity

leave, so I was back teaching five days after giving birth. So I developed a really intimate relationship with my breast pump. I noticed these really interesting and strange things in my body. So, the process of let down is when your body kind of ejects the breast milk out, and usually that's caused by these biological signals, such as your baby's cute face, or the sound of their cry, or literally the stimulation of your nipples with their mouth.

[13:53]

I found that because I was breastfeeding so early and so frequently, literally the sound of my breast pump would make me let down. Like, I became like I could literally feel the sensation of the hormones driving up into my body, just hearing the mechanical pump. And I just felt like I was living this Donna Haraway "Cyborg Manifesto" moment, where I was both human, animal and machine hybrid. And I became really interested in this relationship between my body and the pump. Like in considering breast pumps, I'm struck by how they're so both liberating and limiting. Liberating in that it allows my body to be apart from my baby and still nourish him. Limiting in that in many spaces, the existence of this machine implies that women can reenter the workforce despite all of this other labor that they have to do. And so, for instance, this is a photo series that I really love by a photographer named Corinne Botz. And she takes portraits of lactation spaces in workplaces, like literally places that women pump in, and you can see it's literally like a basement. It's a bathroom. Often it's just a closet with "lactation space" Post-It noted on it. And so I've been thinking a lot about that.

[15:16]

When I was making this work, I was thinking about the labor of care and feeding, almost like an invisible infrastructure, kind of like the way that electrical wires or plumbing are under the floor, and you don't see it in the formula crisis. A lot of Internet commenters would say things like, "why don't women just breastfeed? Breastfeeding is [inaudible 15:37] free. You don't have to buy it." But breastfeeding is only free if you believe that women's time is valueless.

[15:46]

So continuing on the conversation between gender and design, I turned to toys. After I gave birth, my apartment became filled with toys. I became interested in the ways that perhaps we're all primed from childhood for the systems that society wants us to abide by. So I've been studying toys as a kind of behavioral simulator. This is a photo series by the artist JeongMee Yoon, where she's this project taking portraits of children in their homes, surrounded by the objects they owned, sorted by colors. So you can see it's a very striking color story. And it's not just color at play. It's also content. So I started to look at just the history of toys and finding all these vintage ads.

[16:26]

Unsurprisingly, a lot of girls' toys are very domestic. This one literally says, "every little girl likes to play house, to sweep, to do mother's work for her." And boys toys are very focused on preparation for working in the industrial economy. And I won't go too deep into this, but there are a lot of psych studies, and sociology studies, that show the impact of identity formation with the kind of material toy artifacts that you're surrounded with. So this project analyzes existing toys, which tend to be incredibly gendered. These are images that have been scraped from toy stores like Amazon, Target, Walmart, and they've just been pixel sorted. So these are all of the girls' toys. So taking the RGB values from zero to 255, sorted, unsurprisingly, fairly pastel pink, a little bit of lavender and purple. This is the same exercise with the boy's toys. I think even the silhouettes tell a kind of story. And so in this kind of attempt to find the zeitgeist of what makes a toy male or female, I fed it to a machine learning model with an AI model. We took all of the data that we got from these toy stores, and then we asked the machine learning model to invent new toys based on what it learned.

[17:41]

And so these were some of the first sets of things that it created. There are ones that stood out to me. This one's called "Yoyo Lip Gloss DIY Squishy Doll Me Up." It says, "in case you didn't get the memo, tweens are obsessed with hair clips again." And I think it's interesting that the machine learning model picked up the sassiness in toy marketing

language as well. This is a more recent iteration of what the machine learning model produced, and I kept reading through them and wondering, how do we gender both overtly and subconsciously? So this one jumped out at me, too. It says, "that I can change anything, kitchen, because yay girl power!" And then it just adds kitchen to it because it learns from the data set that it's got to have something domestic. And, Donna Haraway writes that we are biocultural organisms, that we're shaped not just by biology, but by environmental and material contexts. How might we unlearn gendered values starting at childhood?

