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UNIVERSITY OF CALIFORNIA SAN DIEGO

Creative Connectivity: Defining a Practice in the Arts

A Thesis submitted in partial satisfaction of the requirements
for the degree Master of Fine Arts

in

Theatre and Dance (Design)

by

Ethan Eldred

Committee in charge:

Professor Bobby McElver, Chair
Professor Christopher Kuhl
Professor Victoria Petrovich
Professor Shahrokh Yadegari

2024

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University of California San Diego

2024

DEDICATION

Bindi, my ears would
work better if you weren't
barking, but what for?

EPIGRAPH

Triptych: Play, Play, Play

Stanza ↻ : Play — The free way

Stanza →↓ : Play — The usual way

Stanza ↓ ↻ : Play — The unusual way

↻	↓	↓ ←	↓ ←	↓ ←	↓ ←	↓ ←
→↓		Feel				
→↓	the	thirst		for		play
→↓		but		a	new	
→↓	way				to	play
→↓			a	way	none	
→↓		believe	real	to		play
→↓		in a	way			
→↓			not		one	
→↓					of	
→↓			this	collective	all	
→↓	will		ever			play
	again				thus	
					seek	to
	be	satisfaction			itself	
			constant			
			constancy			
	hidden		in	movement		
		and	stillness	and	searching	
						play

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My family, who first put up with my love of noises: Janet and Keith, Emmett and Bobby.

To the one who has earned every honor of mine and more by being my shelter, giving me a warm home to return to at 3:30 AM, and holding me while we both break down – Wheelson.

Grace. You've carried me. I love you so much. Here's to a life connected in creativity.

VITA

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ABSTRACT OF THE THESIS

Creative Connectivity: Defining a Practice in the Arts

by

Ethan Eldred

Master of Fine Arts in Theatre and Dance (Design)

University of California San Diego, 2024

Professor Bobby McElver, Chair

In this thesis, I'll propose a model of practice in the arts centered on my concept of Creative Connectivity, for use as a rubric and tool in observing and evaluating creative work. Where connectivity is commonly conceptualized as only relating to information technology, my Creative Connectivity model is inspired by technological connectivity and expands to define three categories of connectivity. Curiosity, community, and cognition are used as concepts to

observe connections created in an artistic work, respectively: connections among ideas and knowledge, people and populations, and the mind and senses.

In individual chapters with case-study examples, I examine how each of the categories of connectivity can be used to observe my own artistic work in three different aspects: the process, the product, and the artist's practice. The three categories of connectivity and the three aspects of a work combine to form my Creative Connectivity Matrix, a rubric for observing artistic work.

In a case study of a culminating production experience at UCSD, Alistair McDowall's *X*, directed by Rosie Glen-Lambert, I examine the production through the lens of this model of practice, exploring the impact of each kind of connectivity on process, product and practice, as well as ways in which the categories of connectivity overlap to form new forms of connection.

In final reflections, I propose this model of practice as a useful tool in my own practice and pedagogy of theatrical design, supporting a healthy, fulfilling, and sustainable practice over time.

INTRODUCTION

In over ten years of professional audiovisual work, and more years as a musician before that, I've made many connections. Literally.

From guitar amps to network switches, the times I've plugged a cable into a port are too numerous to count. In the pandemic era, the role of networking and information technology – and thus the number of virtual connections I've made – has grown even more than those physical plug-and-socket connections. This is the popular vision of connectivity in theatre and the arts: electronics and I.T. These *are* key tools in my daily life and work, but through my MFA work at UCSD, the concept of connectivity has come to mean so much more to me. I've come to understand “Creative Connectivity” as the metaphorical center of my practice, and an ideal by which to measure my success. In the past I have stated my life's mission as “Facilitating togetherness with storytelling and technology,” and I believe I can now state that mission more concisely: “Creating Connectivity.” In different aspects of connectivity, I've found a framework to model my practice on, and a rubric by which to measure the progress of my work. This thesis will endeavor to define my concept of Creative Connectivity and will propose its usefulness as a tool in my own collaborative practice and pedagogy.

This is an interpretive endeavor, so definitions will be key. As expected, the first definition of “connectivity” in the Oxford Advanced Learner's Dictionary centers on technological connection: “connectivity – noun. 1. (*computing*) the ability of systems, platforms and applications to be connected to each other,” with examples such as “wireless/broadband/Bluetooth connectivity”: and “high-speed connectivity to the internet.” I have arrived at my thinking by way of this kind of technological connectivity, but I think of technology as a tool for a broader connectivity. That broader connectivity is captured in Oxford's

second definition “2. the state of being connected; the degree to which two things are connected.”

Continuing this line of thinking, we must say what “being connected” means. In my concept of Creative Connectivity, I’ve relied on different definitions of the verb “connect” that draw attention to different kinds of connection. I have built parts of my concept from those different definitions. Three of those definitions each involve specific uses of the word for utilities: for electricity, gas, or water, for the internet, and for phone lines; another is for transit, a connecting flight; and another definition is for sport, “the batter connected with the ball”.

Two remaining definitions in the Oxford are the ones that most interest me. The first is as a synonym for “link” or “associate”: “4. *to notice or make a link* between people, things, events, etc.” (my emphasis). The final definition is different from the others in its human meaning around relationship. “7. **connect (with somebody)** to form a good relationship with somebody so that you like and understand each other” (Oxford’s emphasis). The definition for another word entirely is where I find my last “connection” for this practice: “synapse.” Oxford defines it simply: “synapse – noun. (*biology*) a **connection** between two nerve cells” (my emphasis).

To summarize our journey of defining our central concept, “connectivity” is simply the state of being connected or the degree to which things are connected, and to “connect” is to “join two or more things together.” For our purposes, we’re interested in three kinds of connection. Firstly, we’re interested in “connect” as a synonym for the verb “associate”: “*to notice or make a link.*” Secondly, we have connection as in a relationship, to “connect (*with somebody*).” And thirdly, we have biological connections: those of the synapses, the **connections between nerve cells**. These three types of connections form the basis for three aspects that make up my concept of Creative Connectivity: **Curiosity, Community, and Cognition.**

Each of these represents a very different kind of connectivity, and yet each is important to a nuanced understanding of connectivity as a basis for creativity. **Curiosity** is connectivity of knowledge and ideas – the spirit of inquiry that leads one to observe the world around them and make connections, i.e. to “notice or make a link” between things. **Community** is connectivity of people – forming social connections “so that you like and understand each other”. **Cognition** is connectivity of the brain – defined by Oxford as “the mental action or **process** of acquiring knowledge and understanding **through thought, experience, and the senses**” (my emphasis).

This latter may be less immediately clear than the former two in its relevance to connectivity, and the distinction between curiosity and cognition may also not be readily apparent. To clarify, remember that the idea of “cognition” in this model is drawn from the synapses, the connections between neurons, the metaphorical splices of the of the circuitry of the brain and the senses. “Curiosity” is defined in this model around the *outward product*, the act of observing and making connections in the world, and the knowledge gained there. “Cognition,” however, focuses on the *inner process*, the actual circuitry of the brain and senses. The use of the word “cognition” to encapsulate this idea draws on the field of cognitive science. Cognitive scientists study how the nervous system processes information. They seek to understand everything in the human mental experience, from language and sensory perception to memory and emotion, researching these phenomena by way of the neurochemical signals behind them. Most relevant to my work, this field includes the discipline of psychoacoustics, the study of the physiology and perception of sound.

To further clarify with an analogy, one can think of Creative Connectivity like a three-legged stool, with curiosity, community, and cognition as the legs. The legs make up the stool and hold it up. If all three legs are grounded, it will stand up. If curiosity, community, and

cognition are all well-connected in a work, it is fulfilling the Creative Connectivity model. If one of those three is less effective, it is worth reviewing that aspect of the work for ways to strengthen it. Each of the legs is different and important and the overall result is the combination of the three

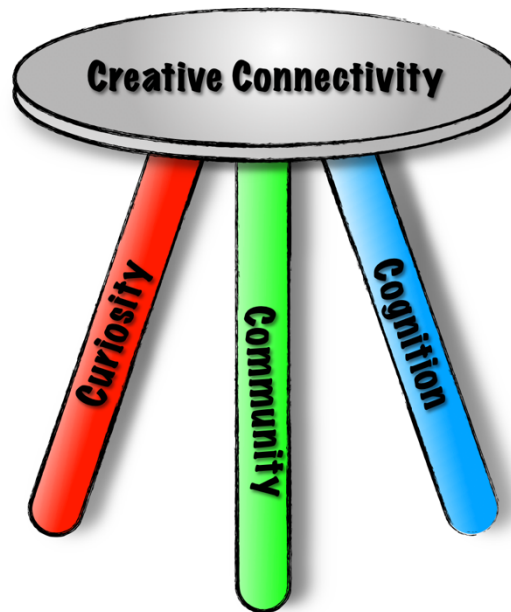


Figure 0.1 Creative Connectivity depicted as a three-legged stool.

