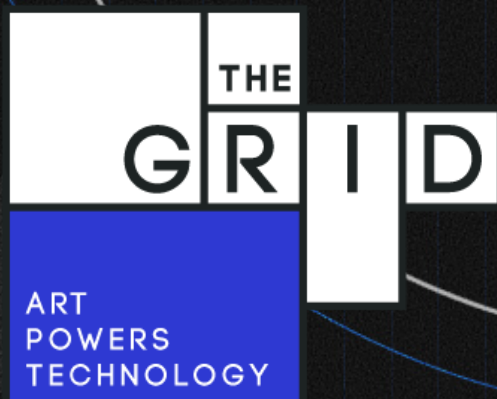


THE GRID ART + TECH REPORT 2020

BY VANESSA CHANG, PHD



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FOREWORD

The idea for The Grid was born on a foggy afternoon in June 2019 in a downtown San Francisco café. I, my European colleagues, and Nadav Hochman had an animated discussion about the complex interplay of art and technology in the San Francisco Bay Area, informed by numerous conversations with other local thought-leaders. We were finally able to coin a name for our common vision: **The Grid** was founded as an international art and technology network with the primary goal to connect European cultural diplomats with local arts organizations and the tech industry in Silicon Valley. The network would ultimately function as a facilitator, mitigator, advocate, and matchmaker between silos that rarely communicate. The Grid would work in concert with and in service of its diverse stakeholder pool, rooted in mutual respect and the desire to break down entrenched silos.

The Grid's first tangible achievement was to rally all European cultural diplomats in the Bay Area around a single focus - the intersection of art and technology - with the establishment of **EUNIC Silicon Valley**. The second milestone was bringing together local art + tech organizations to collaborate with each other, fostering an environment of solidarity and knowledge exchange. The third major step in building The Grid was winning a grant by EUNIC Global via the European Spaces of Culture project and securing the financial support of The Grid's first tech partner, Salesforce. With a clear set of recommendations in mind, outlined in The Grid's Art + Tech Report 2019, we thus proceeded to define The Grid's mission statement: In light of Silicon Valley triggering a cultural watershed moment with ripple effects around the globe, it is imperative that we contribute to positively shape technology at its core. The Grid believes that art will be an essential contributing factor in this process. Building upon this notion, my partner-in-crime Martin and I put in many caffeinated long hours investigating the nature of the relationship between art + tech. We concluded that the characterization of art and technology as antagonists constitutes a false dichotomy that greatly downplays the importance of art in the creation of new technologies. Technology is rooted in artistic practices. Art fuels technological innovation, illuminating the wires of the power grid. Finally, a slogan emerged from the mist, encapsulating The Grid's most profound conviction, that **Art Powers Technology**.

In the context of the pandemic, The Grid launched a new festival format in San Francisco: **Exposure - Art + Tech + Policy Days** stretched The Grid's original boundaries to include policy as a third pillar, thus paving the way for a unique collaborative model that invites policymakers to pursue a more holistic approach to rules and regulations. If the current crisis around technology's impact on our society

has taught us anything, it is that we need to show more appetite for cooperation and willingness to learn from one another. Only then will we be able to create a common understanding of our shared reality that will give way to a more human-centered and inclusive technology for the benefit of all humankind.

The Grid is propelled by this vision and champions artistic collaborations that advance a new dialogue between art + tech + policy. I want to thank all our partners for working on this shared aspiration and for fostering an ecosystem of excellence, solidarity, and trust. The Grid is rapidly expanding its network around the world, so stay connected and **#GetOnTheGrid!**

A handwritten signature in dark ink, reading "Clara Blume". The script is fluid and cursive, with the first name "Clara" and last name "Blume" clearly distinguishable.

Clara Blume, Ph.D.

President EUNIC Silicon Valley

Project Lead and Co-founder of The Grid

EXECUTIVE SUMMARY

In December 2019, European cultural institutes partnered with local artists, art collectives and tech companies in the San Francisco Bay Area to launch The Grid. The Grid is now a global network between multiple international stakeholders in art, technology, academia, foundation, and governmental sectors. That launch presented the findings of *The Grid – Art + Tech Report 2019*, a study conducted by Nadav Hochman and Alexander Reben that identified seven extant models of collaboration between artists, cultural organizations, and the tech industry, and affirmed the need for an entity to instigate new connections between these stakeholders. The report positioned The Grid as a potent new organization for fostering these connections within the Bay Area, and with its European counterparts.

In 2020, The Grid began addressing these recommendations in their response to the COVID-19 crisis, *The Grid: Exposure – Art + Tech + Policy Days*. Building on and cultivating their global network, this virtual event brought together sixteen partners from Europe and the United States, representing artistic, corporate, academic, and government sectors. Four cultural organizations from the San Francisco Bay Area –



The Grid officially launched its website and online program with *The Grid: Upload* on 17 June 2020. Clockwise from top left: Austrian Tech Ambassador Martin Rauchbauer, President of EUNIC Silicon Valley Clara Blume, EU Ambassador to the US Stavros Lambrinidis, EU Houses of Culture Project Lead (EUNIC Global) Robert Kieft, and Executive Vice President for Government Affairs (Salesforce) Eric Loeb.



Gray Area Foundation for the Arts, ZERO1: The Art and Technology Network, CODAME Art + Tech, and MUTEK SF – curated panels, workshops, community-building experiences, and performances that highlighted the region’s innovative scene. Ars Electronica, the enduring Austrian media art festival, affirmed the project’s interdisciplinary and cross-Atlantic reach, as did STARTS (Science, Technology & the Arts, an initiative of the European Commission). The European Union Delegation to the US and EUNIC (EU National Institutes of Culture) shored up The Grid’s commitment to adding policy to art and technology conversations. Salesforce, The Grid’s industry partner, represented their ongoing work building bridges with the tech industry. The Center for Humane Technology foregrounded The Grid’s ethical commitments to reshaping technological development for the good of all. *The Grid: Exposure – Art + Tech + Policy Days* placed artists, technologists and policymakers from both sides of the Atlantic together in community and conversation, addressing some of the most urgent concerns at the intersection of art, technology and policy.

Last year's report focused on existing initiatives at the intersection of big tech and art, identifying the major corporate stakeholders whose technologies have powerful and ongoing impacts on daily life. This report maps other critical actors in the Bay Area art and technology ecosystem who contribute to defining urgent questions about technologies, and who are outside of that dyad. These include representatives from academic institutions, art institutions and smaller art collectives, foundations, and government agencies. In so doing, this study considers the circulation of cultural and social capital with material forms of capital in the region.

This year's report builds on the observations and recommendations of *The Grid – Art + Tech Report 2019* by examining the historical, political, ideological and cultural forces that have shaped the encounter of art, technology, counterculture, and industry in the Bay Area. I found that in the field of art and technology in the Bay Area, the tech sector's needs, goals, priorities, and structures tend to orchestrate the dynamics of the field. This asymmetry obscures the foundational role that the region's counterculture has played in the emergence of big tech – and the values of techno-utopianism, flattened hierarchies, and flexible labor that guide the industry. Many of the artists, scholars, and cultural leaders I interviewed highlighted an extractive relationship between artists and the tech industry. Funding the arts is already a challenge in the United States, due in large part to a shift towards effective altruism, a form of philanthropy that prizes measurable impact and return on investment. Despite expectations to the contrary, funding art and technology practice can be even harder, although as a transdisciplinary field, there are opportunities for its practitioners to redefine metrics of success. This study examines some of the possibilities and potential pitfalls of art and technology collaborations and posits where and how The Grid might best situate itself to build and fortify connections and fill fissures in a fractured ecosystem.

Based on these interviews, I propose some strategies for The Grid to cultivate more equitable and sustainable collaborations between individuals and institutions, and in so doing, work to build trust between stakeholders with sometimes very different priorities. By contributing to a regenerative art and technology ecosystem both within and beyond the Bay Area, The Grid can help to sustain ongoing dialogue about art and technology, conversations that they can then leverage through their governmental access to inform tech policy and regulation.

METHODOLOGY

The San Francisco Bay Area is a metropolitan region in Northern California spanning nine counties. Home to more than 7 million people, it encompasses the cities of San Francisco, Oakland, and San Jose, and Silicon Valley. While Silicon Valley refers strictly to the southern part of the Bay Area, corresponding roughly to the Santa Clara Valley, there are numerous links between the large tech corporations who have headquarters or satellite locations in the valley and arts and cultural communities in San Francisco, Oakland, San Jose, and Santa Cruz. I examined the interrelationships between different sectors, focusing on this region as a microcosm of the art and technology field writ large. This region reflects many of the ongoing concerns and challenges faced by artists, cultural organizations, and others working in the field.

While the focus of this report is primary actors within the Bay Area art and technology ecosystem, this community is ultimately informed by national and global networks as well as practices and conversations that cross borders. Similarly, Silicon Valley is both local and global. This report thus reflects the scope of The Grid as an entity rooted in the region, but with a transnational reach and global ambitions.

Over the course of 6 months, I conducted a series of qualitative interviews with current and former employees at tech companies (including Google, Microsoft, IDEO, Apple, HTC, Adobe, Facebook, Autodesk, and Snap), representatives from academic institutions (Stanford, UC Berkeley, San Francisco Art Institute, UC Santa Cruz, San Jose State University), local arts organizations (Gray Area Foundation for the Arts, CODAME Art + Tech, ZERO1, Living Room Light Exchange, Kinetech Arts), museums (Asian Art Museum, De Young Museum), foundation leaders (Rainin Foundation), institutes, residencies, and think tanks (Institute for the Future, Berggruen Institute, Leonardo/ISAST, Djerassi Resident Artists Program) and local art commissions (San Jose, San Francisco) from the San Francisco Bay Area, as well as artists and technologists working in the field. I also spoke to people from other national and international organizations (Serpentine Galleries, NEW INC, National Endowment for the Arts, Knight Foundation, Ford Foundation, National Academy of Sciences) working at this intersection to get a sense of how they are trying to navigate these complex encounters and issues. Some of my interviewees requested anonymity; in these cases, where quoted I did not disclose their names or affiliations.

In addition, I conducted a literature review of current and historical practices in art and technology collaboration, as well as the philanthropic field in the Bay Area and the United States.

INTRODUCTION

Where Technology Powers Art, Art Powers Technology

The art and technology ecosystem in the San Francisco Bay Area is unique for its proximity to Silicon Valley, whence many of the world-changing technologies media artists use emerge. For over a century, technological development has informed cultural production in the region. From Edweard Muybridge's pioneering experiments in chronophotography in the late 19th century to Frank Oppenheimer's founding of the Exploratorium in 1969, the founding of Xerox Parc Palo Alto's artist residency program in 1970 to the heyday of Survival Research Labs' riotous machine art performances in the 1980s and 1990s, and the millennial emergence of artists and organizations attuned to digital technologies, the Bay Area has seen wave after wave of art and technology countercultures. Artist and Berkeley professor Ken Goldberg casts these countercultural waves in art and technology emerging in response to and in tandem with "a real or imagined discovery: land, gold, atomic elements, hallucinogens, circuits, algorithms."¹ These artists and innovators have long played with and probed the limits of new technologies, often critiquing their cultural impact as they do.

For all this deep history, the current Bay Area art and technology ecosystem is one characterized by fracture. A rich array of regional entities inhabit the field: field-specific cultural collectives ZERO1: The Art and Technology Network, Gray Area Foundation for the Arts, CODAME Art + Tech, Living Room Light Exchange, Leonardo/ISAST, Stochastic Labs, Survival Research Labs, and B4B3L4B, to name a few; tertiary institutions Stanford University, University of California, Berkeley, University of California, Santa Cruz, San Jose State University, San Francisco Art Institute, and California College of the Arts have programs, departments and centers dedicated to this work; tech companies Google, Facebook, Mozilla, Thoughtworks, Adobe, and Microsoft have artistic programs; traditional art institutions SFMOMA, Yerba Buena Center for the Arts, the De Young Museum, the Asian Art Museum, the Tech Museum, and Pace Gallery Palo Alto each have their own varying explorations of this intersection. Despite this plethora of entities invested in this work, practitioners in the field have faced chronic challenges in finding resources and opportunities for creating, developing, educating, showing and sharing their work.

In this respect, they face a set of challenges endemic to the field at large. For decades, artists working with advanced technologies in the United States have largely existed on

¹ Goldberg, "A Century of Art and Technology in the Bay Area."

the periphery of existing institutions. With a few notable exceptions, these practitioners have not been easily able to access the tools, networks, and resources of their more traditional counterparts in the art world. Working across disciplines and using diverse tools, these artists have worked to forge networks to support their practices, which are uniquely situated at the intersection of several sectors and industries: art, technology, and academia. While practitioners in this space are innovative and resourceful, these media art networks are simply not as mature as they are in Europe and Asia. For this reason, many art and technology practitioners seek creative opportunities abroad to advance their careers and deepen their networks.