[18:38]

I've also been thinking a lot about the human tendency towards collecting, which I don't have to tell you as curators, but what does it mean to collect something, to own something? How does it build on your identity? As a first generation immigrant, my brother and I struggled to fit in, so sometimes we tried to fit in through our things. And kind of embarrassing to tell you, but I collected Beanie Babies and he collected Pokemon cards, and both of us found that these artifacts helped us integrate into our friend groups. And so in digital spaces, how does this relationship between identity, community formation, and collecting play out? I'm sure at all at this point, you're all familiar with NFT Blockchains and the recent cryptocurrency crash. I wanted to explore a version of this kind of AI toys that reflects its roots as a product of digital space. I'm really interested in all of the online algorithms that tell you, and suggest to you what to buy next. I'm also really interested for my own children who occasionally watch YouTube. Even before I can click pause, sometimes the next video starts playing and then they're immediately addicted to it. They only need to see like, literally 2 seconds of "Paw Patrol," and then they know that "Paw Patrol" is the zeitgeist of their generation. And so I'm kind of curious, like, how do these algorithms that surveil our data predict our future wants?

[19:58]

How might these trajectories shape future notions of gender? And as our digital feeds become more and more curated, how might we break out of these deepening existing

preconceptions of sex and gender? So I mentioned, while I refer to my pregnancy and motherhood on feminine terms, I want to acknowledge that there are many people who give birth as men or nonbinary, and how might design or visual artifacts help them break barriers too? If you look for men's pregnancy wear, you'll find nothing, more or less. Even maternity wear itself is quite hyper feminized in its wording. I spent the last few years having conversations with transgendered and nonbinary persons to learn what types of garments are gender affirming to them. And interestingly, time and time again, the suit and blazer came up, and so I spent some time learning about both the history of the suit and the history of pregnancy wear. The history of pregnancy wear has evolved in conjunction with social norms. As you can imagine, for a long time, maternity wear was fairly modest. And even though many religions encourage procreation, the presence of a pregnant belly denoted the act of sex, which was considered vulgar.

[21:10]

So, there were things like pregnancy aprons, and things like that, that would help cover them up. The height of this might be the Victorian era, in which pregnancy was considered a condition to be concealed to the extent that maternity corsets were made. And I guess it's worth noting that most maternity fashions in history are more or less exclusive to describing the kind of fashion trends of wealthy women. Women in poor or working class families typically just wore baggy, oversized dresses during their pregnancies. Pregnancy wear continues to evolve with constant consideration of the male gaze. And it wasn't until the Pregnancy Discrimination Act that was passed in 1978 that protected pregnant women from being fired in the workplace in the US. That you see you start to see more instances of maternity workwear. I gave this talk somewhere else, and someone told me that their mother, who works, I think in the 70s, she was mandated to take a urine test every week just to make sure she wasn't pregnant, and if she was pregnant, she could get fired. So thinking about this in terms of what does maternity wear look like in a time in which she might actually have to conceal it for various economical and political reasons?

[22:23]

So in 1978, the workplace starts to protect against this type of discrimination. And there's a lot of history between this slide and this slide, but I've skipped some of it. I think that just to close off the maternity history, I just want to reflect on today's celebrity culture in which I think it's arguably both liberating and fierce. Looking at these working moms taking control of their bodies, not hiding under tent dresses, I think it's silly. But celebrities can often set a cultural tone for what might eventually become accepted mainstream. And so to quote a "New York Times" article on the subject, this is a time when many people on the far right, and even the mainstream right, are promoting policies that challenge the continuing autonomy of women, identifying people over their bodies lives and decision making capacity. By dressing to showcase her pregnant belly, and in a way that has nothing to do with traditional maternity wear, Rihanna is modeling an entirely opposite reality. She's saying, I'm a person still, and I'm my person. And I do think that this is super fierce and super amazing and wonderful. Someone mentioned to me like, that also looks really uncomfortable, and potentially it is.

[23:40]

And so, I don't know. I think that there's always this kind of dual-edged sword as a pregnant body, where you kind of have to perform perhaps the notion of what sexuality and fierceness was to you or not. Personally, I love that. I hope Rihanna gets to make these choices for herself. Right? Like, that it is not policed by other entities. But, I don't know. That's TBD. So with this evolving history in mind, in an ongoing project, I've been designing a series of pregnancy menswear in the form of a power suit, to normalize and remake stigmatized assumptions between gender, sex and parenthood. And the current sculpture is meant to look like a drawing because I consider it to be a sketch, an ever evolving idea informed by ever evolving conversations. The LED panels are meant to evoke a dressing room. It's an ongoing project. I continue to make new sketches and versions of this. I'm wondering, what can pregnancy wear for men or non-binary persons look like? Can the presence of certain design objects begin to normalize a wider spectrum of effects? Returning to work that I made during my own pregnancy, this is a garment that I made in 2019 in order to make sense of the changes that were happening to my body.