Curiosity, community, and cognition are independent kinds of connectivity and are interconnected aspects of Creative Connectivity. It is my goal to clearly define Creative Connectivity and each of its three component parts, seeking to understand how they support and balance one another. In so doing, I aim to outline Creative Connectivity as a rubric or qualitative measure of the balance of the work I do in the world. To that end, I'll take a close look at each kind of connectivity, breaking down what I can look for to gauge success in that area. Within each kind of connectivity, I'll make observations of three aspects of the work in question: the production **process**, the final **product**, and the creator's (my) **practice**.

Combining the three kinds of connectivity with the three aspects where I observe them gives us a useful tool for reference in this process: a “Creative Connectivity Matrix” (Figure 0.2). Using this as a rubric, I can easily note my observations of each kind of connectivity in each aspect of the work, organizing my thoughts on that work for whatever purpose I need, from offering feedback to colleagues or students to finding ways to improve my own work.

CREATIVE CONNECTIVITY MATRIX			
CONNECTIVITY OF...	... CURIOSITY...	... COMMUNITY...	... COGNITION...
CONNECTS KNOWLEDGE & IDEAS.	... PEOPLE & POPULATIONS.	... MIND & SENSES.
...as observed in...			
...PROCESS			
...PRODUCT			
...PRACTICE			

Figure 0.2: Creative Connectivity Matrix

The central idea and broader thesis of this concept is that in balancing the three elements of Creative Connectivity, I can support my mission of “Creating Connectivity” in the world, while also maintaining balance in my own working life. When I allow for curiosity, I can add to the world’s knowledge, guided by my own intellectual satisfaction. In upholding community, I can foster relationships, connecting people and stories, while holding space my own social needs.

And in understanding cognition, I can connect perceptually with my audiences, and maximize my impact on their thoughts and emotions, while also caring for my own well-being.

My hope in clearly defining this model is firstly to be better able to actively apply it in my own practice and pedagogy, and secondly, with time, to develop it into something that may be broadly useful in the arts. With those goals in mind, we'll review each one of the three types of connection with case studies from experiences I've had. Finally we'll review one final last case study, looking for the ways the different connections overlap, combine, and connect with each other.

CHAPTER 1: CURIOSITY

In my practice, curiosity is the connectivity of knowledge and ideas. Applied curiosity looks like processes that trust and build on creators' natural instincts, interests and inclinations. It is asking "what is interesting to me about this work?" In product, curiosity yields connections among ideas in the work: motifs, through lines, easter eggs, etc. Connecting ideas helps to keep audiences engaged and immersed in the work. In intentionally practicing curiosity in life and work, we can expect to continually find new interests and ideas, new tools and skills that will help us grow in our work and stay interested, stimulated, and satisfied in a sustainable career.

Following curiosity helps me to connect with projects that are a good fit and to move on from those that aren't. Curiosity connects me to new ideas. Those ideas reveal new interests, I explore more new ideas and the cycle continues. I can trace my current interests in music and sound back to my 4th grade attraction to the cello. It's a familiar experience: we learn skills in sequence along branching paths of decisions, taking us down different career paths. However, what I call the connectivity of curiosity isn't just in a linear chain of events, but in living networks of experience. In following curiosity freely, we connect ideas together in new combinations, adding new knowledge to the world.

In my personal experience, it's not just that 4th grade cello lessons started me on a path of musicianship, but how that path has meandered, transforming, and being transformed by other parts of life. For example, I also love nature, and that and my musicianship were both assets in becoming a summer camp counselor. There, I had my first experiences as a teacher and leader and I learned folk songs and storytelling. Those leadership and storytelling experiences prepared me for jobs back in the theatre world, solving problems and managing people. All the while, I did follow a linear path too! I jumped from cello to guitar, songwriting to composition, sound

design to technology. But focusing on that linear story ignores the larger part of my experience. Because of my network of experiences, I can bring some extra knowledge or intuition about the intersections: music outdoors, or technology in nature, folk aesthetics, and so on. My experiences as a summer camp counselor make me a better sound engineer, designer, and educator.

From 4th grade to MFA Candidacy, following the connections of curiosity has rarely been a conscious decision. But the story of how I've come to embrace technology as core to my artistic work is an example of following curiosity intentionally, and a useful example of how I will continue to observe my own curiosity as a useful signal in my practice of Creative Connectivity. I always wanted to design and compose, but also found myself fascinated with theatre technology and became a skilled engineer. Entering my MFA, I felt I had spent too much time sidetracked on tech, and not enough on creation. I was determined to make my mark at UCSD with musical and storytelling craft alone, without sinking time into learning new tech.

I arrived at grad school and immediately faced challenges to this plan. Spatial audio was a research area for my advisor Bobby McElver, as well as for an MFA candidate at the time, Stewart Blackwood (MFA class of '22). The way they used sound was fascinating but required some new tech tools. To avoid a learning curve, I planned instead on exploring pre-built tools like Apple's Logic Pro, which includes Dolby Atmos, a commercial spatial sound format. I found a foil in Mr. Blackwood, a creative coder who had self-trained in several programming languages. I admired Blackwood's artistry, but this path was not for me. I saw learning to code as the path I wanted to avoid, pursuing tech over art.

Instead of coding custom solutions, I looked for creative ways to repurpose available resources to create immersive experiences with sound. It was difficult. I fought with Apple's Logic Pro implementation of Dolby Atmos, trying to repurpose software aimed at music

producers for my work for theatre. I had some successes. Once, my chosen tool was a spectrograph, visualizing sound live in color. I fussed over a design and eventually put the monitor face-down on top of a glass bowl with miniatures inside it, creating a scale model for something I called the “Immersion Dome,” a huge venue, with concert audio projected in colored light on the glass surface. (Unbeknownst to me, the Las Vegas Sphere would open shortly after). I enjoyed this, but soon found myself stuck. The spectrograph only had so many options and even fewer of those looked good on the model.

Over the same period in my first quarter, I had the opportunity to assist Mr. Blackwood on his fall '21 design, *Sotoba Komachi*. The design included a classic central set piece in the Japanese tradition of Noh, from which that play descends, a finely cultivated tree. However, reflecting the script’s themes of aging and decay, this tree would be made of trash, with ghostly lights glowing inside. The team was able to imagine how it could become a character, those glowing lights pulsing with the music or the actors’ voices. I was fascinated with this special audio-reactive lighting effect. A combined gesture like this connected sound directly to action and space, capitalizing on everything I had learned of sensory perception in the brain.

But to my chagrin, this sound-light effect was done with Max. Max looked so different from my idea of code at the time that I didn’t recognize it for what it is: a programming language. Instead of lines of text, Max uses a graphical interface. It’s a visual language. To me, Max felt close to what I was fluent in – Qlab – where a show is composed from a set of pre-existing objects. The difference was that Max can start from a blank canvas. I could start from an idea, like the tree, and iterate. This looked like something I could do, and I wanted to.

I faced a conflict: my inner curiosity to learn this new tool against my decision to focus on artistry with the tools I knew. My curiosity was irresistible, and I realized it was an important

signal, telling me to reexamine the story I was telling myself about my goals. I never really wanted to stop learning new technologies. I just wanted to be an artist, and sometimes new tech tools could make me better at that. Furthermore, connecting my curiosity in art to this curiosity in technology reinforced both. The desire to create could power my study of new technologies, and my curiosity about technology could enhance my abilities to create. In observing and supporting the natural connectivity of my curiosity, I could make myself a better artist.

I followed my curiosity, began to use Max and other coding tools, and was rewarded. My quest to reverse-engineer that effect deepened my understanding of connectivity and ended up being my gateway into coding. Now Max, OSC, and AppleScript (a MacOS language useful in QLab) are key tools in my workflow, and I've made use of Javascript and Python in various projects. I've found that an ability to start from nothing and create something is a key advantage of learning to code. I've also learned that creating custom solutions, rather than slowing the process, often saves time in the long run.

With this power gifted to me by my curiosity, I can adapt as ideas change, rather than having to start from scratch or reject ideas that don't fit my tools. My creativity is better and more flexible for being connected to my interest in technology. I'm now confident enough to call myself a creative coder too – not a fluent coder, but a creative coder all the same – thanks to the power of my curiosity to connect ideas together. As part of my practice, knowing the power of curiosity lets me apply it intentionally; curiosity about curiosity – observing myself and my work for what I'm naturally drawn to – helps me to keep the joy in what I do and to continue making new connections.

