
Designing Music for Projection Mapping using an emotional arc: Telling the story musically first

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Projection Mapping is a visual storytelling medium with a global audience- events often feature artists from a dozen countries in spaces that host a mixture of international guests.

Music is a universal language- one that speaks to everyone, no matter who they are. A sweeping and beautiful orchestral phrase evokes the same level of emotions the world over.

The grammar of music- building momentum, accelerating tension, chords that feel 'complete' when they land- are all story-telling devices. They're designed to take us on an emotional journey together.

When we're designing our epic projection mapping stories for public spaces, our goal is to connect that place with the people who'll experience it there. Think about why you remember a particular place that's a favorite of yours- why is it such a deep memory?

Usually, it's about how you felt when you were there. That's why we begin every experience by designing the musical story first- we plot out the emotional journey before we embark..

Where do we want to take them? Is it on a voyage of discovery, like an ancient explorer? We can show them things they'd never imagined, opening their minds to understanding and experiences they'd never expected.

Or do we want to fill them with pure wonder? We can start somewhere wide and mysterious and open and slowly fill in the details while adding new mysteries along the way.

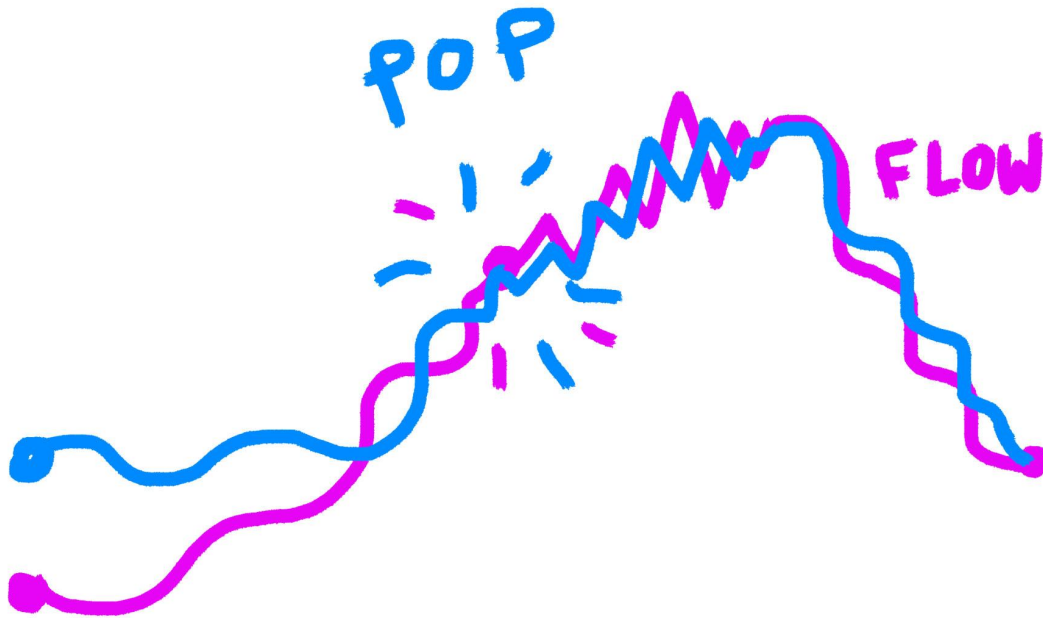
A song is also called a "progression." Just like any story, it needs to GO somewhere. If our soundscape begins sparse and spacious, we'll follow each note as it grows and builds into something new. But where is it heading? Stories are about change and growth.

Both of those are about OPPORTUNITY. Choice. Risk. Which way will it go? Music needs tension- every choice is tense! But it can't be tense all the time. We need to go from a welcoming place that feels like it needs something MORE to a better place through a difficult choice. Isn't that how all the exciting things we experience usually go?

Visualizing the story's emotional arc

Before we begin with musical or visual design, we need to create the emotional journey the story will take us on. I consider our stories not as visuals that follow music (or music that follows visuals) but as one emotional arc expressed through music, that the visuals follow and build upon further.

Here's how we visualized the emotional arc for one story we designed:



In this particular story, the overall arc is two entities who begin in isolation and come together to a new experience with one another. This visual was used to communicate with my composer how the energy and feel of the music should tell the story we had in mind.

What does this arc mean? We're visualizing each of the two entities by not only their level of energy (measured vertically) but also how they connect throughout the timeline of the story from start to finish (measured horizontally) looking at their distance from one another. They get closer as the story progresses- to the point of being nearly one entity at the end- in terms of narrative, but also musically and visually. This is a tool we use in all of our projection mapping designs- visualizing the story as an emotional arc that the music is built on.