[24:59]

This one's called "Small Inconveniences." It's a garment made to stimulate incontinence, which is a common condition in pregnant women and postpartum bodies, where urine can sometimes leak out unexpectedly. As my body changed, I started to wonder about this relationship between fertility and sexuality, desirability. This garment was fashioned out of the materials of lingerie. I noticed as I was scrolling through my normal feeds and opening browsers that I started to get new ads that followed me around the internet. The algorithms assumed that I would be interested in anti- stretch mark creams, tightening serums, hormone regulating pills. And I suppose the ads wanted to plant the seeds of insecurity to ensure that I would be interested. And I made the series to reflect on that. A set of fictional products that would instead give me the very symptoms that they were trying to fix. I asked myself, what actually is wrong with melasma or a stretch mark? What is that relationship between vanity and biological function? Could shortness of breath, for instance, encourage me to slow down and become more mindful? Perhaps these changes were an exercise in letting go of a certain amount of control that becomes inevitable when you have children.

[26:12]

I was mostly thinking aloud to myself as I was making this, but you know what? Pregnancy really was uncomfortable for me, especially towards the end of the 9th month, I truly started to swell and ache. And around this time, I came across feminist writer Shulamith Firestone, who noted that as long as women carry the burden of reproductive labor, there cannot be equality between the sexes. And so I started to fantasize, like many did before me, about artificial wombs. And most conventional depictions are mechanical. But I started to wonder, what if the future of artificial wombs aren't welded but grown? I started to learn about interspecific pregnancy, where one species can carry a pregnancy for another species. And according to Wikipedia, we actually did this with cats to try to bolster the populations of endangered pandas, like, literally impregnated a cat with pandas. So I started to research pigs as a potential surrogate for an artificial womb. After all, we've already engineered pigs to produce

human organs. Very recently, there was a heart transplant from a pig to a human. And so what if we engineered a pig to become surrogate to human fetuses? Would such a technology equalize the biopolitical desire for population growth and free female bodies?

[27:32]

As I dove into the research, I started to feel uneasy. Was this not just a form of colonization over another species body? Surrogacy is not simple. It allows for same sex couples to have a child, empower women to help those in need, and exploit the health of those in poverty all at once. So what you're seeing here is the uterus of a pig. It's a speculative pig uterus that's been genetically engineered to carry human babies. And so, over there at the beginning of the spiral, those are the ovaries. And a pig uterus is formally really beautiful. I was looking at a ton of animal husbandry textbooks. It was interesting, when I was looking for anatomy diagrams of a pig, a lot of times what comes up is actually a butcher's diagram. So, like pork loin and like, tenderloin things like that. And so almost all of the depictions of pig anatomy are for consumption in a weird way. So this is a 3D print. It was printed all in one go. And it is meant to kind of evoke the science fiction possibilities of this kind of techno utopic vision. This is another version of the sculpture in which the whole pig has been articulated.

[28:47]

And, I hope that this project asks for you that perhaps we don't need these kinds of techno-utopian answers to gender equality, that we need policy changes that can make room economically and culturally for reproductive health. So to loop back to the beginning. No matter what your sex or gender, whether you have a child or plan on never having a child, as art lovers and curators, why might you care about designing for care and reproductive arc? Today we mapped out the histories between different objects and their technological function, social adoption, sociopolitical relationship and impact through their design. I encourage you to think about your own personal answers to this question. But I found this excerpt from writer Angela Garbes, from the book "Like a Mother," that I wanted to share as a launching point. She writes, "control over our own

bodies is an essential freedom, but it's one that women have never been able to take for granted. We live in a society that, even as it relies on us to exist, continually conspires to remove us from our bodies and to punish us when we exercise our rights to or to not reproduce."

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True female reproductive health, which is the foundation of everyone's health, requires that the social systems in which we live allow us to make informed choices about what is best for each of us. Science is an ongoing, imperfect process, and its scope is far from complete. For centuries, the territory of human biology was limited mostly to the bodies of white men. Science has taken us this far, but must continue to evolve and to respond to people's real time experiences in order to serve all of us. In the meantime, we have each other, communities of women and parents telling our stories, holding each other up with our shared experiences. I picture them as spiderwebs strung across the world—an infinite, if sometimes invisible, network of strength. Thank you.