CHAPTER 2: COMMUNITY

In the Creative Connectivity rubric, community connectivity is the measure of connection among people. Choices that enhance or create connections among people and populations create what I call community connectivity. The effects of community connectivity can be observed in a production's process, final product, or in the personal practice of the creator. Choices in each of these domains can combine to contribute to an overall balance of Creative Connectivity.

A community-conscious creative process will seek to increase connection, collaboration, and coordination among creators and their constituents, i.e., their audience and local community. Principles of community can be observed internally within each of these groups – i.e., just among the collaborators, or just among the community supporting the work – and it can be observed collectively among all the groups – i.e. the creators being in community with the audience, etc. The more opportunity all these groups have for connecting with each other, the more impact their collective relationships can have on the process. Within a creative team, more and better-quality time to get together and jam, to collaborate, creates more and stronger connections among the team and to the material. A creative team can make efforts to connect with the local community or with a special-interest community relevant to the subject matter, and in doing so can enhance the relevance of the work for the audience, driving public engagement. All these efforts can be further improved with attention to planning, preparation, and facilitation, with a balance of variety and routine in the interactions, and with any number of collaborative (“team-building”) exercises. Creating and using this time as well as possible is important for creating a sense of community connection in a production process.

To know if all these things have been done well, there are several positive results I look for in the final product. As mentioned, a sense of veracity in the work, and observed buy-in from

the relevant community are good indicators to me of successful community work. A community-driven work will give me an impression of informed knowledge of the people involved, and truth to their culture and experiences. In looking deeper, I would hope to discover that individuals in the community find personal connections in the work or come to see themselves in it. Within the work itself, assuming it's a team creation, I look for a sense of "ensemble," that is, just a strong sense of teamwork, timing, and coordination in the piece. How harmonious is the ensemble's sound and movement? Are gestures unified across design and performance elements? In my own work, I ask, "How can I better connect with everything else going on around my part of this work? How can I smooth the seams, tighten the timing, make this feel more personal?" We can ask these things even of solo works. After all, there is still the creative community around the maker, and there is still the audience to connect to. If a work is aesthetically and thematically unified and shows compassion for the people involved, from the characters and creators to the audience, it shows positive community connectivity.

In a personal practice that includes community connectivity, I foster personal connections among my collaborators and audiences. I look for chances to support relationships among all these people around me in a creative community, to help build up friendships. This in turn feeds back to support my own social wellbeing. I am a social animal too, and by being a good friend, fostering community around me, I can benefit from that same impact. From 'Bowling Alone,' to the Bible, and with growing scientific evidence, we've known for a long, long time the impact that social activity has on positive outcomes. Artistic community is no different, and without doubt, a thriving sustainable artistic practice is one that includes community connectivity.

In considering successful experiences of community connectivity in my work as a designer, I can't think of a better example than *A Flea in Her Rear*, where I had a wonderful and

unique collaborative experience with the creative community that built that show. *Flea* is a 1907 play by French playwright Georges Feydeau, a farce driven by jealousy and cases of mistaken identity as the characters move between a Parisian high-society home and the Hotel Paramour, a seedy red-light-district establishment. Our adaptation was driven by movement and clowning. It was clear early on in collaborations with director Prof. Stephen Buescher that this would be an intensely collaborative process. Buescher invited input early and often, developing ideas with an improvisatory movement-first approach. *Flea* was a comedy, the slap-stickiest of slapstick. It would be dense with choreography and physical humor, and it would need a dense sound score to support that.

So much so that it was clear early on that I would have difficulty pre-composing enough sound and music to support this density, and the desire to improvise in rehearsal would preclude leading with music pre-composed before rehearsals in any case. If I worked to compose a full score as the play developed, I would with keeping up with the pace of discovery. And at over a hundred pages (around three hours in the end), the play also was far too long to do the work in the time available late in the process, after the choreography was set.

So, I joined the improv troupe. I built a library of sounds and a workstation, and ways to quickly trigger and switch between those sounds, and then I jumped in. It was a blast to be part of a company again in that way, but I worried about the impact this time commitment would have on my overall design. Every moment in rehearsal was one less moment to advance my renewed interest in technical exploration and innovation.

But I didn't need to worry. Aside from the time saved on composing and recording a full score, I found many other benefits in actively joining in this creative community. The synchrony I could find with the live performance would be far tighter to the action – and flexible at the

same time – than anything that would be possible in a playback-driven design. Being in the room regularly, in a process that was open to improv from all parties, I could offer ideas in the moment that would come to shape beats and scenes of the play.

In a favorite rehearsal moment, I searched blindly for a sound to underscore the reading of the proverbial “perfumed letter,” a tool of entrapment to catch the suspect husband in an act of adultery. I stumbled on an acoustic bass sound and a jazzy drum kit, the actors Ellen Nikbakht and Gabi Chen responded with a sultry seductive reading, I handed them a microphone I had on hand in my setup, and before long the letter was a piece of beat-poetry, performed in a smokey club. It was hilarious, flexible to improv each and every night, and felt true to the moment in the story. That – and so many other moments – never could have happened that way if I hadn’t committed myself to this community, the company of *Flea*, being there in rehearsal as a part of the troupe through it all, rather than as a late addition as in so many rehearsal processes.

With a rapport established, and with my presence on stage, the improv didn’t have to stop on arrival in the theatre. In a typical process where I turn control of the sound over to a stage manager and operator, it is far more important to have consistency of the lines and movement, so they can reliably execute the timing. With me there to help as part of the company, our joyous communal experience could continue, and it only got better through the run. Positioned as I was, near the booth, I could even connect to the lights and (with lighting designer Russell Chow) create moments where sound I performed live triggered lighting effects in perfect sync, not that different from the *Sotoba Komachi* tree moment that inspired me a year before.

Committing to work in community, being present with people, made these connections possible. In absolute refutation of my concerns about the investment of time, this communal work advanced the things that I wanted to do with technology (the things I had been curious

about), and without a doubt it was a demonstration of my musicianship, what I had wanted to accomplish most in my time in grad school. Again, prioritizing connection in the creation of this work had made it the best it could be. The effort paid back the connectivity I put in with more powerful connections I couldn't have predicted, creating a fully integrated experience, and a riotous good time for all involved, company and audience alike.



Figure 2.3: The author's perspective while live-scoring in rehearsal (Top) and performance (Bottom) during the Winter 2023 production *A Flea in Her Rear*.

CHAPTER 3: COGNITION

In my Creative Connectivity practice, cognition is the connectivity of the brain and the senses. In the body, synapses are the actual connections between neurons, the metaphorical wiring of the nervous system. Cognitive connectivity centers around those physical connections and their effects on human perception. In studying cognitive connectivity, I observe the input and output of the brain, the input being the senses, and the output being the mind's experience. Most important for our purposes are the senses of sight, sound, touch, and our reactions to these. An understanding of how the senses work to create perception helps us to precisely design work that uses the senses intentionally in pursuit of a desired response. In addition to this kind of application to the creative process and product, we can apply cognitive connectivity as part of a healthy personal practice in the arts. Meta-cognition – awareness of our own cognitive functioning – is a powerful tool in understanding and acting on the needs of our minds and bodies as we practice our craft.

Researchers can spend a lifetime in psychoacoustics. It's a deep enough field to defy summation, but it is worth identifying some common useful examples of applied psychoacoustics, to illustrate how I use knowledge of what I call cognitive connectivity. In this section I borrow ideas from my mentor Bobby McElver's pedagogy, as well as from Tan, Pfordresher, and Harré's *Psychology of Music*, and from Richard K. Thomas's *Music as a Chariot*.

A general principle is the tendency of the brain to combine simultaneous stimuli. One example is the intimate link between sight and hearing as demonstrated by the McGurk Effect, where perception of the exact same language sound can be changed by changing the visual of the person speaking. With different visual stimuli on stage, the same noise can sound like wind, rain,

or static. Combining (or mismatching) audio and visual stimuli is thus a useful tool for enhancing clarity, creating confusion, or any possible intention in between.

Another example of combination of simultaneous stimuli is the Haas effect (also known as the precedence effect), where a listener experiences two sounds as one when they arrive at the ears close enough to each other in time (under approximately 40 milliseconds apart). A common example is a sound arriving directly to the ears and a moment later the same sound arriving again after reflecting off a nearby surface. If the second sound arrives soon enough, the sounds can be perceived as one sound, coming from the direction of the first arrival (first takes precedence). This effect contributes to the reinforcing acoustic effect of some amphitheatres due to combined reflections off the many surfaces. Aristotle even observed this effect, noting that performers could be heard better when standing on a stone floor than on dirt. Understanding the tendency of the brain to combine simultaneous stimuli, we can understand the potential impact of connecting synchronous design gestures with timing, or in choosing to leave gestures disconnected, as suits the intention.