As a transnational, transinstitutional, transcorporate, and cross-sector network, The Grid is uniquely positioned to address some of the problems I have identified as endemic to this field: chronic underfunding, unfettered technological development, the instrumentalization of artistic innovation, disconnected networks, extractive approaches to artists, and a patchy infrastructure. With one foot in Europe and another in the Bay Area, The Grid is poised to deepen these existing engagements and contribute to tilling the cultural soil that will nurture this work. With its links to Europe's established media art networks, The Grid can also help to elevate the significant cultural work currently being done in this space.

The Grid emerges at an opportune moment to make an intervention. The art and technology field, like the technology sector, is at a crossroads. There has been a surge of interest in art and technology practice from actors who have heretofore invested their time and resources elsewhere – from the art world to global government offices. Artists and cultural collectives working in this space are in urgent need of more resilient infrastructures that can support their creative ambitions. At the same time, they are also, as history attests, uniquely suited to contribute to the most pressing issues raised by platforms and technologies which have become widespread. In many ways, now is the right time to engage these commitments; for all the connections and conveniences they bring, technological tools and platforms have hastened the spread of disinformation, aggravated systemic bias, and threatened the fabric of democracy. These are social and political issues, which must be addressed at the layers of research, development, propagation, culture, and policy.

Due to these developments, recent years have seen a newfound interest from government offices in tech regulation. The Grid seizes on this fresh attention, bringing actors to the table who have not, until recently, been interested in the intersection of art and technology. As The Grid's founding governmental actors affirm, this intersection promises to manifest new approaches to cultural diplomacy and accelerate

transatlantic engagements between sectors. At the same time, this newfound appetite for tech regulation will lead to seismic shifts within Silicon Valley itself; as a network initiated by government agencies, The Grid is well-situated to advocate for the shape of these changes. With their cultural partners and cultural investments in the region as well as abroad, they bring a new policy-oriented dimension to art and technology frameworks.

In *The Grid – Art + Tech Report 2019*, Nadav Hochman and Alexander Reben identified several existing models for collaboration between art and technology sectors, as well as opportunities for The Grid to deepen and support these engagements. The report articulated that The Grid had several roles to play in this respect: supporting business-to-business collaboration, connecting artists with EU cultural institutions, establishing curricula with European universities to train artists to work in the tech industry, identifying and recruiting artists for collaborating with tech companies, evangelizing the value of the arts to tech executives, “seed-funding” the arts by sponsoring prominent start-ups to engage with the arts, and setting standards for supporting artists working for the creation of responsible technology.

This year’s report builds on the observations and recommendations of the 2019 investigation by examining the historical, political, ideological and cultural forces that have shaped the encounter of art, technology, counterculture, and industry in the Bay Area. I found that in the field of art and technology in the Bay Area, the tech sector’s interests tend to motivate the dynamics of the field. Funding the arts is already a challenge in the United States, and despite expectations to the contrary, funding art and technology practice can be even harder. Despite the wealth of cultural capital residing in the Bay Area, there is an asymmetry of power because industry largely holds the purse strings and access to this tech (with the exception, of course, of open source). This asymmetry obscures the foundational role that the region’s counterculture has played in the emergence of big tech – and the values of techno-utopianism, flattened hierarchies, flexibility, and so on that have guided the industry. Many of the artists, scholars, and cultural leaders I interviewed highlighted an extractive relationship between artists and the tech industry and urged a reframing of art’s value within this ecosystem.

In this respect, The Grid’s slogan, “Art Powers Technology,” signals an urgent and necessary reorientation of the field to center artists within this ecosystem – as creatives in their own right, for their empathetic, critical and innovative approaches to technology, and for the role they might play in shaping policy discourse. While there are numerous initiatives working at the intersection of art and technology in the Bay

Area and beyond, The Grid's diplomatic access to local, state, national and international governing bodies heralds a new line of thinking about artists' contribution to tech policy and regulation. As a European-led initiative with strong ties to the regulatory sphere in Brussels, California, and Washington DC, The Grid has the potential to bring corporate interests to the table. Through these channels, The Grid can help to advocate for more sustainable arts funding in the United States, and potentially appropriate industry funding for art and technology practice. Through this new constellation of interests, The Grid can work to leverage and instigate new perspectives and conversations about tech regulation. In this way, The Grid aims to flip the script and empower artists to shape tech policy by integrating them into these conversations.

The Grid's intentions to forge and fortify connections between artists, technologists, policymakers, corporations, academia, and government – at both intranational and international levels – thus requires constructing meaningful and equitable partnerships that can enjoin and preserve the identity of different actors with sometimes competing interests. This report proposes some strategies for thoughtfully designing these collaborations – between individuals as well as institutions – with the ultimate aim of building a regenerative ecosystem that will sustain the future of art, technology and policy in the years to come.

Organization

This report is organized into three chapters. Chapter One examines the art and technology ecosystem in the San Francisco Bay Area, contextualizing it within the larger landscape of art and technology practice in the United States. It characterizes this ecosystem as fractured, symptomatic of an extractive approach to the arts. Chapter Two examines some strategies for building more equitable, regenerative networks between individuals and institutions, as well as best practices for structuring art and technology collaborations. Chapter Three discusses the potential impact of the COVID-19 pandemic on the art and technology scene in the Bay Area and beyond and suggests how The Grid may play a significant role in sustaining the long-term development of a healthier ecosystem that integrates artists, technologists, and policymakers.

CHAPTER ONE

The State of Art and Technology: A Field Divided

Over the last three decades, emerging digital technologies have spawned corresponding media art forms. The broad adoption of personal computing and the sweep of internet access at the end of the twentieth century afforded the rise of net art, a range of artistic practices that use the Internet as its medium. A suite of technological developments in the new millennium – the increasing ubiquity of mobile technology, data visualization, 3D printing, AR and VR, and AI – have also become tools for artists testing the frontiers of creative expression. Although media artists have been working with new technologies for decades, it is only fairly recently that these practices have become visible in mainstream artistic spaces.

For all the recent interest in practices at the intersection of art and technology, there is little agreement about the parameters of those practices, and indeed whether they comprise a coherent artistic field. The field encompasses numerous aesthetic practices, engages varied technological platforms, utilizes myriad tools, and yields diverse outputs. Artists working with advanced technologies tend to be transdisciplinary at heart, hybridizing, cross-pollinating and collaborating across distinct disciplinary and sectoral bounds – from literature to dance, data science to architecture. This wide array of artistic practices belies any attempts to constellate them as one field. While some artists collect under the banner of media arts, new media or emerging media,² others situate themselves within more traditional disciplines like painting or theater, and others still emphasize the diverse technologies they work with.

One unifying factor is that computation is often part of the creation, potential, and the meaning-making of such artwork. Christiane Paul, adjunct curator of digital art at the Whitney Museum of American Art, defines new media art as “art that explores digital technologies as a medium by making use of its medium’s key features, such as its real-time, interactive, participatory, generative, and variable characteristics, or by reflecting upon the nature and impact of digital technologies.”³ And today, as digital technologies have permeated almost every aspect of art-making, some artists, curators, and theorists have declared an era of “post-digital” and “post-internet” art. These terms aim to gather artworks that are fundamentally shaped by the legacies of the internet and of digital processes – and reflect on them – but take the form of material

² Sinclair, “Defining Emerging Media.”

³ Paul, “Histories of the Digital Now.”

objects like paintings, sculptures or photographs. Other works still engage with more tangible technologies like robotics or with biotechnologies like tissue culture and genetic engineering.

In general, “art and technology” remains a common shorthand for this set of approaches and the organizations that showcase them. The term signals its place at the intersection of distinct industries, sectors, and institutions; the field precipitates from an interplay between creatives like artists and scientists, technologists, tech companies, colleges and universities, museums and galleries, countercultural collectives, and funders like investors and foundations. For the purposes of this report, I will also use this term, more specifically as “arts and technology practice” both to replicate common usage and signify some of its elasticity. While this shorthand loosely captures the ideas and players in this field, it also signals some of the fissures that inhere within and the challenges faced by artists and organizations working in this space.

According to Barry Threw, Executive Director of Gray Area Foundation for the Arts in San Francisco, “labeling programs focused on the interdisciplinary integration of art and technology fields as ‘art and technology’ automatically sets up a dichotomy in the terminology which can alienate and confuse audiences from both arts and technology sectors, and instead of synthesizing and integrating two areas of practice, it ends up making this third space that ends up siloing itself.” On one hand, this view shows how the field is often stuck deploying and reiterating extant disciplinary divisions. Despite the best intentions to break down silos, rehearsing these binaries tends to foster conversations about disciplinary territories that many practitioners feel exiled from. On the other hand, it affirms how the field is still defining itself and the networks and audiences that comprise it. In this respect, this is an opportune moment to shape a field in the making. Many of the artists and cultural leaders I spoke to for this report emphasized an urgent need for new concepts, new infrastructures, new approaches, and newly defined cross-sector relationships to sustain the growth and health of this field.

In the United States, art and technology practice has occupied a liminal position between the art world and the technology sector – with artists in this space often feeling disenfranchised from both. Although it has started to change in the last few years, until recently such work had rarely been embraced by the art market or traditional art institutions. In Europe, more established infrastructures exist to support media art and technology; for example, Austria’s Ars Electronica (founded 1979), Germany’s ZKM Karlsruhe (founded 1989), and ISEA International (formerly the Inter-Society for the Electronic Arts, founded in the Netherlands in 1990) have long

sustained education, research, creation, and exhibition in this cultural field. In the United States, while there have been moments of coalescence around this work – such as Experiments in Art and Technology (EAT) and Los Angeles County Museum of Art’s (LACMA) Art + Technology Lab – there has not been broad institutional support for experimental art that integrates new technologies. Organizations like NEW INC, Eyebeam and Gray Area Foundation for the Arts were formed to address this lacuna – and to explore and generate new channels for funding, education, production, and distribution.

Certainly, museums and galleries are actively exploring the use of technological mediation tools like XR for the purposes of audience engagement and education. However, as Ed Shanken notes, “the history of art has neglected to incorporate this visionary conjunction of art and technology into its canon in any systematic way.”⁴ Writing in 1996, the media theorist Lev Manovich parsed this as a divide between “Turing-land,” the domain of computational art associated with venues like Ars Electronica and ISEA International, and “Duchamp-land,” which “want art, not research into new aesthetic possibilities of new media.”⁵ Anticipating the entrenchment of these divisions, he declared then that “the convergence will not happen.”

As several artists and cultural leaders told me, this marginalization is reflected in the realities of funding this kind of work. With few exceptions, traditional arts foundations and other funding bodies have no specific categories for these modes of artistic production; at the National Endowment for the Arts, for example, such work falls under the broad portfolio of “Media Arts,” which also includes traditional moving image media such as film.⁶ The few grants that specifically support art and technology practice do not stretch as far in an expensive field. Artists working with advanced technologies must find other forms of material and financial support; typically, the artists I interviewed support their work through teaching careers at universities or art schools, working in tech companies, or constructing portfolio careers that bring in freelance income from their art practice, adjunct teaching, design work, or other contract employment in the technology field. For those artists with portfolio careers, this cross-sector income also speaks to the new networks of practice and collaboration that they are building.

⁴ Shanken, “Artists in Industry and the Academy.”

⁵ Manovich, “The Death of Computer Art.”

⁶ Other funding categories have supported art and technology projects; for example, in 2011, the City of San Jose Public Art program, in partnership with ZERO1: The Art and Technology Network, received an *Our Town* creative placemaking grant from the National Endowment for the Arts.

Emerging Ecosystems for Art and Technology Practice

The last few years have seen traditional arts institutions beginning to reckon with these new ways of creating and working. Traditional art world venues, from auction houses to biennales, are rapidly incorporating art and technology into their purviews; they are also struggling to reconcile these approaches, and their corollary disruptions of value into their lexicon. The last year saw group exhibitions on artificial intelligence as a creative medium in several major international museums, including the Barbican Centre in London, the Museum of Applied Arts in Vienna, and the de Young Museum in San Francisco, which positioned artists as central to critical discourses about AI. Stalwart industry publication *Art in America* dedicated their January 2020 issue to generative art. According to *Future Art Ecosystems Art x Advanced Technologies*,⁷ a recent study by London's Serpentine Galleries, because these practitioners work with dynamic materials that change over time, they also actively develop new kinds of networks to access and effectively work with these materials and are adept at constructing new narratives to assemble different audiences and collaborators. In addition, many successful practitioners emerge from fields adjacent to the art world, such as computer science and engineering. To effectively support these practices, that same report calls for redefining what counts as art, as well as the kinds of practices that should take place within art institutions. In a similar vein, these kinds of complex technical projects often require a team effort of varied expertise; in this way, these works challenge the singular vision of the individual author, and instead model authorship as distributed and collaborative, as in the case of Japanese collective teamLab. Due to the complexities and particularities of working with advanced technologies, process also becomes a generative space for artistic and technical innovation. For traditional museums and galleries, accustomed to hanging painting and installing sculptures, engagement with artists can shift as a result. Serpentine has launched a series of labs positioning art as R&D, orchestrated from within the museum space rather than industrial labs. As a consequence of these shifts, they also call for reimagining artistic ecosystems around these new practices.