The energy of the story starts low, then climbs to a peak of new intensity, before settling into a comfortable 'flow' as it ends. The sharpness of the lines indicates *the way* the energy travels towards this ending- quickly or smoothly, depending on the scene.

Looking at our entire story like this helps us build a story with music that carries the narrative on its own- one that will only get better as we design the visuals to tell it.

How to tell a story with music alone

There are a number of ways to translate an emotional arc into the music that will carry a story.

Entities being farther apart can play out in music with wider chords that 'feel' more spacious, along with dry and sparse sound design placed in a wider stereo space. If we want entities to feel closer to one another, we'll bring in tighter, more traditional orchestral chords that have notes closer to each other in the musical scale and place them in a more narrow stereo space.

The transformation in the narrative- two entities drawing closer together- can be created musically by transforming the chord structure and stereo space over time and designing visuals to enhance that sensation.

Since I'm a projection mapping artist who is a musician but I'm NOT composing the music, this is a great way to think about directing a composer to get the desired feel and story arc. Musical space and energy correlated with physical space and energy- intensity of light and amount of motion within the visuals.

As we design the narrative arc that the music and visual story will deliver to our audience, I can direct my composer to align the music with areas where the space and energy are off from the narrative arc.

Terms like 'bright' 'energetic' 'empty' 'full' 'dark' 'sad' or 'excited' that are used in an emotional narrative can also apply directly to music design.

Certain chords, scales, or instruments can be considered 'bright' such as ukulele, or the addition of notes to a chord that lightens its feel. 'Dark' scales or instruments like deeply bowed contrabass can change the feeling of a section to darken its tone.

If the story calls for a 'tentative' moment, we can use musical phrasing that feels disconnected or incomplete and make those phrases more connected and intentional as the decision in our story becomes more clear. If two entities in a story aren't understanding each other, we can have their musical phrases not flow into one another. If they are in agreement, we can have their melodies flow in parallel close to one another or even in unison sometimes.

So I can tell him the music should be 'darker' or 'more intense' or 'more connected' in certain areas to tell the story I have in mind.

Orchestrating these changes is up to the composer, but as projection mapping designers we can direct the flow of the narrative arc with the right descriptions of the emotional effect we want the music to have.

Integrating music and visuals

A key part of our process is playing with rough music tracks and simple visuals as my composer and I iterate the musical design. We pair rough music tracks with video of basic motion blocking and general color changes in iterative versions that allow the music and visuals to 'dance' with one another.

In early musical story design, I'll always cut the rough music tracks and visuals apart to push and pull against each other as we work out the best musical flow together.

Sometimes a musical section my composer has created works so well that I want more time on it. Or the music needs to rest briefly after a grand section. And it's very helpful to see how the motion feels over the music- everything feels faster with music behind it. I'm not sure why, but it just does.

Many times a big motion or sweeping visual change will need a musical break so it can just sit and be absorbed visually. So I'll cut and extend the rough music track to open it up for the visuals and ask my composer for more time on the music in that section.

There's also a 'call and response' between music and visuals that enhances the storytelling- a big visual action happens that the music responds to while the visuals then recede. Or the music can build up with a lesser visual response and then 'break' as the visuals take over.

If both music and visuals are telling the story the entire time, it can get overwhelming and even exhausting to experience, especially at the large scale of architectural projection mapping.

Hitting all the right moments in the emotional arc that drives the music and visuals strengthens the story and allows for further development built on this foundation.

Then I send my composer to make the full musical recording while we dive into visual development.

Creating visuals to the musical story we've designed

In projection mapping, we can easily connect narrative and musical ideas like 'bright' and 'dark' with the colors or amount of light we use overall in a scene. If the musical story fits the narrative arc in a satisfying way, then enhancing that story with visuals should feel natural.

The energy and sense of tone from the musical story should carry over into the visuals organically. Energy can be designed as the amount of movement in a scene, the quality of movement, and the amount of light (or how it peaks.)

The quality of the energy can be explored even further in how things move. Is the energy sweeping or pulsing or chaotic? Motion paths and scaling graphs can reflect this quality in how things animate with the texture of the musical energy.

Tone can be as complex as designing a space that feels 'empty' with small objects placed distantly from one another or as simple as the way objects flow across the space in motion.

Learning to hand off 'carrying the story' between being the music and visuals is an effective design element that takes experience to master, but a good starting point is to let a visual element rest after a big moment and have the music carry it. This can be merely having a visual element follow one instrument which rests with the visuals after a musical phrase and another instrument plays more subtly in the break.