Another general principle is the tendency of the brain to adapt to repeated stimuli over time. One example is called habituation. Essentially, we get used to a constant stimulus and adapt to perceive it less intensely. A classic example is the way we lose awareness of lingering smells after we've noticed them, including the smell of our home until we return from an extended vacation. Habituation is a powerful design tool, allowing us to subtly change the feeling of a space over time, or to make powerful use of silence by suddenly removing a sound that had been running unnoticed underneath the action. We can change the perception of lighting brightness and color depending on what we see before and after and how long we hold the same look.

Similar to habituation is entrainment, where instead of reducing in response to a constant stimulus, neural activity increases in time with a rhythmic stimulus. Entrainment is the tendency observed throughout nature for rhythmic or cyclical activity to synchronize across connected systems. Moving pendulums or metronomes that are mechanically paired and isolated from other forces will align over time. Fireflies light up in response to each other and tend to synchronize their light-dark cycles over whole fields. Likewise, repeated rhythmic stimuli can cause entrainment in the “brain waves.” Auditory neurons fire in response to a sound, and that signal passes throughout the brain to the various areas where it will be processed. If the sound repeats, that process repeats throughout the brain, and if the sound forms a repeated rhythm, the brain as a whole can become entrained, as the rhythmic signal spreads to the many parts of the brain that sound impacts. On stage, we have power to use rhythm to create expectations and then take advantage of them. A sudden change in pace, breaking from an entrained pattern, will redirect the attention of the viewer as the brain changes its pattern in response. Not limited to music, or even sound, we can use this effect in speech and repeated movement or visual stimuli, creating patterns in time and then changing them to manipulate attention.

Understanding cognitive connectivity isn't just about using these effects to enhance the audience experience. It's also a useful tool in maintaining a healthy and effective creative practice. A little bit of understanding of the brain helps reinforce the reasons for healthy practices like good rest, mindfulness, and nutrition. Awareness of mental health is a key indicator in cognitive connectivity. Regular practices of rest and exercise go a long way to create time and space for those connections, and activities like mindfulness meditation and yoga can fit in a busy day of creation, giving an intentional moment to check in with ourselves. These efforts toward self-maintenance are worth the time for their own sake but I've also had great work successes

come directly out of moments set aside to slow down and check in with myself. It's a chance to make connections I've been missing, to check in with myself on what I'm interested in or wanting, what I'm feeling curiosity about, and who I'm feeling connected to in my community. I've had moments of inspiration and captured great field recordings or photos often just because I paused for a mindful moment and noticed something interesting or useful in the world around me. I've also tapped into these moments with intentional practices designed for creative mindfulness, like Deep Listening in the style of Pauline Oliveros, or durational practices like one in Prof. Christopher Kuhl's 1st year lighting studio class where we set rules for and document a 14-hour continuous experience.

No experience captures the importance of cognitive connectivity in my practice like that of my residency with La Jolla Playhouse working with the design team on *Is It Thursday Yet?* This piece is an exploration of the neurodivergent mind of dancer Jenn Freeman and the story of her life on the autism spectrum, having been diagnosed at age 33. Autism Spectrum Disorder is complex, and is expressed differently in different people. A common defining symptom is differences in sensory processing and perception. Sensory stimuli can be overwhelming, compounding with other issues such as delays in processing and social and language differences. I aided in capturing this overwhelming sensory experience, continuing my explorations of spatial sound and audio-reactive lighting and video effects. Early on in design meetings, I kickstarted discussion around intentionally combining overwhelming sensory experiences, proposing a gesture with spatial sound jolts triggering lighting and video flashes in synchronous chain-reactions around the space, a representation of firing neurons. In the theatre, sound and the main video cue list for the show ran from the same computer, making it easy to connect the two precisely, along with a secondary video computer for more display outputs. In total there were

about a dozen old CRT TVs and five projectors linked together in the system, showing video and text in sync with the sound cues throughout the show. In a highlight moment for me, I was able to create an audio-reactive video layer, blue and pink static pulsing live in time with the music, highlighting the text and enhancing the power of the climactic musical moment of the show.

The opportunity to bring cognitive connectivity into practice, working with knowledge of the brain in this show, a show built around a unique cognitive experience of the world, was a rare moment of connection for me. In joining this team, I got to connect my scientific interests with my growing artistry. It brought me a new level of understanding for the power of cognitive connectivity in theatre, on multiple levels. Understanding the connectivity of the brain helped us tell this story in so many ways, from maximizing the impact of our sensory gestures, to understanding the ways that we hold our audience's attention over time, to imagining a different sensory experience of the world and bringing that experience to an audience. Most meaningfully, *Is it Thursday Yet?* will help many to understand themselves. In this show, I found new connections about how my own mind works. What more impactful connection can there be?

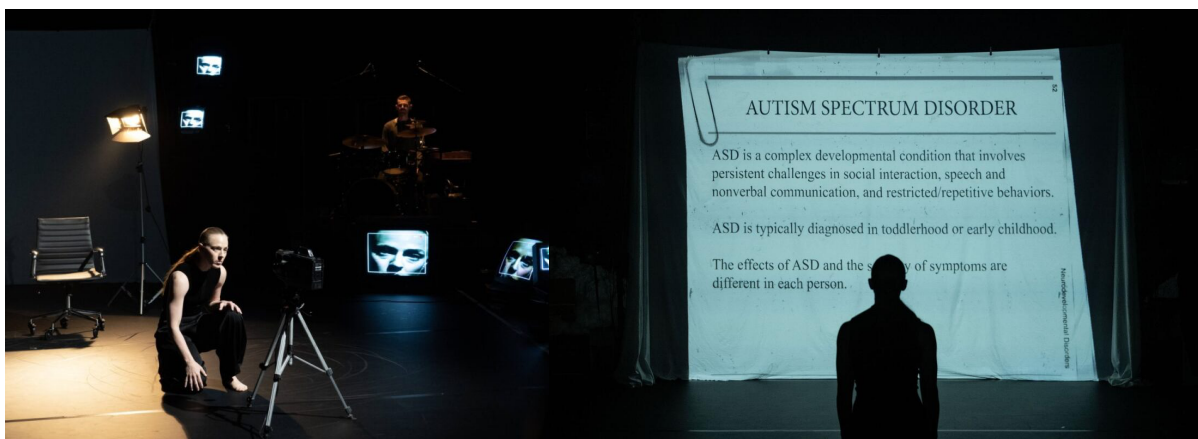


Figure 3.4: Jenn Freeman in *Is It Thursday Yet?* Video Design: Joseph DiGiovanna. Lighting Design: Cha See. Scenic Design: Rachel Hauck. Photos courtesy of La Jolla Playhouse.

CHAPTER 4: CONNECTIVITY

Having closely examined the three types of connectivity in this model, let us return to review Creative Connectivity holistically. We have established a few useful analogies. One is the three-legged stool: when each aspect of the model is attended to in a work – in its process, in its product, and in the creators’ practices – that work is likely to be well-balanced from the perspective of Creative Connectivity. I would expect to observe in that work well-connected ideas, a strong sense of community, and a powerful sensory experience.

I’ve also introduced my Creative Connectivity Matrix, a tool for observing the three kinds of connectivity in three parts of a project: the process, the product, and the creators’ practice. In the filled-in matrix below (Figure 4.1), I’ve summarized just a few of the signals I watch for in observing the different kinds of connectivity in each part of an experience.