In the United States, these new ecosystems are already being built by artists and cultural organizations, if in an ad hoc fashion. As many artists in this space are inventive and entrepreneurial, this burgeoning infrastructure is robust. Many artists are knowledgeable about the field's existing opportunities, and actively network to create new ones. Artists and community leaders I interviewed affirm the utility of incubation programs, mentor-based programs, residencies and educational institutions with

⁷ Vickers, et. al. *Future Art Ecosystems: Art x Advanced Technologies*.

technical connections between artists and engineers. Because art and technology practice is constantly changing, requiring ever-updated technologies and renewed expertise, practitioners often create their own networks for knowledge exchange and transfer, audience and community-building, distribution networks, and creative capital. These new relationships sketch out several possible infrastructures for a healthy ecosystem. As the field evolves, there is a need and an opportunity for stakeholders – from governments to museums to tech companies – to be part of defining and shaping that ecosystem. If they do not act now, these ad hoc networks will harden – potentially into unhealthy ecosystems that do not support artists and that rehearse asymmetries of power undermining genuine innovation and social good.

The field of art and technology is at an inflection point. The surge of interest in these forms from more mainstream art institutions coincides with a critical moment in big tech. As digital technologies have become widespread in daily life, technology companies are producing structures that influence everyone. But not everyone has a seat at the table. Social media platforms have expedited the spread of misinformation and disinformation, machine learning algorithms that encode bias are being used everywhere from image search to the justice system, and surveillance is woven into the fabric of consumer capitalism. As Berkeley professor Abigail de Kosnik puts it, “there’s so much work to be done at this crucial moment in human history to try to surface the way that tech has permeated, suffused, and overtaken human decision making.” As many art and technology practitioners engage with and reflect on these computational processes – and the ideologies and social structures that they embody – they are uniquely poised to sit at that table. Increasingly under pressure for the seismic impact of their tools and platforms, some tech companies are responding to these criticisms. It is a very different moment in the technology industry than it was five years ago, as it is in art and technology practice; sensing “something new” about the present, one art and technology program director cited Michel Foucault in calling it a period of “radical rupture” and a “new entry.”

As an international and interinstitutional entity constituted by a diverse array of actors from art, technology and policy sectors, The Grid is positioned to enter and fill that rupture. Rooted in Silicon Valley, initiated by government cultural bodies, informed by academic and cultural institutions, and inclusive of key local players, The Grid can help to foster deeper connections across these fragmented networks. At the same time, by leveraging its governmental and diplomatic clout, The Grid can help to construct art and technology collaborations as a force for shaping tech policy and regulation.

Fragmented Innovation Ecosystems in the SF Bay Area

In the San Francisco Bay Area, the art and technology ecosystem is skewed, in rhetoric and practice, towards the latter term in the dyad. With varying degrees of accuracy, Silicon Valley looms large in local imaginings of the ecosystem, which is robust but fragmented. According to several arts leaders I spoke with, “art and tech” signifies the disproportionate priority not only of the technologies that artists use, but also of the industry that begot them. As Michael Ogilvie, San Jose Public Art Director, remarked, “in this valley, the paintbrush and the palette and the clay that many artists use is binary code.” Abigail de Kosnik, director of Berkeley Center for New Media (BCNM), sees capitalism as the driver of most conversations in this sphere; academic institutions like BCNM are instead committed to artistic and scholarly explorations outside of capital.

This is amplified by the persistence of the “art and technology” frame; as one Bay Area arts leader observes, its cooptation by design agencies that emphasize the glittery aspects of technology lacks a critique of capital that animates much artistic practice in this field and veers into the space of spectacle instead. Technology’s outsized place in this field can elide other disciplinary approaches – science, humanities, design – that inform artistic practice. According to a local university department chair in art and technology, this tends to be the case in educational programs operating at this intersection as well. Drawing on his own experience graduating from, and now running, an art and technology program, he notes that because they require so much dedication to technical literacy, these programs are “really engineering programs

“It’s a political landscape that’s pockmarked. It’s kind of like a mash up of the moon and the rainforest. There’s places of lush, verdant opportunity and barren landscapes of pockmarked asteroid collisions where ideas around innovation were spawned and destroyed by meteor strike.”

**G. Craig Hobbs,
San Jose State University**

populated by artists, but that don't really support the history, traditions, ideologies, the ways of knowing and being of artists."

Organizations dedicated to art and technology practice in the Bay Area describe a fraught, patchy relationship with the technology industry that has, in significant ways, come to define the region's economic and cultural landscape. According to Joel Slayton, a pioneering artist, curator and researcher in the field as well as the Founding Director of the CADRE Laboratory for New Media at San Jose State University (the second such lab in the US after the MIT Media Lab), "the evolution of the Bay Area art and technology ecosystem ran in parallel with the changes in industry and changes in culture generally. Not just the arts culture, but the larger technoculture of Silicon Valley." This observation describes a few interlocking phenomena: the historical and ideological legacy of the counterculture on cyberculture, artists' utilization of emerging technologies in their practices, material engagement and financial support for this work from the tech industry, and the broader impact of the industry in its boom and bust years on the cost of living and cultural life of Bay Area cities.

Even before the COVID-19 pandemic laid waste to much of the cultural landscape,⁸ art and technology organizations in the Bay Area were already facing broader existential challenges after a fruitful prior moment in the scene's history. Danielle Siembieda, Creative Director of Leonardo, the International Society for the Arts, Sciences, and Technology, identifies a particularly fruitful cross-pollination of art and technology sectors a decade ago that has waned even as national interest has grown. This period⁹ arrived in the wake of several transformative organizations and events dedicated to media art, maker culture, and other intersections of art, science, and technology in the Bay Area: Gray Area (founded 2006), Maker Faire (2006), Noisebridge (2007), Tech

⁸ From the very beginning of the pandemic, the arts and culture sector was listed by the Bureau of Economic Analysis as one of the top five industries experiencing the most direct and immediate economic threat. In an early impact survey conducted in March 2020 (totaling 3049 submissions from artists and arts organizations), the California Arts Council reported that organizations estimated an average revenue loss of \$193,642 each, individuals estimated an average personal income loss of \$23,857 each, 66% of organizations had to cancel events that cannot be rescheduled, and 85% of individual artists and cultural workers had to cancel appearances or shows. See Publitas, "COVID-19."

⁹ Certainly, art and technology practice in the Bay Area has a longer lineage than this particular moment. From Edward Muybridge's work in chronophotography at Stanford in the 1970s to the founding of the Exploratorium in 1969, to the launch of Xerox Palo Alto Research Center's artist-in-residency program in the 1970s, as well as Roger Malina's migration of Leonardo/ISAST to the Bay Area, the pioneering robotic work of Survival Research Labs from the 80s, and WIRED Magazine's debut in 1993, the founding of ZERO1 in 2000, numerous initiatives have constituted the historical landscape of art and technology practice in the Bay Area.

Shop¹⁰ (2006), the ZERO1 Biennial (2006-2012, though the organization was founded in 2000), BioCurious (2010), CODAME Art + Tech (2010), Counter Culture Labs (2013) and others.¹¹ She cites Gray Area's *Summer of Smart: Democracy in the Digital Age* (2011) as a pivotal moment in forging generative cross-disciplinary exchange, where art genuinely interfaced with policy and technology to foster urban innovation; developers, designers, planners, civic leaders, activists, journalists, and others came together around government data sets. "A decade ago," Siembieda says, "general start-up, incubator, and hackathon type of investments were in every direction you looked. People were coming out creatively with engineers and artists were really invited and allowed to participate and play in these spaces. We also saw afterwards the emergence of a lot of artists and residencies from Facebook to Google to Autodesk

"There was a particular moment in time and a particular pool of capital that was associated with this hype cycle around this emerging technology."

Julia Kaganskiy

and others." In 2013-14, ZERO1 placed fellows with Google, Adobe, the City of San Jose, and Montalvo Arts Center to solve individual innovation challenges. Autodesk Pier 9 launched its much-lauded artist residency program in 2013 as well. Since that time, both the Maker Faire and Tech Shop have closed and filed for bankruptcy, iconic hackerspace Noisebridge narrowly avoided closure with a bitcoin donation from cryptocurrency exchange Kraken, while the Autodesk Pier 9 workshop closed its doors.

Leaders in art and technology fields situate these challenges within the tumultuous sphere of capital interests, attributing these peaks and troughs to the larger economic drivers of technological investment. In the timescale of technological

development, a decade can see more change than a century in the plastic arts; in the last decade, 3D printing, virtual and augmented reality, and artificial intelligence each ascended the global stage to great fanfare, and with great promise for artistic production. According to Julia Kaganskiy, Founding Director of NEW INC, the world's first museum-led incubator for art, technology and design in New York City, technical and artistic research in this space – and the injections of capital that sustain it – follow the boom and bust cycles of capital. During her tenure, Kaganskiy saw this reflected in

¹⁰ The Tech Shop allegedly had a phone in its space connected directly to the patent office.

¹¹ Not to elide the numerous other organizations and projects that have contributed to this landscape in the Bay Area, including Soundwave (founded 1999), Survival Research Labs (1979), and Recombinant Media Labs (1991), to name a few.

the incubator's partnerships, as well as broadly in the field. She uses the example of virtual reality to illustrate how, around 2015, companies were eager for use cases and creative content that could demonstrate the medium's potential, its creative and technical capabilities: "How do we use this new technology to tell stories or create interesting experiences that serve as proofs of concept to validate that the technology itself is worthwhile and therefore attract investors, audiences, content producers? There was a particular moment in time and a particular pool of capital that was associated with this hype cycle around this emerging technology, and it's perhaps worth noting that this was the third hype cycle for VR, and a few years later the focus seemed to shift to AI and AR."

Through this lens, the sporadic support for media arts practitioners by tech companies in the Bay Area can be seen as a function of their utility vis-à-vis these hype cycles. In Siembieda's view, the particular movement that happened over the last decade was rooted in the revolutionary promise of the 3D printer but has waned as the 3D printer lost its sex appeal – and didn't quite fulfill its promise to become an indispensable household tool. She casts the current state of affairs in the Bay Area as the countercultural remains of that frenzy, concluding that "you had a splurge of money come in, and a lot of energy and effort on the corporate side looking for that investment, which allowed for a lot of counterculture and fringe groups to emerge from that." As I will discuss shortly, this connection between technology and counterculture is but the latest stage in their shared history. As generative as these investment cycles have been for cultural practice, the lack of continuous support makes it very challenging to sustain a healthy arts ecosystem as more and more wealth is captured by massive corporations.

While corporate funding of art and technology practice in the United States has happened, they are, in the words of one practitioner, "blips on a spectrum," although history testifies to the deeper entwinements of culture and technology. There are, as Nadav Hochman and Alexander Reben catalog in *The Grid – Art + Tech Report 2019*, several ongoing corporate programs for art and technology collaborations; many of these are in-house artist residencies for either employee offices, product applications, or product development. Yet, even as in-house art and technology programs have grown within companies, less corporate money has flowed to support the creative landscape outside of these programs. Artist and professor G. Craig Hobbs characterizes this as part of the overarching attitude to the arts in the United States, noting that "there's just not the same cultural awareness of the importance of art and culture for the general health of society. There's not this idea of tilling the soil, of creating a rich compost year after year after year."

Silicon Valley and Arts Funding, 2000-2020

The funding ecosystem for the arts in the United States is a complex tapestry of governmental bodies, private foundations, corporate and individual donors, and organizational income. Government funding is disbursed through different instruments at various levels of government, from federal (the National Endowment for the Arts) to state (California Arts Council) and municipal (San Francisco Arts Commission) tiers. There is little continuity between the priorities, goals, and mechanisms of different state and municipal bodies, and the size of their budgets relative to population. Every artist and arts leader I spoke to bemoans the lack of robust government support for the arts and decries it as an unsustainable model whereby artists' investment in society and in themselves comes through sweat equity. For them, European models for funding the arts seem far more appealing and sustainable. Since much arts funding comes from private foundations for which there is intense competition, this breeds a landscape where artists might strategically brand themselves (as one artist dryly remarked, "If I didn't have a day job, I would probably be Brand Island."), or monetize their creative and intellectual labor in industry, academia or portfolio careers bridging different sectors. In addition, sustained activism from marginalized groups – and the national conversations they have spurred – has necessarily reoriented much grantmaking, at least in the Bay Area, towards underserved communities and projects committed to social justice. Art and technology projects that don't evince these engagements may find it more difficult to secure funding from foundations. Some cultural leaders also suggest that diversity, equity, and inclusion are also becoming part of conversations with potential corporate funders.