The reverse also works well- letting a big musical flourish rest and have a visual reaction to it with smaller supporting music elements.

One element often built into our musical stories is the drop- an emotionally enhancing element you'll often hear in dance music. Escalating tension and energy builds as the rhythm speeds up and shortens at the same time until it hits a peak and then disappears.

Drops are about bringing excitement to a fever pitch- and then letting it all release. It's that feeling of nervousness about something you're hoping for but can't believe will happen building up so high that it pops- along with all your fears- when it actually comes true.

Interpreting a drop visually uses the same elements- light can grow in amount in a scene, color, or intensity and change in rhythm with the music to a peak that disperses visually into something new. Too many drops and they lose all meaning, so we reserve them for big transformative moments.

Another technique that adds depth and interest to our projection mapping stories is leaving space in the motion design for after the final recording is finished, so we can find those special musical elements by the composer that we wouldn't have thought to design ourselves.

Let the final details in the music be a delightful surprise to your design, an unexpected element that can inspire your visuals in amazing ways.

One project had the most incredible handbells recorded in a cathedral for the final instrumentation (which we didn't design for in our general story arc) that added a tremendous amount of texture and played very well visually along and added accents that drove the story in new ways. We adjusted our animation and added new elements that elevated the story even more because of this exciting new musical addition.

Instruments that tell the story best

Different stories need different instrumentation- a tale of war shouldn't sound like a love story.

We designed one of our stories like a conversation between two entities who approach one another slowly and form a relationship. For this story, we chose two very distinct instruments- the soft and silky violin and a bold and brassy trumpet- as their 'voices' to suit the character imagined for each of them.

In our music design, we created moments for each of these entities and described how they were feeling for the composer. Examples of these moments could be 'bold one approaches the shy one, who backs away' or 'shy one calls out tentatively.' Our composer created the soaring and lyrical music to these notes and even added them to his notation for the musicians so they could perform with the best inflection for each scene. It also helped tremendously that the two musicians were married, so their emotions were genuine.

Other notes for this story called for sound design to make the two of them feel very alone in a vast space at the start and even a note for the ending to sound like 'warm creamy chocolate blending together' for the lush symphonic ending where the two join as one.

For another story on learning to love nature again, we chose instrumentation that felt connected to the Earth and ancient cultures at the start of the story as the world is being created and moved on to more ethereal and otherworldly as we mixed distinctly separated climate areas together.

We chose more organic music that spoke to the scale of the issue- the fate of an entire planet- with lilting elevated tones that rose above us all as individuals.

On yet another project, we remastered several pieces by an artist who mixes toy pianos with electronic music to play an entire building like one big visual instrument lit up with fun and whimsy.

This was designed almost percussively with an aim of creating synesthesia for the festival attendees with visuals designed to look the way the music sounds. Crispy or crackling electronic sounds were matched with fuzzy and frenetic visuals, smooth flowing melodies met with delicate fireflies that flowed to the same rhythm.

Sections with electronic bleeps and bleeps were accompanied by happily bopping cyclical custom emojis, rhythmically bouncing rubber ducks, retro style pixel art, and building wide visual pops to the musical accents.

If we begin with a good idea of what the energy of the story will be, deciding on instrumentation only makes it better.

How it all came together

We began this process with an emotional arc- the journey we want the story to take us on as we travel through the narrative. This was the basis for designing the musical story that all the visuals followed.

We started with big story elements first, then added 'spice' to the music- accents, texture, and embellishments. Once we've got that feeling right, we iterate with the rough music and visuals until both have the right balance of carrying the story.

Our stories began to work beautifully when they were just rough previsualizations with basic audio- the finesse and musical character just adds to that as we design it. Visual intensity or mood follows musical mood- it should work before we can see it! We pepper sound in where we'd like smaller movements or gentler characteristics and go bolder and bigger with the instrumentation as the story should intensify.

Then we add to the basic visual elements from the musical direction, adding more spices and accents as we work with final recordings, letting the music lead the way.

All of the elements have their own voices- characters, emotions, and even the building ITSELF reacts to the story with its own sonic character. Treating tones and sounds like colors gives each sound its own space and purpose musically to fulfill with the visuals that follow it. Mixing all the colors of paint together makes a muddy brown- and sound is no different.

Lead with your heart and design the musical story to stand on its own- then follow that arc with your visual design. If your story starts strong emotionally, it can only get better.

George Berlin Studios crafts artfully immersive audience experiences that are "Music for Your Eyes." We tell incredible projection stories around the world- from tales on the nature of love to the love of nature- with custom crafted music that soars.

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