<i>CREATIVE CONNECTIVITY MATRIX</i>			
CONNECTIVITY OF...	... CURIOSITY...	... COMMUNITY...	... COGNITION...
CONNECTS KNOWLEDGE & IDEAS.	... PEOPLE & POPULATIONS.	... MIND & SENSES.
...as observed in...	(...looks like...)	(...looks like...)	(...looks like...)
...PROCESS	<ul style="list-style-type: none"> - Trusting, following, and building on natural instincts and inclinations. - Asking "What is interesting to me about this project or story?" 	<ul style="list-style-type: none"> - Maximizing collaborative time, quality of interactions, coordination, shared discovery, communication - Involving relevant communities from outside the team 	<ul style="list-style-type: none"> - Intentionally observing characters/ audience's/performers internal and external world - Using neural phenomena like entrainment, habituation, and combination of simultaneous stimuli
...PRODUCT	<ul style="list-style-type: none"> - The creator still finds it interesting - Connected ideas within the work: <ul style="list-style-type: none"> - motifs, easter eggs, throughlines - immersion, engagement, logic 	<ul style="list-style-type: none"> - Sense of "ensemble." Unified gestures and ideas, all elements - Shows informed knowledge of relevant social / cultural info - Audience can see themselves in it 	<ul style="list-style-type: none"> - Intentional sensory synchrony, - Effective use of sensory stimuli. - Perception of time is as intended - Immersion in the world of the work
...PRACTICE	<ul style="list-style-type: none"> - Mental stimulation / satisfaction - Chosen projects are a good fit - Finding interesting connections and questions. 	<ul style="list-style-type: none"> - Connecting with collaborators / audiences / friends socially - Social connections / shared experiences predict positive outcomes in health 	<ul style="list-style-type: none"> - Applying meta-cognition to self-care as an artist. - Observing healthy practices like mindfulness, exercise, nutrition - Prioritizing support and treatment where needed

Figure 4.1 Annotated Creative Connectivity Matrix

Connectivity suffuses this practice at each level. Each aspect individually consists of some form of connection-making, and as the three aspects are connected with each other, they compound each other, positively reinforcing each other's signals and results. To highlight the connections within the model itself, let's look at Creative Connectivity in one more useful way, as a Venn diagram. The kinds of connectivity – “Curiosity, Community, Cognition” – are the three circles of the diagram. The center overlap is simply “Connectivity.” Secondary categories form at the intersections of the three primary ones. I label the intersection of “Curiosity” and “Community” as “**Collaboration**,” the intersection of “Cognition” and “Curiosity” as “**Consciousness**,” and the intersection of “Community” and “Cognition” as “**Conscience**.”

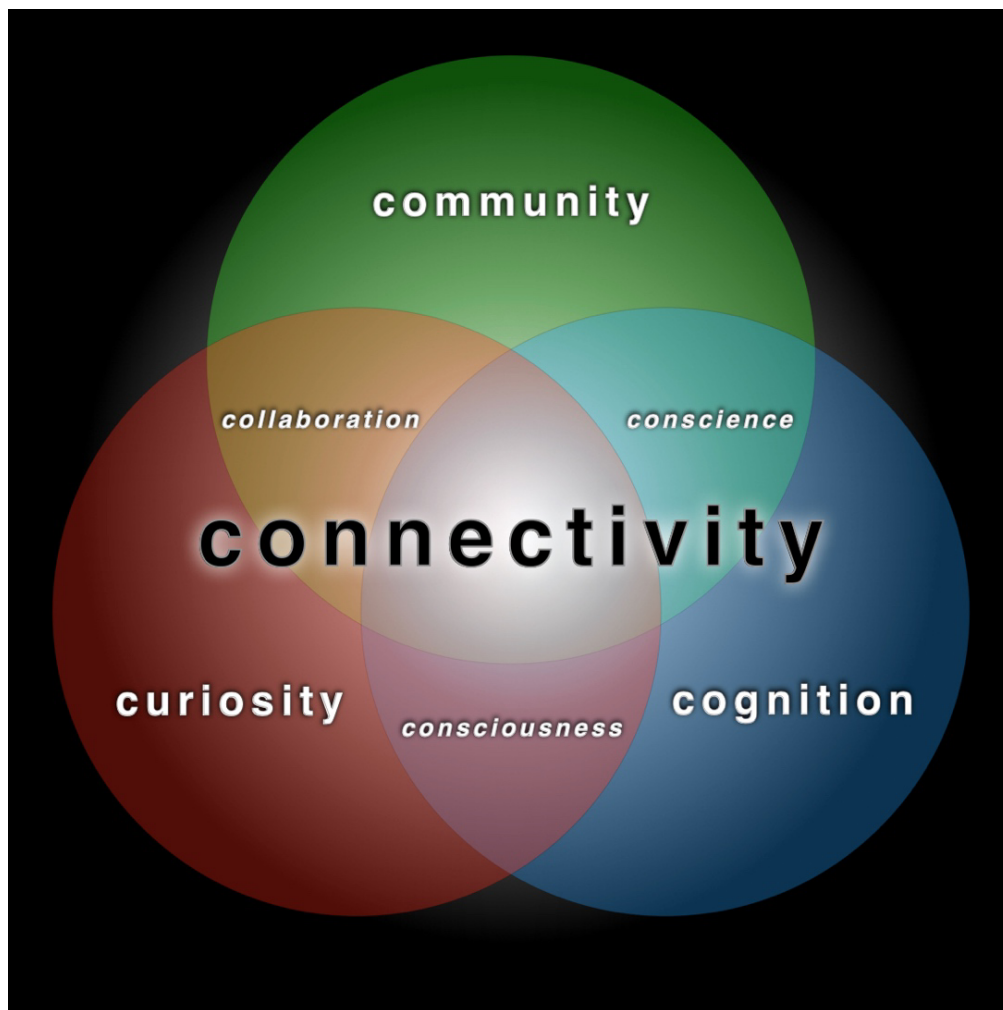


Figure 4.2: Venn Diagram: Creative Connectivity as Three Primary, Three Secondary Elements

Each of these secondary aspects represents another useful category of signals I can think about in applying Creative Connectivity in my work. We'll briefly define each of them here, and the following chapter will use these secondary categories as a frame of reference for one final case study of Creative Connectivity as applied in a culminating production experience at UCSD.

“Collaboration,” is the act of curiosity in community, when people collectively come together to build connections among ideas. The example above of *A Flea in Her Rear*, is not only a great example of community, but also of collaboration. Everyone on that team had the opportunity to direct our collective attention to the objects of their own curiosity, in a funny beats of physical comedy or choreography and the result was that we got to know each other well enough to effectively follow our improvisational impulses together.

“Consciousness” is curiosity applied to cognition and vice-versa. One Oxford definition for consciousness is “the fact of awareness by the mind of itself and the world.” A work of art that draws connections between one’s ideas and interests and the inner workings of the mind and senses demonstrates consciousness as described by the Creative Connectivity model. *Is It Thursday Yet?* is a show that exemplifies consciousness, as applied in this rubric. The show didn’t just benefit from an understanding of the physical workings of the brain in its production design, it is the ultimate act of meta-cognition, built on a curious urge by one unique person to understand their own personal history in context of new insights about her own cognitive make-up, the unique ways her mind and senses work.

For our purposes, “conscience” is cognition applied in community; it is the personal perception of the ethical correctness of one’s actions. Again, referring to the Oxford: To be conscientious is to “[wish] to do what is right, especially to do one’s work or duty well and thoroughly.” A creative work that acknowledges an obligation to positive ethical impact in the

community (however you define community in the moment) exhibits the traits of “conscience” in my concept of Creative Connectivity. One example project from my portfolio was conscience-driven in this sense was *ResilienSEA*. Created by Ali Mariko Dressel while in the Masters of Marine Biodiversity and Conservation (MAS-MBC) Program at the Scripps Institution of Oceanography at UCSD, *ResilienSEA* is “a platform for performing arts that immerse audiences with urgent ocean and climate issues as a way to engage, inform, and galvanize communities toward climate action and ocean conservation.” The first *ResilienSEA* event was a performance bringing artists, scientists, activists, and policy makers together for a dance and design driven interaction highlighting the feedback loop between global warming and bleaching coral reefs. The event connected members of the community together to discuss and included spectacle dance performances and a designed environment immersing the audience in a bleaching reef with lighting, music, and projection design. In creating this setting, we used the impact of sensory immersion to help people connect to the issue at hand and to each other, raising the stakes for the networking and discussions that would happen in this space.

Usefully, observing a work using each secondary aspect of Creative Connectivity entails simply gauging signals from the primary aspects at its intersection. To evaluate collaboration on a work, I can look at how well the people involved are supporting each other’s interests. I can gauge conscience by examining the mental and emotional impact of the work on the community of people around it. To gauge the level of consciousness in a production, I can see how the ideas and questions of the project connect to perception, and I can check if anything the work says with words is undermined by the stimuli of light and sound. I can ask if the piece’s questions and explorations are handled in a way that is conscious of the sensory, mental and emotional impact

they may have (i.e. are sensitive topics and experiences handled with appropriate contextualization, trigger warnings, etc).

In application, there is no expectation that a production will excel in any of the primary or secondary elements of Creative Connectivity, though it may. The usefulness in this model lies in evaluating the desired balance of all the connective elements, and in providing a vocabulary to respond to concerns. If my team wants to make a production feel more immersive, I can refer to cognitive connectivity and ask how we are connecting to each of the senses and how we time those interactions. If it comes out that the concern is about how people are connecting those experiences to the story plot, I can refer to “consciousness” in the model, evaluating how those sensory experiences use perception to raise story questions or stimulate curiosity. Or if the same design moment causes concern around causing potential harm to the audience, I can refer to “conscience” in evaluating how best to support the attending community in this sensory experience.