It's a common assumption that art created with advanced technologies enjoys ample financial and material support from the tech industry. Artists and organization leaders in this field repeated that they had begun their work anticipating such support, and also report audiences and potential non-industry funders echoing the same. In almost every conversation I had about this topic, they used the same trope – that this is a nut they've been trying to crack, and perhaps an impossible one. At the same time, their creative associations with technology, and by extension, the technology industry, are often cited as a potential barrier to gaining support from more traditional funders such as foundations. Publicly conceived as a metonym for the tech industry, the technology used in media art practice emanates similar political problems. This negative affiliation can afflict local arts organizations seeking to build new audiences. In the Bay Area, the majority (65%-85%) of organizational budgets in this field tend to come from earned

income (tickets, education, workshops, subscriptions, memberships, and other sales),¹² with grants making up 5-15%, and corporate donations at 5-10% or less.¹³ In this respect, this particular regional intersection of art and technology amplifies systemic issues that destabilize the infrastructure of the arts ecosystem in the United States as a whole. It aggravates existing funding disparities that already make it difficult to fund art of any medium. Indeed, the realities of funding this kind of work, and the organizations who support it, reflect its liminal status between art and technology sectors.

For art and technology organizations, the donations that intermittently come from tech companies typically serve a specific goal for the department or business. Leaders of such organizations cite HR or PR departments as typical sources of such support; the former might see arts-related activities as a means of employee engagement, while the latter might serve to burnish the business's reputation. Product departments can also be a source of support; in such cases, the product team evinces an interest in inviting artists to use their new technologies in creative ways. Corporate partnerships, whether through monetary donations or in-kind sponsorship (the donation of goods or services), are usually motivated by a combination of altruism and self-interest. Donations to art and technology projects or organizations are never *carte blanche* donations. According to Julia Kaganskiy, "the demo aspect is always a key part of these relationships. The product is always being integrated into these cultural relationships and more specifically in their relationships with artists."

In the San Francisco Bay Area, the arts economy has struggled to meet the changing tastes and new funding models stemming from the tech world. Despite the shiny new technologies from which this wealth is born, the tech-minted rich have not shown much interest in supporting art created with technology. Traditional signifiers of wealth – collectible works like painting and sculpture, and the large institutions that house and sustain it – remain of primary interest to those looking to invest in the arts, and

¹² This figure is based on projections from organizations I asked, including Gray Area Foundation for the Arts, CODAME Art + Tech, ZERO1: The Art and Technology Network, Living Room Light Exchange, Leonardo/ISAST, whose budgets range from \$20,000 to \$1.5million a year. Budgets for more traditional Bay Area art institutions, like Yerba Buena Center for the Arts, SFMOMA, the De Young Museum, and the Asian Art Museum, whose budgets range from \$12 million to \$66 million for their most recent fiscal year, reflected similar breakdowns. In this respect they reflect a common view that the health of an American non-profit hinges on its earned income.

¹³ Public art projects that incorporate technological elements can draw on location-specific funds, such as San Francisco's "1%-for-art" program that requires the large projects in the Downtown and nearby neighborhoods provide public art equivalent to 1% of the construction cost, and San Jose's municipal ordinance specifying that 1% of city capital improvement project budgets be set aside for the commission, purchase, and installation of artworks.

traditional institutional-building philanthropy has long been on the wane. Media art is not easily collectible, although there are various initiatives utilizing blockchain to position this work within classic systems of artistic capital. While some culture professionals in the Bay Area have tried to leverage the region's reputation for innovation to bridge art and technology sectors, results have been underwhelming.

The fundraising for the Bay Lights, a public art installation on the bridge that joins San Francisco and Oakland, offers some insight into the state of local arts patronage. Describing this massive light art installation is "a monument to the power of technology on both an artistic and a literal level,"¹⁴ in "The Bacon-Wrapped Economy" Ellen Cushing emphasizes how much the tech world served as a cultural context for launching the project. The artist, Leo Villareal, has connections with the industry due to his work in a Microsoft think tank in the 90s. Before it was installed in 2013, the project's URL made the rounds on social media. Yet, for its original promise as an emblem uniting the art and technology sectors, the majority of the \$8 million in funds raised to support it came from the old guard. While Marissa Mayer, former CEO of Yahoo, and Marc Pincus, Zynga founder, donated to the project, big tech corporations did not. As Cushing points out, for all the talk that these "Microsoft Medicis" were poised to save the art world, with the exception of a few tech world art patrons like Microsoft co-founder Paul Allen, Salesforce CEO Marc Benioff, and more recently Amazon CEO Jeff Bezos, this hasn't happened.

This new generation of wealth, however, has redefined the landscape of arts funding by a more transactional approach to giving. In terms of giving, the distinction between old money and new money, according to Cushing, can be understood as a difference between supporting culture and consuming it. The former describes traditional institution-building philanthropy – funding institutions with an eye to their long-term sustainability, without expecting anything in return. This form of philanthropy has rapidly diminished in the last decade and a half, as many arts organizations in the Bay Area attest, and threaten to take with it the institutions that nourish and sustain the region's cultural fabric. The latter is a hallmark of the contemporary giving landscape, referring to the idea that philanthropy should net some kind of return on investment. The return can be personal; Kickstarter, with its system of supporter rewards, embodies this philanthropic accounting. In the 11 years since its founding, Kickstarter has funneled \$4.9 billion dollars to over 191000 projects;¹⁵ on average, they distribute more than three times as much money as the National Endowment for the Arts. The return on investment can also be understood in a more global sense, as elder

¹⁴ Cushing, "The Bacon-Wrapped Economy."

¹⁵ "Stats." *Kickstarter.com*.

Millennials and Gen Xers seek to make a palpable and measurable impact with their dollars.

The accumulation of massive wealth in Silicon Valley both within individual and corporate coffers, has led to the emergence of a new mode of giving. Effective altruism describes a paradigm shift in giving, informed by a start-up ethos that values disruption, impact, and return on investment. According to *The Giving Code*, a 2016 study on Silicon Valley philanthropy by Alexa Cortes Culwell and Heather McLeod Grant, this approach to giving mirrors the Silicon Valley tech sector's approach to innovation; as defense technologies of the 1950s begot personal computing in the 1980s, the internet in the 90s, and today's social media companies, "Silicon Valley giving follows a similar arc, with each wave of corporate success creating new personal wealth and catalyzing a subsequent wave of philanthropy, complete with its own forms of experimentation and innovation."¹⁶ For this reason, while the amount of money donated by Silicon Valley-based corporations has increased (Culwell and Grant note that the overall corporate giving pie increased 4.3 times from a total of \$14.3m in 2006 to a total of \$61.8m in 2013 and *Giving USA 2020* shows that corporate giving in the US as a percentage of corporate pre-tax profits has, at an estimated 1%, grown to its highest level since 2003), corporate giving has become increasingly strategic.

For many companies, such strategy entails giving to designated program areas that align with their area of business and core competencies; in tech, that typically translates to a focus on STEM (Science, Technology, Engineering, and Math). As Culwell and Grant note, by centering impact, this focus privileges supporting larger, mature nonprofits that can lend visibility to corporate partners at the expense of smaller community-based organizations. In practice, by 2013 this had led to 86% of corporate philanthropic dollars and 93% of all giving by Silicon Valley private foundations leaving the region¹⁷ in search of highly visible causes such as health and the environment. The study reports that of the philanthropic dollars that remain in Silicon Valley, the majority of these go to major nonprofits like universities and hospitals – and less than 5% of those funds go to local community-based organizations.

Silicon Valley industries harness the region's rich cultural, intellectual and material resources to generate massive wealth. The biggest tech companies have seen their profits skyrocket during the COVID-19 pandemic as demand for digital services have

¹⁶ Culwell and Grant, *The Giving Code*.

¹⁷ *The Giving Code*, however, excludes San Francisco County from their definition of Silicon Valley, confining it to San Mateo and Santa Clara counties.

grown.¹⁸ Most of the major tech companies have responded to this crisis, donating cash and in-kind support to medical research and emergency relief funds.¹⁹ While these corporations don't exist to give money away, corporate philanthropy – and philanthropy from individuals enriched by tech industries – plays a significant role in numerous American sectors, from health to the environment. Yet, the philanthropic field is incredibly complex and opaque. Various elements contribute to this opacity: the emergence of various giving vehicles, such as donor-advised funds, which have been devised to serve donors' interests in remaining anonymous or otherwise concealing their giving; companies' reticence to reveal too much about their philanthropic activities; laws that exclude donor lists on Form 990s²⁰ from public inspection; and the rise of foundations led by the original donor as instruments of their personal priorities.

While data on Silicon Valley corporate support for the arts sector is hard to come by, arts institutions and cultural leaders have testified to the increasing challenges in corporate fundraising – due in no small part to the realignment of priorities around STEM fields identified in *The Giving Code*. This is not to say that these contributions do not exist; donor boards at larger institutions SFMOMA, Yerba Buena Center for the Arts, and the Fine Arts Museums of San Francisco regularly list companies like Adobe, Facebook, Salesforce, Verizon, and others, with contributions typically ranging from \$10,000 to \$50,000 a year. At the same time, some companies have developed robust internal arts programs and those budgets have not been made available to the public. Newly rechristened Facebook Open Arts, for example, has commissioned about a thousand works in the eight years of their existence, and also partners with external institutions and organizations as part of their international programming and outreach efforts. As a company that makes products for creatives, Adobe also finds clear business alignment with the arts sector, manifest in their partnership with San Francisco-based gallery collective Minnesota Street Project. Mozilla disburses funds to art and advocacy projects through their Creative Media Awards program (in 2019-2020, a total of \$200,000 to eight different projects).

The publication of *The Giving Code* in 2016 provoked many Bay Area nonprofits to evaluate and redefine their philanthropic appeals. Taking their cues from this study, they pivoted from talking about charity, instead using the language of business to reorient the impact of their missions in terms of metrics, data, and efficacy. Because

¹⁸ Lopatto, "In the pandemic economy."

¹⁹ Longley, "Bug in the System."

²⁰ Form 990 is a form that some tax-exempt organizations are required to submit to the Internal Revenue Service (IRS) as part of their annual reporting. It provides the public with financial information about a non-profit organization.

effective altruism espouses “evidence and careful analysis to find the very best causes to work on” rather than “just doing what feels right,”²¹ it is difficult to align more abstract goals with this vision of success. In particular, the arts have struggled to remake themselves in this mold. How do you measure the impact of an artwork or an arts organization? How quickly does that impact reveal itself? *The Giving Code* identifies a critical gap between the utilitarian mindsets and language of business and the more emotional language used by those in the non-profit sector. For the arts in particular, the reconciliation of these spheres may be insurmountable. As Shelley Trott, Director of Arts and Strategy at the Rainin Foundation, told me, artists and arts organizations have been bending over backwards to redefine their work in relationship to the vaunted ROI.

For non-profits to access those funds, there is an urgent need to redefine the value and impact of the arts; this is a fine needle to thread, for if the arts are defined purely in terms of business imperatives, much is lost. Due to its already liminal status between sectors and the capacity of its practitioners to meaningfully engage and innovate with emerging technologies, the art and technology field has several inroads into remaking these measures. In addition, The Grid’s commitment to architecting art and technology collaborations in service of generating tech policy suggests other avenues for generating social impact and value.

Techno-utopianism: The Legacy of the Counterculture in Silicon Valley

While much capital resides in tech industry coffers, the idea that art and culture are entirely on the receiving end of the technology industry misses the critical ways that these have shaped the emergence of Silicon Valley. The tech industry’s neoliberal values – its lionization of flexible work, entrepreneurialism, interdisciplinarity and collaboration – are rooted in the cultural history of the Bay Area. For global spectators, technology is one of the most significant exports from the San Francisco Bay Area. Home to the world’s biggest and most influential tech corporations, Silicon Valley is understood by many as a global seat of innovation. For all the celebrated – and vilified – inventions spawned here, it is not a closed system. Silicon Valley’s vaunted climate of innovation – and the values that inhere in this term – formed within the cultural crucible of the Bay Area and must be understood within the region’s broader cultural history. This history reveals the crucial role art and culture have played in tilling the creative soil in Silicon Valley.

²¹ Semuels, “How Silicon Valley Has Disrupted Philanthropy.”

