Throughout architectural history, acoustic spaces have been developed and perfected for instrumental music. Contemporary advances in technology have produced music of new electronic forms. Distinct from instrumental music both mechanically and artistically, electronic music demands the design of its own architectural space: one informed acoustically by the physical composition of electronic sounds, and inspired by the genre’s often-multisensory presentation and rising cultural influence.

While ‘electronic music’ is becoming familiarized by a subset of compositional genres that are trending in current pop culture, electronically produced and amplified music is not just a trend, but the artful manipulation of technology that can only continue to exist and develop in the future of music. This unique form of music deserves to synthesize a home marked of its own digital oddity. Rather than being mechanically wrestled into the shell of some historical rehabilitation, this contemporary sound art deserves architectural spatialization that conforms appropriately to the shape of its wavelengths. This thesis studied and composed a modern space for contemporary electronic music sited in downtown San Francisco.

3 Greenberg, Kate. Untitled. 2012.
4 Ibid.


To produce an acoustic definition of electronic music, beyond simple genre categorization, a comparison study of Beethoven's *Fifth Symphony* and Wolfgang Gartner's electronic remix was performed.

Waveform (top), frequency (second to top), waterfall diagrams (second to bottom), cymatic (bottom).

Spatial substitutes: tents, fabric, fog, and LED.

DJ worship and the stage as a plinth.
SAN FRANCISCO VENUE STUDIES

Motion and dBApk studies of 1015 Folsom St

Study of a typical electronic music dance floor program (below)
Motion and dBApk studies of Ruby Skye
While the basic program elements listed are derived from spaces currently used for the presentation of popular music, these elements will be envisioned and reorganized as appropriate for the acoustical and cultural characteristics inherent in electronic music.

The Mission Bay Creek has been selected for the location of this new performance space. The site straddles the water border of the San Francisco Bay and the urban arts and music niche recently forming in the northeastern part of the city. This allows the venue to take advantage of water’s natural sound insulation, and to present itself as an integral part of the San Francisco civic gateway.

The water of the site will be drawn into the building to be activated by sound cinematic visual reactions beneath the main dance space, causing the creek beyond to become a secondary canvas for electronic music performance at the urban scale. The surface of the site will reflect the visual undulations of the building’s glowing facade, and ripple in reaction to an underwater subwoofer resonance chamber. Mission Creek will be activated by this space for electronic music, and transformed into a visual diffraction of the concert within.

SITE/PROGRAM
DESIGN REQUIREMENTS

PROGRAMMATIC

CAPACITY
3,500

PERFORMER ZONE - MIXING BOOTH
formerly identified as the “stage,” often inappropriately plinth-like

DANCE SPACE

HYDRATION STATIONS
a “bar” to those alcoholically inclined; a water source to others

SEATING
for the fatigued; introverted; or occasional older audience

CHILL POCKETS
space for rest on the periphery of the excitement

OPEN AIR SPACE
traditionally known as the “smoker’s alley”

RESTROOMS

CONTROL ROOM / STUDIO
A/V booth and editing studio

GREEN ROOM

BOX OFFICE / COAT ROOM / VENUE OFFICE

HEALTH / FIRST AID ROOM

MECHANICAL / ELECTRICAL / STORAGE

ACOUSTIC

VISUALLY SUBTLE, MONO SOUND SYSTEM
built-in to centralized mixing booth and surrounding walls

ACCEPTABLE dB LIMITS
within venue as well as external limits of +8dBA / +8dBC

MATERIALLY INTEGRATED SOUND DIFFUSION/ABSORPTION
wave behavior is controlled through material treatment

CLARITY OF SOUND
early-to-late sound ratio should be C80: +5dB

PIEZOELECTRIC FLOOR / CYMATIC FEATURE / SUBWOOFERS
beneath dance space, providing maximum vibrations and cymatic visuals

PROJECTION SYSTEM
built-in, walls as projection surfaces to create constant sense of crowd inclusion

HUMIDITY / TEMPERATURE CONTROL
radiant cooling for dance space and to provide acoustical balance

SOUND ISOLATION AT PERFORMER ZONE
fill speakers and reverse phasing at booth to balance overlap from main speakers

ENCOURAGE SOUND DISPERSION, DISCOURAGE REFLECTION
floor mounted speakers with high ceiling will increase direct sound: reflected sound

SOUND PRESSURE REDUCTION IN CHILL POCKETS
aim speakers away from concave periphery spaces to reduce reflections within
chill pockets use fill speakers, but are ambient enough for conversation to take place

SPATIAL AND ACOUSTIC FLEXIBILITY
radial plan can transform a concave pocket into an acoustically directional performer zone
space can support temporary amphitheatre-style seating for unique audio/visual events

FREQUENCY TREATMENT: DEAD IN LOW END / LIVELY IN HIGH END
full spectrum bass demands maximum bass absorption to maintain clarity, warmth, and acceptable dBC limits
diffusion of higher frequencies provides liveliness, dispersing sound more evenly and reducing standing waves

BASS TRAPPING THROUGH MULTI-LAYERED SPATIAL PLAN
building will act as a bass trap, minimizing bass buildup through radial layering of acoustically absorptive walls
The headphones of electronic performers allows for their centralization in a non-reverberant space, while a radial plan provides an all inclusive experience as the traditional stage lightshow expands to the walls surrounding the dance space.

The distortion of the radial surface creates areas of lower sound pressure for audience decompression and conversation, while the positioning of auxiliary program orbital to the radial plan allows for the layering of acoustically absorptive walls, effectively turning the venue into a bass trap large enough to handle the broad low-end sounds which define electronic music.

PROGRAM ‘REMIX’

This space for electronic music performance will take a radial form, with the performer and their music at the focal point.