Now that we’ve had a thorough introduction to each of the primary areas of Creative Connectivity and a primer on each of the secondary categories, we can practice applying the model in full. We’ll see a detailed application of these ideas in the following chapter’s case study of a theatrical production through the lens of Creative Connectivity.

CHAPTER 5: *X*, A CASE-STUDY IN CREATIVE CONNECTIVITY

The Role of The Sound Designer

All the previous examples exist on this multi-faceted spectrum of creative connectivity, but one production most fully embodies this model of practice, as defined here, and was the production in which I had the best opportunity to apply these ideas with intention. As such, that production makes an excellent example of all the facets of Creative Connectivity in action.

UCSD Theatre and Dance's 2024 production of Alistair McDowall's psychological sci-fi thriller *X* was a near-future story of a NASA crew on Pluto, where they lose touch with their controllers on an Earth ravaged by climate change. The disconnection breaks their system's ability to track time, leaving them not knowing how many days or months or years they've been stranded in space while their conditions deteriorate. The crew's reluctant acting captain, Gilda, must hold her mind together while hoping for rescue. *X* was directed by MFA Class of 2024 Candidate Rosie Glen-Lambert, a frequent collaborator and friend at UCSD.

In this production, I had the opportunity to take on a more collaborative role than usual, sharing sound design duties with co-designer Padra Crisafulli (MFA Class of 2025). They (Crisafulli) took the lead on musical composition and sound effects, and I took charge of the technical and systems aspects of the sound design, allowing each of us to make in-depth explorations of the work, approaching it from different angles. While our work was very collaborative and inter-dependent, Padra was largely free to think as a storyteller and composer, and I was able to focus primarily on how to explore this story through the lens of connectivity. I was similarly able to collaborate with scenic designer Raphael Mishler (MFA Class of '24), and associate video designer Eleanor Williams (MFA Class of '25), on the centerpiece digital clock, for which I would be the video programmer. Rounding out the designers I worked closely with,

lighting designer Elba Emicente Sanchez and I were able to collaborate on building numerous moments throughout the show where lighting levels and effects were controlled directly in response to live sound levels.



Figure 5.1: *X*, production photo showing the space station set. Pictured, from left, are Elliot Sagay as Clark and Kennedy Tolson as Mattie. The author acted as video programmer for the clock, center. Also note the empty expanse of space above the station. Photo: Rich Soublet

Even on the surface, connectivity is central to a sound designer's work. It's simply connecting A to B. As a sound system designer I am tasked with connecting the actors' voices and the composer's sonic landscape to the audience's ears. I analyze the script and the room's architecture to decide where to put the speakers, how to mount the microphones, and what I want the console and computer connections to be, all to move sound along a continuous connected path from source A (the actors or playback files) to destination B (the audience's ears) in the most effective way possible. I draw it all up in system schematics for the house audio engineer to install (in this case, the excellent and skillful Steve Negrete). In the theatre before and during technical rehearsals, I check the connections, play noises, take measurements, adjust and repeat.

Twist knobs, listen, repeat, twist knobs, listen, repeat until the truest possible version of the sound at source A reaches the ears at the destination B.

However, in this job, even when I'm not actively composing or creating sound effects, most of my process happens before putting pencil to paper or finger to knob. Pre-production is a process of collaborative connectivity, the director guiding the team's conversations, to point our communal curiosity in the same direction, toward a coherently designed experience for the senses. Successfully done, this process sets us up to connect all the elements of a production - performance and design - into a unified whole. Each system choice must be grounded in the collaborative dramaturgical work of the playwright, the director, and the creative team.

Pre-Production: Initial Connections

In the *X* process, our well-organized collaborative environment with plenty of lead time was critical to success. *X* is a complex, ambiguous script that seems at first to progressively leave its own internal logic behind, and we knew we had ambitions for a large immersive production, stretching the available resources. We needed plenty of time collaborating together to process and problem-solve this script, and to make plans for the production we imagined.

Preparation and lead time at the very beginning were also key to caring for our cognitive health in the final stretch. Many of the leading artists, including myself, were rising 3rd years, having learned the hard way through two years of continuous production work concurrent with classwork and teaching and research just how hard we could push ourselves and when we would need to conserve energy. On the other hand, we had experienced those two years in the trenches together, building rapport and an invaluable connection of trust and respect for each other.

Knowing all this, concept meetings commenced nearly a year in advance of the start of rehearsals. From then on, we maintained a rigorous schedule of collaborative meetings under the skillful coordination of our production stage manager, Caleb Cook. Regular group design check-

ins and one-on-ones with the director would occur over summer 2023. We increased to weekly design meetings in the fall and coming into winter '24 we had extra meetings scheduled with production staff to ensure we could fully execute our vision.

It wasn't just about having so much time, but also about the shared spirit of inquiry, the curiosity we were able to share in the communal space of *X* pre-production. Everyone was immersed in the story, finding hidden connections in the story to parts of the human experience we never would have expected. Everyone brought good humor, enthusiasm, and generosity. Especially useful in this time was the work of production dramaturg Maddie Williams, who brought a critical ear to discussions and continuously documented our research questions from "how do I pronounce 'Luscinia Megarhynchos'?" to what is it like to experience Alzheimer's? We accumulated insights, from the aesthetic of space-age googie architecture to ways we could manipulate the perception of time. Thanks to this amazing early collaborative period, we came into the build and tech rehearsals well-prepared, well-staffed, and more well-rested and ambitious as ever.

Some aspects of the production that we discovered early on would come to define my efforts: that this story was centered on communication loss, and that we would seek with the design to distort the flow of time, creating sharp, cinematic-style cuts between scenes. There was the clock, accomplished by way of an OLED TV screen. It was a given that in UCSD's Mandell Weiss Theatre, a large proscenium-style space, we would rely on body mics to help the actors' voices fill the space and overcome the cinematic scoring, while maintaining a natural sound. I was able then, to think through and coordinate logistical aspects of the systems early on.

Collaboration: Community of Curiosity

Early on, collaborating with Mishler, I realized his scenic concept had a vast empty field of space above the enclosed main set piece. This would be done with a tight-stretched scrim,

which would appear solid black from the front, but would be perfectly transparent to sound. The main system speakers, normally relegated to the outer perimeter of a proscenium for visual reasons, could possibly be hidden at a more acoustically favorable position, right in the middle of the frame of the proscenium – a sound designer’s dream. This was a great discovery of course and would be made even more useful by the spatial audio needs of the production.

I would get to continue working on a personal interest of mine – developing my own tech workflow that efficiently integrated spatial audio into the rehearsal and performance process. For *X*, there would be a traditional main system of Left, Right, and Center speaker arrays, Front Fills, Subwoofers reinforcing the low end, and a pair of Delay speakers for the farthest seats. Working in tandem with the main system, a speakers arrayed across the stage behind the black scrim, and others surrounding the audience on the sides and above were used for the spatial system, for a total of 16 additional spatial speakers. Working in QLab, we could send sound to each speaker in the traditional channel-based way, and we could also spatialize audio signals by sending them from QLab to “Spat,” a Max patch using Ircam’s Spat5 package for spatial panning. For each sound “object” sent to Spat, we would also send OSC messages dynamically providing the object’s location and other control data using QLab Network Cues. After the initial set-up and tuning, the workflow for each new spatial sound object was as simple as creating the QLab Sound and Network Cues and drawing the movement path on a scale ground plan of the theater shown in the Network Cue interface. During the run of *X*, Max was set to run automatically in the background. The show operator fired cues in QLab as usual, with the only extra element for them being a Spat “reset” button, just in case.