The unique creative environment of the Bay Area is the product of many historical strands. The spirit of the pioneers is often cited as an ideological precedent for big tech's ethos of disruption. This pioneer ethic grounds one of the tech industry's core guiding values, technological utopianism, or techno-utopianism for short. Broadly conceived, techno-utopianism is a belief in the capacity of technologies – as agents of cultural and social change – to bring about a better world. For better and worse, techno-utopianism animates many of the industry's inventions and interventions. Indeed, several of the tech workers and leaders I interviewed for this report emphasized this underlying impulse at the heart of many of their enterprises. Herein the artist and the technologist converge – both are engaged in world-changing projects. Techno-utopianism is also the industry's hubris: Without stopping to consider the complex ideologies embedded in the raft of technologies that have rapidly restructured how we communicate with and understand each other and the complex social societies they have rapidly displaced, these companies have conferred technology with world-changing power.

Techno-utopianism is also the ideological substrate of cyberculture's surprising bedfellow – the 1960s counterculture. In *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*, Fred Turner traces the intertwined legacies of the American counterculture and post-WWII military-industrial research culture in the digital utopianism that fueled the emergence of computing culture as we know it. Conventional wisdom has cast WWII and Cold War era military research in stark opposition to the counterculture – usually identified by vintage images of student protestors – that also defined midcentury America. As Turner shows, however, these groups shared a view of “institutions as living organisms, social networks as webs of information, and the gathering and interpretation of information as keys to understanding not only the technical but also the natural and social worlds.”²² Informed by a then-new cybernetic rhetoric of systems and information, military research culture became highly interdisciplinary, collaborative and entrepreneurial. The intellectual output of American research culture, notably the work of Norbert Wiener, Buckminster Fuller, and Marshall McLuhan, inspired hippies across the country. The 1960s art worlds in San Francisco and New York contoured these values; Brand's movement through these worlds brought him into contact with John Cage and Robert Rauschenberg, who were redefining art practice as a collaboration between audience, artist, and materials, and for whom artmaking had become the building of information systems of pattern and randomness.

²² Turner, *From Counterculture to Cyberculture*.

Grounded in this view of “the globe as a single interlinked pattern of information,”²³ the wing of the counterculture Turner calls “New Communalists” saw technology as a tool for transforming global consciousness and fostering social change. These twinned cultures coalesced in the Bay Area, in large part through Stewart Brand’s work with the Whole Earth Network. According to Turner, through the *Whole Earth Catalog*, and later WELL and *Wired Magazine*, Brand implemented this cybernetic worldview by knitting together then disparate communities of artists, scientists, hippies, ecologists, and mainstream consumers in its pages. The “new, networked mode of techno-social life”²⁴ formed through these enterprises would ultimately sustain the emergence of the first dotcom boom. The public emergence of the Internet and then the World Wide Web in the 1990s was attended by a rhetoric of democracy, decentralization, and the flattening of hierarchy, an altogether utopian vision of a networked community seizing the reins from ossified government structures to build new social structures. In this telling, the valorization of technology as a tool of empowerment, consciousness and entrepreneurship – still treasured in contemporary cyberculture – as the founding principles of a new society laid the groundwork for the values and triumphs of big tech in Silicon Valley. As I will discuss later, these interdisciplinary, networked values, grounded in techno-utopianism, would also motivate mid-century collaborations in art, science, and technology that have continued to shape contemporary incarnations.

Silicon Valley and the Economics of Extraction

Despite the intertwined history of culture and technology that gave birth to Silicon Valley, the region’s cultural capital has been leveraged in service of the tech industry without significant returns. One artist and professor I interviewed described this as an artificial separation, saying that “the Bay Area has incredible unmet potential, which is ironic because the origins of Silicon Valley are the history of the intersection of technology and culture. Those things have necessarily been extracted and separated.” Many of the artists and arts leaders I interviewed echoed this notion of extraction as a feature of the relationship between technology and culture. In the context of contemporary consumer technologies, extraction is commonly understood as the means by which personal data is siphoned from social media and other consumer platforms and later deployed for sales, marketing and surveillance purposes. Extractive economies (with regenerative economies as their opposite) tend to treat local and regional economies as places from which wealth – in the form of resources, money, and

²³ Ibid, p. 5.

²⁴ Ibid, p. 8.

labor – can be extracted. In a cultural sense, it describes a similar approach to cultural resources – extraction without replenishment.

For numerous tech workers, San Francisco’s cultural life has been touted as a benefit of moving to the Bay Area, despite its high cost of living. Until COVID-19 shelter-in-place orders effectively closed offices, controversial company buses shuttled workers between their San Francisco apartments and their corporate campuses in the Valley; high tech salaries enabled workers to pay increasingly high prices for rent, driving up the cost of living further. In the last ten years, the meteoric rise of big tech, rising from the ashes of the first dot-com bubble burst, has driven eye-watering increases in the cost of living in the Bay Area. For artists in San Francisco, Oakland, and other parts of this creative hub, living here has become largely untenable. The last decade has seen the demolition of artistic warehouses and the withering of arts non-profits.²⁵

“The Bay Area has incredible unmet potential, which is ironic because the origins of Silicon Valley are the history of the intersection of technology and culture. Those things have necessarily been extracted and separated.”

Over the years, foundations and other organizations have tried to build bridges between art and technology sectors, with little success. Shelley Trott, Director of Arts and Strategy at the Rainin Foundation in Oakland, recounts several failed attempts to convene philanthropy officers at major tech firms about the importance of the local arts community; ultimately, she concludes, the arts are not generally seen to serve business interests. Several artists, cultural leaders, and scholars decry the lack of cultural investment in the region by the tech elite. San Francisco’s cultural capital has been a shiny object for tech recruitment within the region, its countercultural initiatives exported elsewhere.

²⁵ According to a Sustain Arts study of the Bay Area cultural ecosystem conducted in 2014, one in five arts and cultural nonprofits folded in the period 2000-2010 – with smaller organizations the least likely to survive. The same study suggested that arts participation rates in the Bay Area may lag behind national averages – and that public demand for theater, humanities, and dance may be lower than the nation. The archived study can be found at <https://www.sustainarts.org/bay-area-info>.

Several artists and leaders I spoke to frame it as a fundamental view that San Francisco is not, in the eyes of big tech, a cultural hub. One arts leader recounted to me how one art and technology initiative they spearheaded was appropriated by a tech company, then repackaged, rebranded and delivered in London. Frustrated with the reality that these corporations are largely doing their cultural investment in other cities that they see more as cultural hubs, he says, “San Francisco is just not on the map. It’s just exporting.” One art school department chair echoes this critique of this extractive approach to culture in San Francisco, urging a fundamental sociocultural shift: “We have to fund the city we inhabit. And we know there’s a moral obligation to provide amenities to the city one inhabits because that’s how you build a more desirable future – as opposed to just using it without any reinvestment into it, which is one of the situations that has been San Francisco’s downfall.”

Towards a More Equitable Art + Tech Community

In the Bay Area, this recognition of big tech’s dominance, and the engine of capital that drives it, has made for an uneasy relationship between other actors in the art and technology field. G. Craig Hobbs describes this as a more recent shift, consonant with the consolidation of power by big tech and when their massive platforms became tools of disinformation. In San Jose, the cultural, financial and political center of Silicon Valley, he says, “we went from a place of an embrace of the technology, of interdisciplinarity, of civic outreach and impact within the city to a place of tech backlash.” Even as this backlash has rightfully taken aim at the tech industry’s troubling impact, it has obscured the multiple functions and multimodal origins of technologies, which are not easily reduced.

Thoughtfully constructing alliances to build healthy art and technology networks means working with this irreducibility, while also acknowledging the existing power dynamics that currently structure art and technology communities of practice. According to one chair of a Bay Area art and technology university department, “there is an asymmetry of power in art and technology. Its aspirations are innately and implicitly interdisciplinary aspirations – the idea of moving toward more interdisciplinary approaches to innovation and knowledge creation. But it hardly functions as a strong collaborative interdisciplinary venture, because most of the funding resides in the technology sector.”

A strong collaborative interdisciplinary venture necessitates building infrastructure that recognizes and mitigates this asymmetry. In *The Grid – Art + Tech Report 2019*, Nadav Hochman and Alexander Reben emphasized the need for new connections between

artists, tech companies, arts institutions, and other stakeholders in this field, identifying The Grid as a powerful unifying platform to foster, develop, and deepen those connections. In many ways, artists and organizations in this field are already doing this work, albeit in a less structured way. As The Grid continues to architect their multi-stakeholder platform, their partnerships with local artists and organizations – in tandem with more established European networks – should inform the nature of these collaborations.

**“Artists don’t
meet the
measure, they
make it.”**

**Weidong Yang
Kinetechn Arts**

Sustaining genuine interdisciplinary exchange will require building networks grounded in care – an ethic that takes interdependence as its foundational principle – and scaffolded by meaningful partnerships that affirm the priorities, commitments, and needs of different stakeholders. As the pandemic has decimated the pool of resources, several foundation directors and art leaders emphasized the need for building cooperative consortium models, rather than competing for those dollars. Chris Barr, Director of Arts + Technology Innovation at the Knight Foundation, says, “As we move towards more cooperative arrangements, many organizations may be concerned with losing their individual identity. We should explore structures that allow for organizations to benefit from some standardization and access to talent, while retaining their

voice and value within the community.” As an interinstitutional entity with a broad cross-sectoral reach, The Grid is poised to offer such a cooperative structure.

At the same time, securing support for this kind of work necessitates acknowledging the larger reorientation in funding ecosystems towards impact-centered projects – and recruiting artists and practitioners to redefine the terms, scale, and scope of that impact. In the words of Weidong Yang, artist, scientist and co-founder of Kinetechn Arts and creative data science studio Kineviz, “Artists don’t meet the measure, they make it.” Media artists are at the vanguard of emerging technologies, and have long been conscripted to reimagine how such technologies are used and made. Similarly, organizations doing this work need sustainable support – and they’re on the bleeding edge of innovation anyway. Addressing the chronic funding issues in the field for smaller organizations, one arts organization leader I spoke to describes her vision of a pooled industry fund for art and technology practice. In this proposal, she urged industry to understand the field’s practitioners as innovators and brand ambassadors.

CHAPTER TWO

Building Better Networks across Disciplines and Organizations

In many ways, this is a particularly promising moment for genuine collaboration and cross-pollination between technology and the arts. The past few years have seen a surge in national and global interest beyond the countercultural core of practitioners and organizations long dedicated to this work, as art fairs create a space for blockchain and AI art, museums and galleries launch research labs, and new collectives like Processing Foundation have formed to support artists and researchers in this field. As the pandemic has forced many organizations to migrate their activities online, their existing knowledge and expertise with digital tools and platforms have proven to be especially valuable.

Due to the spread of disinformation on their platforms and their corresponding effects on democracy, technology companies are under intense pressure to evaluate how they do business, and who sits at their design, development, and decision-making tables. In the words of one artist, this is a “bonsai moment” for culture writ large. As we look ahead to – and work to define – the ecosystems around these practices, it is important to be deliberate about how those collaborations are structured and staged. Reproducing existing models, many inherited from the origins of cross-disciplinary art, science, and technology encounters in the 1960s and 70s, without careful attention to the specific social and political contexts now shaping the effects of design and technology on our lives, may undercut their potential for genuine change.

In the context of the current techlash and the corresponding appetite for tech regulation evinced by governing bodies in the United States and the European Union, this cross-pollination should include regulators in the policy sphere. In dialogue with artists and technologists as well as scholars, policymakers can work to redress some of the systematic problems at the heart of these serious global issues. Ideally, The Grid will triangulate these actors to redefine these collaborative processes in service of our urgent contemporary moment. Furthermore, The Grid has already seen some success leveraging this policy approach to gain access to resources and decision-makers in Big Tech.

The potential of art and technology collaborations are manifold. As Nadav Hochman and Alexander Reben highlighted in *The Grid – Art + Tech Report 2019*, artists working with advanced technologies can bring facets of emotionality, criticality, and exploration

to research, development, and production processes. Artists and technologists both emphasize the freeform aspect of artistic practice to research. According to Toshi Anders Hoo, director of the Emerging Media Lab at the Institute for the Future, art can serve as a “play space” for technology. One example of this is Adobe’s *Festival of the Impossible*, wherein artists are invited to create with augmented reality. Amy Peck, founder at EndeavorVR and former Director of Enterprise Content at HTC Vive, calls the capacity of artists to expand into a freeform, exploratory space “volumetric thinking.” G. Craig Hobbs, Area Coordinator of the Digital Media Art (DMA) Program and Director of San Jose State University’s CADRE Media Lab, similarly characterizes it as “a real open lab, playful environment, where students can fail elegantly and often.”

“Technology has real world impact. We need to be more collectively mindful and aware that there are many facets to the human experience that we can’t just assume that it’s just this. It’s just too naïve and too perilous. I want this plethora of brains in the room. We need to have very dimensional conversations about the technology that is in front of us.”