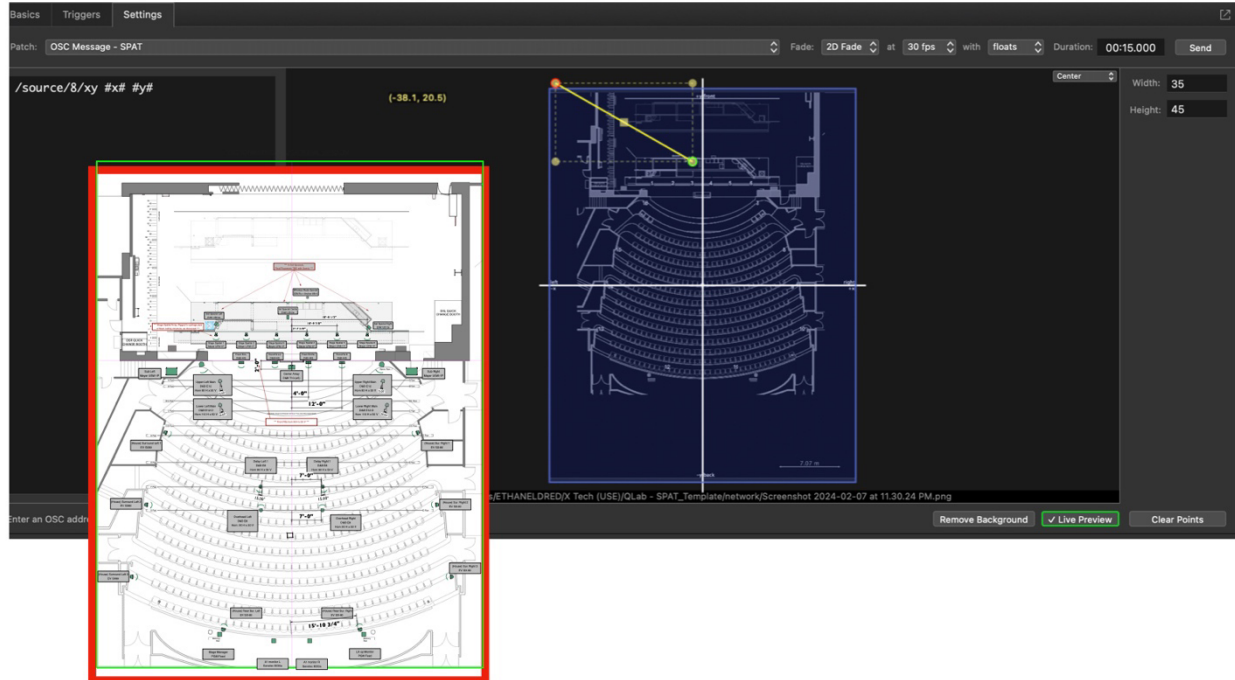


Figure 5.2: The XQLab / SPAT workflow was simple: draw the sound’s path on the theater ground plan. QLab’s Network Cue interpolates this path data over time, filling in the arguments of a repeated OSC message, according to a template we provide. Inset left: X Speaker Plot

Having succeeded at building this new workflow, we were able to serve the show’s spatial audio needs easily – a bird chirping in flight, a disembodied voice, ghostly visitors in the vents – all moving in clear continuous paths across the wide proscenium stage. This sort of convincing, continuous movement can be difficult to coordinate with a mix of multiple channel-based loudspeakers hidden throughout the set, but it was comparatively easy with object-based mixing via our spatial audio system. Padra overcame the system’s short learning curve, and they would come to include dozens of individually spatialized audio objects throughout the play’s sound score, as well as sounds routed via traditional channel-based mixing. I also got to apply spatial sound effects to actor microphones at certain times for heightened voice effects.

The success of our student A1/Audio mixer on this show is another fine example of the power of collaboration, or curiosity in community. With an introduction from director Rosie

Glen-Lambert we found our audio operator and assistant sound designer, Natalia Demko. Natalia was new and inexperienced, but very curious and enthusiastic, and that enthusiasm helped her to be able to compensate for her inexperience in a marvelous way. Natalia was able to join the *X* community early on, much sooner than an audio operator typically would. We invited her to attend as many rehearsals as possible, where she could practice her line-by-line mixing with a small, disconnected MIDI controller in place of the real audio console. Over time, Natalia was able to become familiar with the script and form line-mixing “muscle memories” literal synaptic connections that would help her run the show smoothly once the mics were actually turned on. Using ideas behind Creative Connectivity – i.e., her own curiosity, our creative community’s generosity, and some knowledge of learning cognition – we were able to give Natalia a great learning experience and provide our show with highly reliable sound mixer.

Finding those opportunities at the intersection of curiosity and community, the opportunities that arise when interests align in this way, and being intentional about taking advantage of those opportunities and observing areas for improved connections is how I use the Creative Connectivity principle of collaboration.

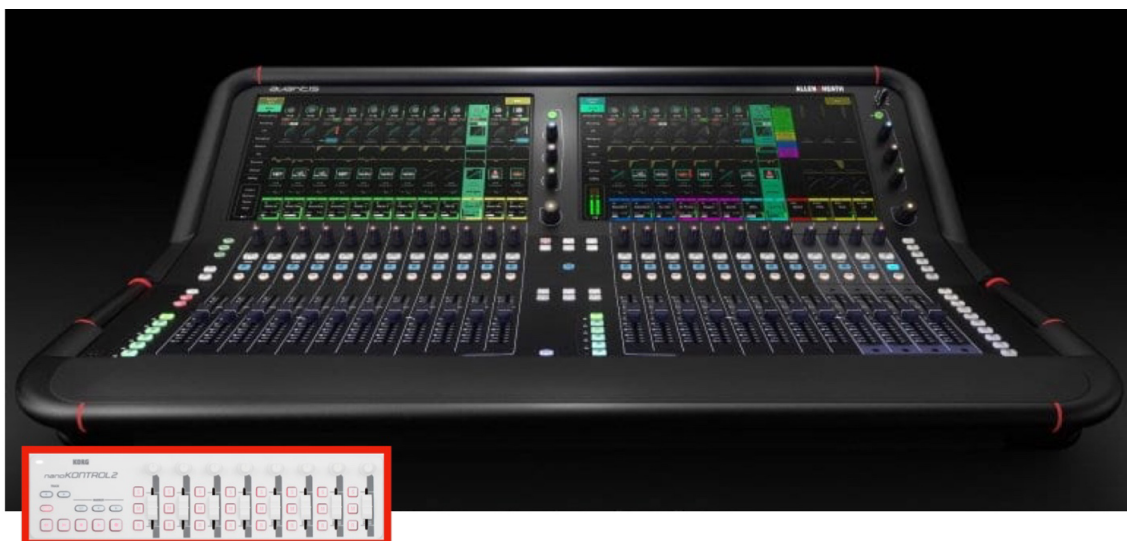


Figure 5.3: Natalia mixed *X* line-by-line on an Allen and Heath Avantis audio console. ...
...Inset Left: Natalia's practice console, a Korg NanoKontrol2, approximately to scale.

Consciousness: Curiosity and Cognition

In some special cases there was incredible synergy between the show's system needs and my personal curiosity. One such personal curiosity, a pet technical project of mine that our director Rosie was aware of, would become a core concept to the unified production design. These moments featured live audio-reactive effects in the lighting and video. Accomplished by way of creative programming, audio signals were converted in real-time to data that could then be applied to modulate parameters of the lighting or video effects, most often the intensity or speed of a lighting effect or the opacity parameter of a video effect, making the light or video appear to pulse in sync with the sound.

We know from psychoacoustics that there is a strong perceptual link between sight and sound. Mismatched visual stimuli can trick us into aural hallucinations, and vice versa, and coherent visual and aural stimuli reinforce each other. Sights and sounds have different perceptual effects based on how they relate to other sensory stimuli. Simultaneous stimuli tend to combine and reinforce each other. The brain adapts to repeated stimuli. These phenomena of cognition are central to my concept of Creative Connectivity and have a long history before me of application in the theatre. An ancient example of the use of simultaneous stimuli is a staple of fight choreography, a separate impact sound to help create a convincing but safely-staged punch.

Collaborating with lighting designer Elba Emicente Sanchez, we applied these principles repeatedly on *X*. In one pivotal moment, marking a transition in tone of the performance from strictly naturalistic to surrealistic, we hear a mysterious child's voice coming from a laptop on the set. Rather than naturalistically localizing that audio to the laptop, we wanted that sound to be immersive, disembodied, coming from around us. At the same time, we wanted it to be clear that the laptop was the source of this sound. So connecting the sound to the laptop visually became critical to the gesture. An early simple draft of this moment featured the laptop screen simply

lighting up at the appropriate moment, triggered remotely, via an Open Sound Control (OSC) message over wifi. In the final and most successful iteration of the design, in addition to the laptop screen lighting up, a live audio-reactive lighting effect was built using LED's cleverly built in to the table the laptop sat on. Since those LED's were wired into the networked control systems of the theatre, we could send many more OSC messages with much less latency. This – and some involved programming using QLab's OSC implementation – allowed us to continuously update the intensity of those LED's many times a second, according to the current sound level of the disembodied voice cue. We still also sent the laptop a message to turn its screen on at the right time, and the perceived effect was to see the light from the laptop screen pulse precisely with the sound of the mysterious child's voice all around us, firmly establishing the illusion that the laptop was the source of this immersive, intimately close sound. This was accomplished much to the horror and pleasure of our audiences, who would consistently voice their shock in this moment. This culmination of a curiosity that struck me in my first year of the program was made possible in my third year by a little work of technical connectivity and a lot of work on understanding how to effectively use the cognitive link between sight and sound.