Asta Roseway, Microsoft Research

Many cultural leaders I interviewed also affirmed artistic contributions to understanding and shaping the ethical implications of technologies, as well as the discourse around them. For example, *Uncanny Valley*, an AI art exhibition at San Francisco’s De Young Museum, aims to kickstart a critical discourse around technology that is based within artistic practice and sustains a philosophical and political investigation into artificial intelligence technologies. That artistic inquiry into the potential impact and effects of certain technologies could be taken as a serious form of speculative research that could go on to inform policy. At the same time, as one departmental chair at a Bay Area arts college cautions, artists working with technologies should not be pigeonholed into creating conversations about technology, simply because they are using emerging ones. Such an approach would reinforce existing orientations, in the Bay Area at least, towards technology as the centripetal force of the ecosystem. His vision of such work, and an institutional program that serves it, would “leverage

emergent communication technologies for the express purposes of engaging with a variety of social, cultural, political, economic, and environmental issues.”

In terms of cross-pollination between the art and technology sectors, there are precedents as well as barriers to engagement. Tina Vaz, Head of Facebook’s Open Arts, and former deputy director of global communications at the Guggenheim Foundation, says the relationship between art institutions and companies is essential, making work possible that would not otherwise be. “If the two can come together, how can art leverage technology in new ways to reach more people?” she asks, “How can art bring nuance and sensitivity to technology? If these two could work together effectively, what contributions could they make to cultural and media literacy?” *Future Art Ecosystems*, the recent study released by Serpentine Galleries, posits that there are numerous business incentives for tech companies to serve as patrons of the arts. These include the capacity to foster organizational learning, applying domain-specific knowledge and experience to benefit the usability of emerging technology, provide public-facing PR and CSR opportunities, signaling a commitment to innovation to external investors as well as younger employees, providing a space for employees to engage in part-time pursuit of their own creative projects, and finally, leveraging the art world’s reputation as an “epicenter for creativity” to burnish organizational reputations.

As Joel Slayton remarks, “the number one commodity in Silicon Valley is creativity. You don’t have to be an artist to be creative, and people are creative across the board. But the arts have a special domain of expertise and creativity relative to creative thinking and problem solving that other disciplines don’t. And if you have the ability to articulate how that works and it can be shared in language that translates and can be understood within context specificity of the tech industry, that’s an incredibly valuable commodity.” While this view suggests some inroads into collaboration, it also highlights a core challenge articulated to me by some academics and creatives in the field: Engineers and designers believe themselves to be artists and so don’t need Michelangelos, and artists working on issues of technology are more interested in critiquing it – they don’t aspire to be the next big app builder. As one Bay Area museum curator notes, “a mutual education needs to occur so we can bridge the division between the arts and technology sector. A really strange gap exists. We can’t get into the tech industry because these companies and engineers rightfully think of themselves as creative, and basically peers of the artists.”

While these business incentives may serve as motivations for tech companies to work with the arts, some artists and academics see this as a point of contention. For this reason, certain academic centers like Berkeley Center for New Media see their role as

promoting platform approaches to analyzing technology that are not ever or mostly about corporate or governmental goals for technology. The commercial imperatives that have driven the worst outcomes of contemporary technology structure these encounters in terms of capital and neoliberalism. And yet, this has been a feature of many art and technology industry collaborations.

The Lab as a Model for Art and Tech Collaboration

The vision of flattened hierarchies nurtured by Stewart Brand and his peers – which prioritized flexibility, exchange, and collaboration – also structured the prototypical art and technology exchanges that still persist today. In North America, there are over a hundred labs and programs dedicated to collaborative experimentation in art and technology. Many of these labs situate themselves in the lineage of mid-twentieth-century collaborations between artists and Cold War era military-industrial institutions like EAT (Experiments in Art and Technology, launched 1967), CAVS (Center for Advanced Visual Studies, founded 1967 at MIT) and the Los Angeles Museum of Modern Art's Art & Technology program (1967). Born out of the widespread techno-utopianism that animated much research in military, academic, and artistic contexts at that time, these initiatives have become touchstones for the resurgence in art and technology collaborations of the 21st century.

In *Technocrats of the Imagination*, John Beck and Ryan Bishop show how these partnerships were licensed by a shared vocabulary – creativity, experimentation, collaboration, interdisciplinarity, and research – around which contemporary programs also orbit. They also highlight how techno-utopianism enjoined these artists, including Buckminster Fuller and Charles and Ray Eames, and their host institutions. They understood computing technologies not only as instruments of social change, but as models for a flexible, efficient, and nonhierarchical world. In this respect, these collaborations are another thread in the prehistory of neoliberal ideals of work under capital. As Beck and Bishop argue, the story of these labs, their ambitions, their limitations, and their contemporary resuscitations, track the broader “conversion of the collectivist avant garde into the precarious labor of the twenty-first-century creative class.”²⁶ Despite the differences between these early projects, Beck and Bishop suggest they shared an interest in “the serious investigation of the prospects for art as a mode of practice directly engaged in the production of new forms of living.”²⁷ In this commitment, and their model of collaborative, project-based, time-limited

²⁶ Beck and Bishop. “The Return of the Art and Technology Lab.”

²⁷ Ibid, p. 237.

interdisciplinary activity, these early collaborations have provided templates for contemporary art and technology labs and programs.

For Beck and Bishop, the uncritical invocation of this history of art and tech labs – and the concepts that animated them – to legitimize their contemporary incarnations is a failure to recognize their limitations, as well as an elision of the radical political context from whence they emerged. Crucial to understanding these failures, they note, is attending to the ways these spaces pressured art to formally embody politics, leading to a set of categorical confusions that ultimately led to the displacement and aestheticization of radical social imagination; in this thinking, the flattened networks of information sharing do not simply promote democracy, they actually are democracy. So framed, the virtues of collaboration, interdisciplinarity and experimentation became emptied of meaning as they became untethered from the radical political visions of the 1960s, and now, in art and technology contexts that uncritically seek to replicate these models. Ultimately, Beck and Bishop urge new initiatives in this space to pay close attention to this history, and consider their own political aims, for “without a politically utopian driver, it is hard to see what innovation in art and technology collaborations can be other than more product and more spectacle.”²⁸ They are not optimistic about the current state of such collaborations, suggesting that they are essentially structured by military-industrial interests.

Cognizant of this influence, some residency directors emphasize the importance of creating and nurturing incubators and centers outside of corporate and academic paradigms, potentially funded to some degree by tech companies, but independently governed. One corporate research lab lead affirmed this, saying, “We need a neutral territory we can help fund, where people can come to the table without being owned.” Organizations like NEW INC and Serpentine Galleries’ R&D Labs make steps towards defining these territories. A structure like The Grid, which gathers a consortium of diverse actors in this field, could also effectively occupy this space. Beck and Bishop also highlight how the contemporary art and technology lab tends to rely on “the precarity of the contemporary labor market in the culture industries as much as it is the beneficiary of tech largesse”²⁹ – as “outsourced entrepreneurs” artists in these spaces are at the whims of the gig economy; constructing regenerative networks that support artists would contribute to mitigating this chronic instability.

Given these insights, the political stakes for contemporary art and technology collaborations must be foregrounded and cultivated deliberately. As the common

²⁸ Ibid, p. 238.

²⁹ Beck and Bishop, *Technocrats of the Imagination*.

virtues of interdisciplinarity, experimentation, and collaboration have been deployed to near-emptiness, developing a new shared language, grounded in mutual practices, can serve to sustain regenerative encounters between artists and technologists moving forward, as well as the networks that hold them together.

R.I.S.E.: An Anatomy of Collaboration

Building regenerative networks grounded in care entails an approach that cultivates new modes of cross-disciplinary communications, and also values and preserves partner identities and priorities. Once discourse can shift from reinscribing disciplinary territories (as the art and technology frame is wont to do), one strategy is to narrativize the evolution of an idea, from its germination to its outcomes. At the National Academy of Sciences, one unrealized programmatic articulation of this trajectory was condensed into the acronym R.I.S.E. – Research, Innovation, Strategic Engagement. This highlights the central elements interdisciplinary collaborations can use to define their work and the difference audiences these elements serve.

Various programs are already doing this to some degree in-house; for her recent residency at Microsoft, the artist and architect Jenny Sabin did collaborative research with company engineers about machine learning, gave lectures and conducted workshops with employees in the research division, built an interactive architectural pavilion that staged a powerful aesthetic experience, and co-developed an archive and documentation to showcase the project's learnings about AI and affect to the public. Leonardo, the International Society for the Arts, Sciences, and Technology, is a Bay Area-based global think tank that utilizes its partner network to create infrastructure supporting the full cycle of an idea. This approach affirms the profiles, strengths and capacities of different partners, be they research, exhibition or publication partners, enjoining them in meaningful ways that foster knowledge exchange and build collective capital. These networks should include people and organizations who represent the whole spectrum of lived experience. By deliberately including diverse voices at every level of that collaboration from the beginning, as The Grid aims to do, we can begin to redress the imbalances that currently inhere in these ecosystems.

Best Practices for Process-Based Research Collaborations

The Grid – Art + Tech Report 2019 called for defining best practices and replicable models of collaboration, while also highlighting the R&D artist residency as one of the most potentially productive models for staging genuinely innovative collaborations

centered in process. The structure of these kinds of collaborations vary widely. Like Djerassi's *Scientific Delirium Madness*, they can be open-ended, a crucible for connection. Others are organized around a problem to be solved and place an artist in a research lab for a period of anywhere from 2 weeks to 3 months. Other iterations work around artists' existing commitments; such a residency might stretch out for 18 months to 2 years, with the artist doing much ideation and prototyping work in their own studios, with structured engagements with a participating lab's engineers and staff. Based on these varied approaches, this section articulates some principles undergirding successful collaborations – between people, organizations, and sectors.

The recent resurgence and push for artistic collaboration with other disciplines is part of a broader "recalibration of the meaning of 'research' as it is understood by arts practitioners."³⁰ Generative cross-disciplinary research requires the establishment of mutually defined communication frameworks – "a common language, negotiate mutually rewarding goals, establish clear communications and effective knowledge sharing and develop a scheme for project coordination and management."³¹ In a residency context, how this development of a shared language has been staged depends on particular institutional goals. As Margot Knight, former Executive Director of the Djerassi Resident Artists Program, puts it, "beginning with the end in mind is so critical." Djerassi, a residency in the truest sense insofar as participants live onsite on a ranch just north of Silicon Valley, was designed to support freeform investigation and collaboration between artists and scientists. Investing in the creative process, without expecting outcomes, the program offers participants a space to find mutual ground and incubate ideas; this model has nurtured some ongoing cross-disciplinary partnerships that have extended far beyond the life of the residency. Other initiatives, like Kinetech Arts, a San Francisco-based dance and technology group, scaffold these encounters through their Open Lab, a weekly freeform exploration that isn't dictated by any one agenda.

Collaborations focused on addressing specific topics or problems generally have less bandwidth for this freeform approach. Aimed at specific outcomes – be that an artwork or a product – these programs benefit from careful curation and structure. *The Grid – Art + Tech Report 2019* underscored the need for careful matchmaking of artist and engineer research teams. This is true in academic, industrial and other contexts: Matthew Tiews, associate vice president for campus engagement and interim senior associate vice president for the arts at Stanford, who has overseen several of these collaborations at the university,

³⁰ Beck and Bishop, "The Return of the Art and Technology Lab," p. 215.

³¹ Shanken. "Artists in Industry and the Academy."

“For the young philosophers we hired, A.I. is a philosophy. So they read philosophy books and philosophy discourse and want to talk. But the engineers are basically doers. And for them, it is a practice. You cannot really talk about it, unless you do it.”

Tobias Rees, Berggruen Institute

described these as “bespoke.” Several art residency managers at tech companies emphasized a selection process that included preliminary interviews and discussions. “It’s a kind of “alchemy” because you want to make sure there’s a connection,” as one artist-in-residence director remarked. This really needs to be facilitated by an agent who has a deep familiarity with the knowledge bases, cultural norms, and expectations of different sectors, whether in industry, academia, or art institutions – “the vernacular, the vocabulary, the technologies, the emotional layers. You’ve got to be able to translate the vision into engineering principles.” According to Ed Shanken, “such individuals play a vital role in enabling interdisciplinary research in involving artists by justifying industry’s investment in them, convincing colleagues of their value, and intermediating between the interests of individuals and institutions and between artists, engineers, and scientists.”³²

Such intermediaries are catalysts, and are increasingly important to this kind of research, although Shanken notes that their specific managerial or personal qualities are unclear. They may be “a historian simultaneously acting as an ethnographer and management consultant.”³³ That curator or facilitator has to mediate the imaginative scope of the artist and the technical constraints of engineering, without losing the essence of the vision. At the same time, as Sara Diamond notes in “Degrees of Freedom,” citing former Intel Communications Director Dana Plautz, “some of the friction between artist’s creativity and technologist’s creativity can result in inventions. [...] Products can also result that might fit an unanticipated market need.”³⁴ Artists in

³² Ibid., p. 416.

³³ Ibid.

³⁴ Diamond, “Degrees of Freedom: Models of Corporate Relationships.”

such spaces have the opportunity both to shape the development pathway of an emerging technology, as well as generate new narratives around it.

Organizations like Leonardo/ISAST and ZERO1, with deep experience in bridging disciplines and sectors, as well as extant collaborative models to draw on, have played that curatorial role. In one iteration led by then ZERO1 Director Joel Slayton, they built a fellowship model that connected participating artists embedded in Adobe, Google, Montalvo Art Center, and the City of San Jose with mentorship in the form of outside experts, educated them on the innovation model itself, monitored their activities and gave them milestones to meet. Even so, building in some space for developing mutually comprehensible terms of engagement can sustain the collaboration and build community.

“A genuinely shared language would include the quantifiable and the intangible.”

Anna Sidana

For technologists, particularly those working in product research and development at tech companies, importing language from artistic, humanistic, or social scientific disciplines can preemptively foreclose relationship-building, a prerequisite for collaboration. Some programs thus establish the terms of a collaboration by doing, not just saying; such exercises can also help to foster trust, which can be in short supply in such cross-disciplinary enterprises. Technologies are not neutral – they materialize and enact social, cultural and political systems and ideologies. They express philosophical ideas, but not through language. Rather, technological design is an act of philosophical practice. Where philosophy is discourse heavy, technologies are both objects and practices, and art practice can be a philosophical investigation. Because

of this, technology is literally a philosophical laboratory. It is in these intersections of art, technology, and philosophy that Founding Director Tobias Rees grounds the projects of the Berggruen Institute’s “Transformation of the Human” program. The program places artists and philosophers in key research sites – major tech firms like Google and Facebook among them – and facilitating practice-based dialogue with technologists, they aim to make artificial intelligence, biotech and climate change into “visible places of experimentation for the way we think about ourselves as human.”³⁵ The triangulation of these fields could, ideally, allow a project to germinate a larger framework which might then recruit other intracompany divisions. For example, a

³⁵ Bauch, “Berggruen Institute Announces.”

working group could be a vehicle for developing a larger vision of what a city could look like, or what capital could look like; such a project would entail working with engineering, as well as public relations, and possible internal policy departments, and government policymakers. Earlier efforts signal the promise of projects of this scope: In 2013, ZERO1 facilitated Paula Levine's fellowship at Google, where she worked on representing maps and borders – a complex problem at the intersection of art, technology, and policy. Engaging with the limitations of policy in imagining global networked communities, *City-to-City* visualized network traffic in the form of a topographic map.

This multidisciplinary approach incorporates perspectives from the humanities and social sciences, which can provide critical social and cultural context. Some companies have integrated sociologists into product development. At Snap, author and social media theorist Nathan Jurgenson was hired at an early stage of the business to inform product decisions: in public keynotes, Snap founder Evan Spiegel's stated vision³⁶ for the product replicates Jurgenson's published ideas. Snap also funds a separate online magazine, *Real Life*, which publishes critical essays and narratives about living with technology, and of which Jurgenson is Founder and Editor-in-Chief. This model offers some precedent for how interdisciplinary relationships at an organizational level can serve mutually beneficial goals, with attention paid as well to the technology's social impact.

One long-term residency director expressed hope that meaningful partnerships could link some of these outcome-driven residencies with more cerebral ones in a tighter way that integrated the for-profit world of residencies with the non-profit world. This would help not only to balance the ecosystem, but also to sustain knowledge transfer. Scaled and facilitated by The Grid, this knowledge exchange could expand internationally, between Europe and the Bay Area. This approach would draw on Europe's mature art and technology networks, as well as Silicon Valley as a nexus of technological development, to expand and deepen the impact of these partnerships.

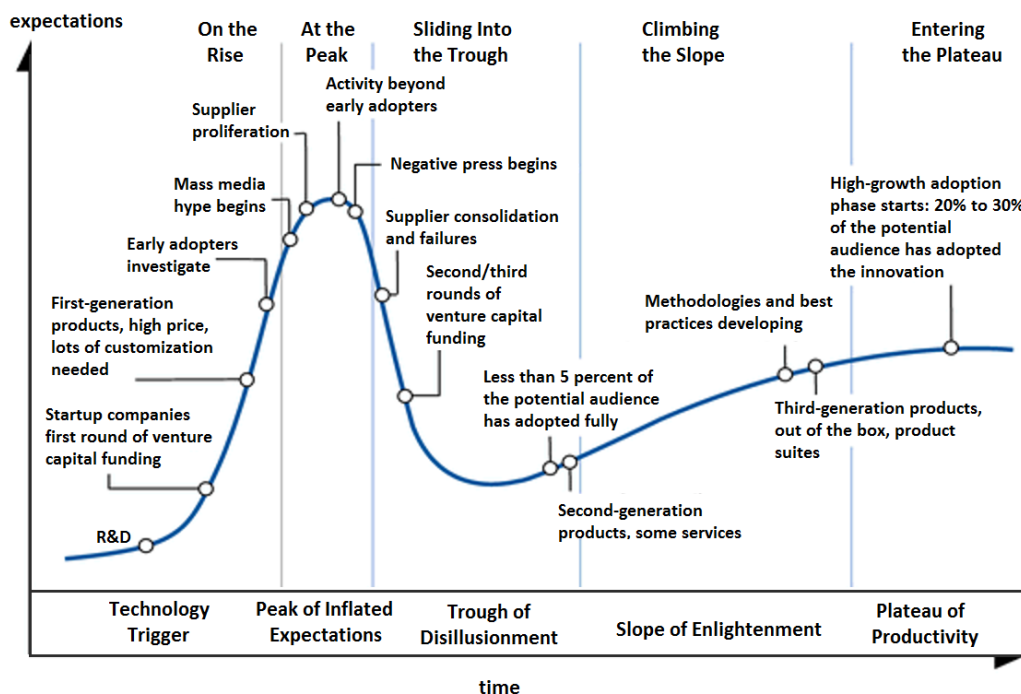
Where Art and Industry Meet Innovation

In Silicon Valley, innovation is currency. And despite some divergence between artists and technologists' understanding of what innovation is – and who it serves – it remains the most powerful claim for integrating artists into technological research and

³⁶ Herrman, "Meet the Man Who Got Inside Snapchat's Head."

development. Yet, many artistic projects tend to engage with technologies beyond the point when they can fundamentally shape them.

Ben Vickers, CTO of Serpentine Galleries in London, cites the Gartner Hype Cycle for Emerging Technologies as a rationale for the museum's recently launched R&D Platform, which encompasses the Creative AI Lab, Legal Lab, and Blockchain Lab. Developed and used by the American research, advisory and information technology firm Gartner, the Hype Cycle methodology is a diagram of the maturity, adoption, and social application of technology along the axes of Expectations (y-axis) and Time (x-axis). Beginning with the "innovation trigger," the graph quickly rises to the "Peak of Inflated Expectations," a steep ascent that represents the building excitement around a new technology sustained by proof-of-concept stories and media interest. At this peak, some companies engage and many don't. Then it crashes: The "Trough of Disillusionment" maps waning interest in the technology as experiments and implementations fail to meet the hype. The graph then steadily rises through the "slope of enlightenment," reflecting how more instances of the technology's benefit begin to manifest and become more understood, leveling off at the "Plateau of Productivity," as the technology enters the mainstream and achieves broad market appeal and applicability. According to Vickers, the point where any arts organization is involved in the production of anything to do with technology tends to be at the plateau of productivity. At that point, he says, "every decision about the technology



General Gartner Research's Hype Cycle Diagram, illustrated by Olga Tarkovskiy. Used under [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/) license.

has been made, and you're essentially creating content." With the increasing use of game engines like Unity in much avant-garde media art, this observation calls attention to where art and technology practices are already meeting platform capitalism.

Serpentine's strategy here has precedents in the toolmaking efforts of artists in this field. For example, artist and programmer Casey Reas co-founded Processing, a programming language and set of code libraries for creators, artist, hacker, researcher, and artist Zach Lieberman co-founded the open source C++ toolkit for creative coding openFrameworks, and UCLA professor Lauren McCarthy created p5.js, an open source Javascript library for artists and designers. Beyond expressing and participating in a non-commercial ethos of open source, these tools can help artists to build communities for knowledge exchange. They can also embody a view shared with me by some artists that in this field, innovation is not an end in itself, but a by-product of art making.

Joel Slayton gets more granular discussing the potential role of artists in the innovation arc within industry research spaces. The richest possibility here lies in "a very small space" of discovery before the design thinking stage and moving to market, from where ideation emerges. The arts work particularly well in this discovery place because they are the provocations to ideas. He argues that "artists working seriously with media technologies are well-positioned to play that instrument if they want to, although it's not for everybody. But most corporate residencies are not set up with this in mind." They tend to serve only the most simple business outcomes like marketing or visibility, rather than impacting vision and strategy. For this reason, he identifies this as "the number one challenge why the arts are not very valued in Silicon Valley."

Despite an increasing recognition of the value of the arts to enterprise, its impact on innovation in industry is blunted by this gap between artistic and business interests. According to Bill O'Connor, Founder of the Innovation Agency and the Autodesk Innovation Genome Project, "innovation is the art of establishing something different or new in the real world that has significant impact." This definition, based on years of research on historical innovations in different fields, foregrounds innovation as an art, not a science, as it cannot be accomplished through purely logical means, requiring imaginative, nonlinear, and even counterintuitive thinking. O'Connor emphasizes real-world impact as a measure of innovation, which allows him to depart from classic business measures. He writes that "we have to think beyond product specs, business plans, and other classical elements of 'business as usual,' and instead focus on the holistic question of *what kind of different or new experience could we create that people would actually embrace?* To do that successfully, we have to combine

traditional left-brain approaches with right-brain elements, such as instinct, passion, creativity, etc., otherwise we're likely to end up with a new invention (i.e. not an innovation) that, even if it is different or new, can't be established in the real world, and thus ends up having no impact."³⁷ This holistic perspective anticipates the productive human-centered engagements that could occur where technology and the arts meet. It also highlights how innovation, prized as it is, does not occur in a vacuum and must come from a genuine understanding of who the field is serving, and what their needs are. Art practice, placed into a regenerative relationship with technological innovation, might help to foster new dialogues about their social impact that could go on to inform policy.

Strategic Engagement and Impact

Building regenerative ecosystems of care necessitates a considered and strategic engagement with art and technology stakeholders. In the long term, these strategic engagements serve to disseminate knowledge, nurture public investment, build community and promote sustainable cultural change.

If there's a common thread between the artists, institutional leaders, tech workers, foundation managers, and others I interviewed for this report, it's a desire for a change in culture and attitudes towards the arts, towards corporate responsibility, and governance. Good will abounds across these sectors, but many feel hamstrung by systems of governance in corporations, entrenched as well as systemic attitudes towards the value of the arts. Part of the problem is that technology-related fields run at an accelerated pace. Industry leaders told a recurring story of ambitious and innovative projects dead-ended by leadership change, or interest drying up in alignment with the whims of the marketplace. As one residency director told me, "it's incredibly hard to find public advocates. They might love what you do, but there is suspicion of the arts in technologies, and suspicion of technologies in the artists' realm." In the words of one art and technology department chair, enduring change works "at the speed of dialogue: thoughtful, co-intentional, consensus-building, meaning-making processes that are not designed to move at the speed of technology or the speed of capitalism, but something that could be a five-to-ten-year relationship building project."

In a corporate environment, successful art and technology collaborations are often scaffolded by other forms of engagement beyond the collaboration itself. At Microsoft

³⁷ O' Connor, "Real Innovation: Timeless Techniques from the Autodesk Innovation Genome Project," *italics mine*.

Research, for example, not only did Jenny Sabin collaborate in the research process, she gave lectures and workshops to the greater community. Asta Roseway, the residency co-founder, emphasizes how she hopes for those conversations to “change minds,” “expand perceptions” and “push people out of their comfort zones” such that engineers ultimately think about the technologies they’re making differently. Leads at Google Research, IDEO, Adobe, and other companies described staging similar encounters with artists through workshops and fireside chats; they also emphasized that the success of this encounter hinges on artists telling stories about their work that reflected its value to the community they’re embedded in, and not just themselves. At IDEO, which is distinguished by being a design firm rather than a tech company (although they certainly work with emerging technologies), creativity is so integral to the culture that employee-led initiatives like the Digital Dream Lab, a physical-digital prototyping collective within the company, has formed.

For genuine impact, such that an artist is not an isolated ornament during their tenure, this institutional engagement is necessary. Whether in business, academia or government, creating support structures to deepen this engagement is a critical ingredient to the success of these tours. For example, in alignment with their investments in public interest technology, the Ford Foundation’s “Technology and Society” fellowship program integrates fellows into the organization itself. Through the tech fellows, the program was designed to instill the capacity for the foundation itself to reflect upon and understand technology. One interviewee cited another example where they had embedded an artist in a government department – without being meaningfully integrated, they were unable to make any kind of change.