Another incredibly effective gesture of audio and lighting connection involved the cinematic cuts in between scenes, by way of some cognitive trickery. At some scene transitions we might hear garbled audio transmissions from the captain and simultaneously see that audio signal visualized in the flashing light of LED strips designed into the front fascia of the stage, aimed straight at the audience. This did a few things for us. It provided a continuous, intense stimulus, driving the pacing of the story and keeping the perceived speed of our cinematic jump-cut scene transitions fast in a dramatically justified way. Those LED's provided an additional logistical benefit: pointed straight at the audience, they shifted the audience's baseline perception

of the brightness of the space, functionally blinding the audience to all the shifts happening onstage in those transitions.

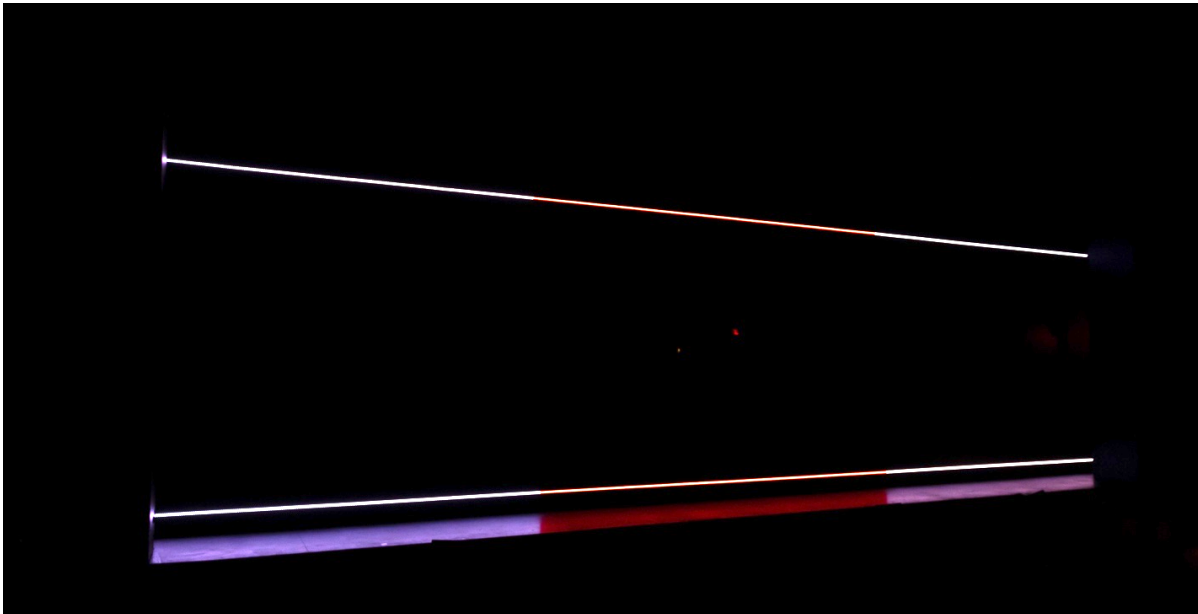


Figure 5.4: LED strips in the top and bottom faces of the set effectively blinded the audience during jump-cut transitions, pulsing in time with transition audio. Lighting Design: Elba Emicente Sanchez. Photo: Rich Soublet.

The repeated use of these effects peaked in a series of vignettes that we called the “Nightmare” sequence. In this sequence the action seemed to cut from one tableau to the next in a flash, actors and set pieces moving impossibly fast in between. In actuality, it could take several seconds to move people and pieces, but the perceived pace was driven ever faster by the dense tapestry of sounds and flashing lights in each transition. At the height of this sequence is a contrasting quieter vignette: the surprise reveal of a marvelous prop/puppetry piece, a person-sized, injured bird. In this vignette, we see the bird struggling on a hospital bed in dim, sculptural lighting, but brighter lights pulse in sync with the bird’s audible heartbeat, heightening the visceral feeling of the bird’s painful experience. Those flashes of brighter light triggered by the heartbeat sound also give us the opportunity to see the bird in more detail and the actor’s emotional reaction to it, while preserving the overall sense of a dim and disorienting space.



Figure 5.5: In this moment with the giant bird, the ambient light was dim (Right), but brighter light pulsed with the bird's heartbeat (Left), revealing more details of scene, while still feeling dark. The actor is Kat Peña as Gilda. Lighting: Elba Emicente Sanchez. Photos: Rich Soublet

There were a few small but notable triumphs in the execution of these audio-reactive effects. The QLab programming that captured the audio levels for the purposes of synchronizing video and lighting levels to sound can sync to pre-recorded sound cues or to live sounds from mics or instruments and is quick to implement for either. To do so, I use a feature of OSC, called “OSC queries,” where the host software (QLab) can continuously check the state of any OSC-addressable parameter. A Network Cue queries the live decibel level of a chosen Sound or Mic Cue, scales it according to a specified range, and continuously updates the control value of another Network Cue, which in turn delivers that control value to the lighting console or video software on the theater’s network. Much like our implementation of spatial audio, this streamlines the programming workflow in tech rehearsals by keeping all the cue editing within QLab, saving the need to toggle to other apps, such as Touch Designer and Max. The audio-reactive programming and data generation is also accomplished entirely within QLab, the most common audio playback software in theatre, saving the need to install any additional software in reproducing this effect elsewhere. The *X* design did include installations of Max and Spat for spatial audio purposes, so this show file would not be portable without that additional software,

however, audio-reactive effects can operate independently of the spatial audio, allowing for the easy portability of that effect to other shows in the future.

Even if I never use it again, working on this QLab trick fed my curiosity and my interest in the experience of working on this project, and noting that small accomplishment is an important part of the process. Celebrating small triumphs like this one is a natural way to reward the impulse that drives discovery. I spend far more time frustratedly trying to fix broken bits of programming, than celebrating successes, but when one comes along, I try not to miss the opportunity for a little celebration. It's a little accommodation I've found in supporting the unique workings of my own mind.

In this way, my cognition serves my curiosity, and my curiosity serves my cognition. Paying attention to these small impulses of curiosity and cognition, the accommodations I naturally form for myself, and the practices that I find work for me is how I apply my Creative Connectivity principle of consciousness in my practice.

Conscience: Cognition in Community

As mentioned above, one of the most important early forces for collaboration in this production was the research and dramaturgical work conducted under leadership of Glen-Lambert and Williams. This collaboration is also our strongest example of the Creative Connectivity principle of conscience. Williams created a magnificent living dramaturgy document, compiling research and resources continuously in response to developments in the rehearsal room and the evolving production concept. In one such early development, we decided that our interpretation of the script to center the experience of dementia and Alzheimer's.

It was key at that time to dig into available knowledge of what that experience is like, for both patients and caretakers. Early paths of research involved reaching out to local communities where we may be able to interact with or interview those living those experiences. Another early

proposal included community-based work in a post-show lobby installation designed to aid in processing of these experiences, aided by the catharsis of the performance. While the installation project did not come to be, the concept gave us all on the creative team an important opportunity to process this new interpretation of the story, and to connect it to our own lived experiences. As a thought-exercise, it allowed us to connect ourselves into the experience of dementia in a way that gave us all a common grounding. That gave us a perspective from which to tell this story and a common anchor for our decisions and opinions as we arrived at the time to build these moments in the play.

This is just one example for me in the application of my Creative Connectivity principle of conscience in a production process. To consider together the experience we are portraying, to take time to share in that experience from as many angles as possible, and finally to recreate that experience responsibly and respectfully.

CONCLUSION

X was a great show. It's one of the collaborations I'm most proud to have worked on. It's also one that strongly exhibits the traits I now look for based on my model of Creative Connectivity. I'm not sure that's a coincidence.

Correlation is not causation of course, but looking back on this show and the past three years has been a powerful process as I connect these ideas. For me, my time in San Diego has been a time of gradual and disjointed discovery, but with a great result.

With this model now defined for myself, I intend to apply it to my practice and pedagogy in pursuit of a satisfying and sustainable artistic practice. Through my career, I see this model as a guidebook for myself, a way to maintain balance and a tool for teaching my students to do the same. In following curiosity, I'll continue to connect new ideas and experiences, and stay interested long term. In building community, I'll connect to new people and stories and provide myself with a social support network. In understanding cognition, I'll be able to immerse my audiences and myself in storytelling, while keeping my mind healthy.

I'm now able to integrate and codify these ideas for the first time, and I can proceed with intention in my next collaborations, using these principles to create connectivity. Whether for teaching and mentorship, or for my own practice, I now have a framework for observing artistic work in process, product, and practice. I can be guided by curiosity, community, and cognition. I can observe principles of collaboration, consciousness, and conscience. Now I have the tools to live my new, refined mission statement: "Creating Connectivity."

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