Public engagement in this field is just as significant and serves several purposes: Elevating artists’ profiles, exposing the public to emerging technologies through aesthetic experience, and shaping public discourse and critical thinking about technology. Because commercial deployments of technology dominate public consciousness, these public engagements, in the form of talks, salons, workshops, and exhibitions can proffer and nurture new relationships to the technologies that permeate many of our lives. In the Bay Area, collectives like CODAME center an ethos of playfulness in their events and workshops, inviting a spirit of creativity to these encounters. A number of grassroots efforts elevate thoughtful, critically-engaged work in the field; these include salons like the Living Room Light Exchange and exhibition venues like B4B3L4B in Oakland, which center BIPOC and LGBTQIA+ representation.

These collectives also help to shore up a sometimes-fragmented community. Artists and cultural leaders in the field lament a dearth of local and national venues for sharing

knowledge, showing work, and finding opportunities. As one artist remarked, “you can count them on two hands.” They certainly exist; Leonardo/ISAST has been publishing research in art, science and technology for over 50 years, and SIGGRAPH, ISEA, Eyeo, Ars Electronica and Transmediale are among the field’s annual highlights (notable, however, is that of these, only Eyeo takes place in the United States). Even so, the field would benefit from conferences, symposia, and publications that scaffold these communities and offer a centralized platform for sharing opportunities.

Ideally, these strategic engagement initiatives would contribute to larger cultural change in the value of the arts vis-à-vis science and technology. In the United States, a lot of foundation and corporate funding is directed to STEM (Science, Technology, Engineering, Mathematics) initiatives, in education and in research. By reframing the arts as a critical part of research and societal advancement (STEAM), more funding and more opportunities could be funneled to this work.

CHAPTER THREE

COVID-19: Remaking the Creative Landscape of Art, Tech and Policy

As it is, artists in the United States face numerous structural challenges; their work is often devalued or understood as sweat equity. Art and technology practitioners have also struggled to find their place in relation to the art world, although this is changing. At the same time, their proximity to the technology industry – whether real or imagined – has attracted criticism. Collaborations with tech companies have been described as “whitewashing” a company’s image; such critics deploy Hans Haacke’s argument that such artists are complicit with capitalism. Be that as it may, tech companies, like art organizations and academic institutions, will continue to be a force in this space. Recognizing this earlier and building alliances that fortify the important cultural work being done in this field, will help to mitigate that disparity. It’s better that the shape of that ecosystem, its priorities, and the meting out of its resources, are articulated from an artistic and institutional perspective rather than shaped by an ad hoc funding regime formalized twenty years from now.

Due to the pandemic and its unprecedented impact on every facet of our lives, not to mention the profound social upheaval in response to racial injustice this year, there is an opportunity and opening right now to reimagine the social contract. Nearly every person I spoke to expressed a sense of hope about this time. The COVID-19 pandemic has amplified existing social inequity; people of color are more likely to get ill and die from it, unable to cope with the demands of childcare and their professional lives, scores of women are leaving the workforce. Commercial technologies similarly reproduce social disparities; consider the various ways the AI technologies encode human bias.

At the same time, artists and organizations in this field have taken quickly to online programming, practiced as they are with new software, digital technologies and virtual worlds. This rapid decampment to virtual cultural programming has highlighted how inaccessible such work has previously been and provided opportunities to transcend geographical limits and build global community. Even so, the digital divide – the gap between those who have access to modern information and communication technology, and those who don’t – means that this cultural expansion has not been available to all. Like the novel coronavirus, the digital divide has widened along already strained economic and racial lines. In this respect, it echoes ongoing issues around diversity, equity and inclusion in the art and technology field. As in the technology sector, access to the kinds of advanced tools utilized by art and technology

practitioners mirrors the digital divide. Some tech leaders I spoke with described robust internal conversations about diversity, equity, and inclusion that suggest, in some quarters, an openness to new community commitments.

Artists from underrepresented communities are engaging these complex issues in creative and provocative ways. Joy Buolamwini's "AI, Ain't I A Woman?" is a spoken word performance, inspired by Sojourner Truth's 1851 speech, that artistically presents her research on the gendered and racial lenses in facial recognition technology. Hyphen Hub's "NeuroSpeculative AfroFeminism" is a VR experience by a global team of women of color that transports viewers into a black woman's body at a futuristic NeuroCosmetology Lab, using the medium to highlight and challenge racialized notions of beauty and identity. Indigenous media artists like Amelia Winger-Bearskin are reclaiming virtual space by creating aesthetic experiences that reflect Native American concepts and identities. These are crucial interventions in a field still reckoning with the painful legacies of the industry to which it remains closely tied. Sustainable art and technology networks will center diversity, equity, inclusion, and access – and elevate artists and organizations doing this work.

Arts leaders in the Bay Area have seen the pandemic as a mixed blessing. On one hand, shelter-in-place orders have proved devastating to the arts;³⁸ in Candid's recent study of arts non-profits, they estimate that up to 10% of the 31,485 they studied could close their doors, never to reopen. One arts agency leader told me that the worst projections anticipate up to 60% of small arts organizations in California having to shut down. On the other hand, due to tech offices going remote for the foreseeable future, numerous tech workers have left the region and rents in San Francisco and other Bay Area cities have plummeted by as much as 31%.³⁹ If, as some arts leaders suspect, these offices don't return to the pre-pandemic normal, that could sustain a larger cultural shift in Bay Area cities. Many of these companies have campuses where they silo their culture internally, offering continued programming right after work. One arts leader expressed his hope that "there will be a need for independent cultural spaces to fill that void that was filled by campuses in so many ways."

When the pandemic comes to an end, the field needs to be prepared to meet these challenges and opportunities. Although there is increasingly diverse representation, as a field art and technology has tended to reflect the structural inequity in technology platforms. When the digital divide forecloses access to computers and the Internet for already-marginalized communities, the advanced technologies used to create work in

³⁸ Harold, "How many nonprofits will shut their doors?"

³⁹ Boone, "San Francisco rent prices down 31%."

**“Art needs to be at the table,
but it needs to be there intersectionally.”**

**Danielle Siembieda,
Leonardo/ISAST**

this field widen that gap. As Danielle Siembieda told me, “art needs to be at the table, but it needs to be there intersectionally.” To build art and technology ecosystems of care, organizations need to create those opportunities in an authentic and inclusive way, and where there are tools and mechanisms to listen and to hear. In corporate contexts, those voices need to be at the table, and in leadership positions. One Google lead emphasized the need for corporations to really open themselves to such leadership; if within the context of an artist residency, he urged integrating them within the organization, giving them a badge, and recruiting senior support and legal teams to develop a holistic framework.

CONCLUSIONS

The Role of The Grid

As an emerging network with ties to art organizations, tech companies, governmental institutions, foundations, and academic institutions, The Grid is poised to help the field of art and technology develop as a whole, even as it introduces a new dimension of policymaking that affirms the powerful impact of artistic practice on increasingly technologically-mediated social life. Ideally, this approach would manifest new opportunities for artists and cultural organizations to sustain their creative work and to intervene in intractable global challenges at the intersection of art, technology and policy. The Grid can and should marshal its considerable connections to scaffold a network that is up to these challenges.

Recommendations

- Build regenerative networks that narrativize partnerships along axes of research, innovation, and strategic engagement. Such an approach would focus on developing sustainable ecosystems, scaffolding connections to build shared value over time. Because suspicion attends the relationship between art and technology sectors, and numerous practitioners in this field reside in disciplinary and institutional margins, partnerships that aim to bridge corporations, non-profits, foundations, and art institutions should aim to build trust, and not be structured entirely around the tech sector. For specific projects, one form this might take is linking a corporate residency with its non-profit counterpart, with the creative process discussed in partners' speaker series, work shown with an exhibition partner, and so on.
- Develop a system of non-profit governance that equitably empowers stakeholders, especially local community partners. As an organization facilitating international, intercorporate, and interinstitutional connections between people and organizations of vastly different sizes, aims, and resources, The Grid faces a unique set of challenges. While the Partnership on AI is one model in the technology sector, it gathers large companies, all with massive resources. One consortium model might be Common Field, a network of over 750 visual arts organizations of widely varying sizes and kinds. There are membership tiers, depending on the size of an organization. Their programs include national convenings, grants, research, resources, forums, meet-ups and

advocacy designed to create space for many people to enter and shape the field.

- Define new metrics of success
 - As part of developing this network, the field needs new metrics. These metrics would include, in artist Anna Sidana's words, "the quantifiable and the intangible." As The Grid architects artist-technologist collaborations within and beyond the tech industry, artists should be part of defining measures of success. If The Grid can mobilize artists and cultural leaders to be part of these conversations at the level of vision and strategy, and not just product development, there is the potential for greater social impact.
 - If an aim of these collaborations, Ed Shanken says, is to create hybrid forms or "boundary objects" that transcend field-specific limits, then there may not be an existing measure to assess their success. Success for such work has to be newly defined: What new knowledge do they produce? Do they produce products? What is their function in the world?
 - Framing and integrating policymaking, in the mold of the "public interest technologist" envisioned by Ford Foundation's Technology & Society fellows, within these metrics from the outset.
- Advocate for Diversity, Equity, and Inclusion. In building these ecosystems, people diverse in race, class, age, ability, gender, and sexuality need to be at the table from the beginning. In the Bay Area, that could mean developing partnerships with organizations committed to this work, such as B4B3L4B, Aggregate Space Gallery, RE:FRESH, and Black Girls Code. Critical perspectives and policy discussions should include BIPOC women like Safiya Noble and Ruha Benjamin, who have shaped much of this larger discussion. Additionally, through their connections to European art, technology, and policy networks, The Grid can foster more opportunities for these practitioners in Europe.
- Sponsor cross-cultural dialogue through talks, symposia, and conferences. Europe has a rich history of new media art. By giving Bay Area and other American artists a platform in Europe, and conversely, European artists a platform in the United States, The Grid can help to fortify existing networks for exchange and knowledge transfer.

- Support the development of a centralized knowledge base mapping existing opportunities, or work with existing publications and platforms to do so.
- Policy advocacy. The American government has never regulated tech companies like the Federal Communications Commission regulated television and radio. How can The Grid get interdisciplinary perspectives – philosophers, sociologists, scholars, educators – in front of senators and Congress, as they also figure them into art and technology collaborations?
- Support external and grassroots spaces outside of the tech industry for incubating art and technology projects, and for education, as well as interdisciplinary discussions for art, technology, and policy.
- Focus Areas: Interviewees named the following topic areas as worthy of sustained attention by The Grid, as they would benefit from the art, technology, and policy lens.
 - Biotechnology i.e. CRISPR-Cas9
 - Disinformation and fake news
 - Borders and border technologies
 - Troll farms
 - Algorithmic bias
 - Data: We have an abundance of data but an inability to understand it. In the context of big data, artists and designers have a lot of potential to contribute to how we see data and how we make sense of it.
 - Surveillance
 - Intellectual property: New modes of creating with emerging technologies and collaborating across sectors challenge existing paradigms of intellectual property and ownership.
 - Climate change has to be part of any future-casting project

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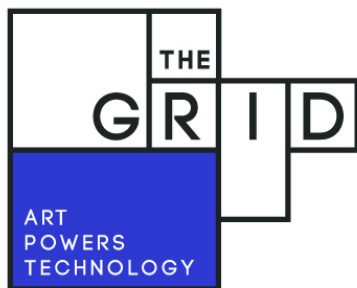
APPENDIX

Author Biography



As a curator, writer, researcher, and educator, **Vanessa Chang, Ph.D.** builds communities and conversations about art, technology and human bodies. Chang is Senior Program Manager at Leonardo/ISAST, where she runs CripTech Incubator. She teaches in Visual and Critical Studies at California College of the Arts. Chang holds a Ph.D. in Modern Thought and Literature from Stanford University, where she was a Geballe Fellow at the Stanford Humanities Center and also ran the Graphic Narrative Workshop, a research workshop and event series dedicated to comics. Most recently, she curated

The Grid: Exposure – Art + Tech + Policy Days, Recoding CripTech at SOMArts Cultural Center, *Intersections at the Leonardo Convening* at Fort Mason Center for the Arts, and *CODAME Art + Tech Festivals 2018 (Artobots)* and *2019 (Space)*. Chang has appeared on NPR's *On the Media* and *State of the Art*, and her curatorial work has been profiled in such venues as *Art in America* and *KQED Arts*. Her writing has been published in *Wired*, *Slate*, *Noéma Magazine*, *Los Angeles Review of Books*, *Journal of Visual Culture*, among other venues.



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