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Toward a Transdisciplinary Model of Highly Emotional
Experiences in Narrative Media:
An Inwards Sound Design Approach

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Abstract (Swedish)

Med den ständigt ökande mängden teorier designade för att hjälpa skaparen att framhäva känslor börjar vi nå en punkt där till och med den mest envisa åskådaren inte kan undgå greppet som film har på våra känslor. Tack vare multidisciplinär forskning om de kognitiva och sympatiska strukturerna som står för uppbyggnaden utav känslor (Blincoe, 2011; Dolan, 2002; Ekman, 1973; Panksepp, 2004), så har det byggts en bättre förståelse kring ämnet. Därav har en integrativ känslomodell blivit en realistisk proposition (Loui & Harrison, 2014). I denna uppsats föreslår jag att för att göra en sådan modell en succé så är förståelse för målgrupp ett krav. Jag argumenterar för att varje projekt har unika kriterier som hittas hos individen, snarare än i den generella förståelse för sinne och kropp, och dess applicerade kunskap i moderna designteorier. Den här vinkeln kräver nya verktyg, som jag försöker skapa baserat på Scherers (2001) Sequential Check Theory, i kombination med etnografiska metoder. I sin tur så testas verktygen på en lokal egendefinerad grupp som en introduktion för arbetssättet och datasamlandet. För att bevisa modellens transdisciplinära potential försöker jag applicera datan i ett verkligt ljuddesignkontext, där metoden hypotetiskt sett är mindre effektiv än i tidigare stadier inom produktion, som skrivandeprocessen. För att generera kvalitativ data så har filmerna, i form av två pilotavsnitt i en serie, visats för gruppen. Ett avsnitt utan applicerad teori, och ett med ändringar enligt den insamlade datan och modellens riktlinjer. Avrundas med ett frågeformulär som berör de framhävda känslorna utav avsnitten. Detta står som en tillräcklig bas för diskussion, om än aningen otillräcklig för konkreta bevis. Uppsatsen avslutas med diskussion om potentiella framtida applikationer där modeller som denna kan florera.

Nyckelord: Empati, Etnografi, Individualitet, Transdisciplinär, Ljuddesign

Abstract

With an ever increasing pool of theories designed to help the creator instill emotion, we're approaching a point where even the most stubborn audience can't fully escape the grasp that film can have on their feelings. Thanks to multidisciplinary research for the cognitive and sympathetic structures that make up emotions (Blincoe, 2011; Dolan, 2002; Ekman, 1973; Panksepp, 2004), a larger understanding for emotions has been built. In succession, an integrative emotion model is becoming a realistic proposition (Loui & Harrison, 2014). In this thesis I'm suggesting that to make such a model a success, an understanding of the target group is a requirement. I argue that each project has unique criteria found in the individual, rather than in the current general understanding of the human mind and body, and it's applied knowledge in modern design theories. This angle requires new tools, which I attempt to create based on Scherer's (2001) Sequential Check Theory, in combination with established ethnographic methods. In turn the tools will be tested on a local self-defined group as an introduction to the workflow and data collection. To prove the model's transdisciplinary potential I attempt to apply this data in a real world sound design context, where this method is hypothetically less effective than earlier stages in production, like writing. To generate qualitative data, the films, in the form of two pilot episodes of a series, will be shown to the target group. One episode without our theory applied, and the other with changes according to data collection and model directions. Rounding it out with a questionnaire regarding elicited emotion, and qualitative interviews, it stands as a sufficient base for discussion, albeit rather lacking as proof of concept. The thesis ends with a discussion of potential future applications where models like this one could be applied.

Keywords: Empathy, Ethnography, Individuality, Transdisciplinary, Sound Design

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Background

Human emotion is a tricky subject residing in our elusive and infinitely complex brain. The topic of emotion presents itself across countless of fields, but plays an especially important role in the entertainment industry which hinges on its ability to play with people's emotions. However, the majority of research papers only go as far as eliciting the reaction. Amongst all present research and theory, few aim to cover the road to emotions of higher, “chills eliciting” levels. One area that does this however, is the Frisson phenomenon. Frisson is the transcendental-like state that one may experience by listening to music, given that the individual is open to experience (Colver & El-Alayli, 2016) among other factors. Building their model off of previous research in this field, Loui & Harrison (2014) lay the groundwork for an integrative approach to reaching these states reliably, proposing a skeleton which invites for more research from other disciplines. Moving to a systemised model such as the one proposed by Loui & Harrison (2014) shows potential in decreasing uncertainty at the production stage, lowering the need for subjective decision-making. In turn, we could theoretically see an increase of satisfied listeners and higher consistency between projects. A similar effect should then too be observed in narrative media. Expanding such a model to work for movies and games would be beneficial. Especially on projects made mostly with profit in mind, where the production team may not be personally in tune with the context to make the right decisions based solely on their subjectivity. Having the clear path that an all-encompassing model like this could provide, might in some cases be paramount for success.

If our goal is to reliably elicit strong emotion, but we have little to no understanding of both context and those the content is made for, then we would need a model encompassing everything that can directly and indirectly affect an individual's emotions. It would thoroughly guide the team through the complexity of the sympathetic nervous system, the vast variety of cognitive mechanisms that create sociocultural variations and their implications to the creator as well as the audience (Harrison & Loui, 2014). It might need even more to be complete. An exhaustive all-encompassing taxonomy of this nature would be tough to follow both time efficiently, and relatively painlessly. Not to mention the grand

effort making such a taxonomy would require of all involved disciplines, ranging from biology and psychology to audiovisual media. There must be a more effective way for every creator to reach a sufficient level of understanding to increase audience emotional response of consumed content. Harrison & Loui argue that the data used as base for their model is too narrow, and needs to broadly include context and culture from all over the world. Going outward like this may reveal more universal patterns, granting deeper overall understanding, but it would still fall under generality, and wouldn't directly take us close and personal to our target audience. To prepare the creator for the project, I suggest that it instead has to look inwards. Naturally, everybody belongs to some group which one can identify with and have mutual understanding for. There are evidently biosocial mechanisms in place to get us to this state, which could unlock the creator from doubt during production.

But to adapt Harrison's & Loui's model (2014) to narrative media, we must cover an important distinction that separates it from music. I will use film as an example, but this should hold true to all narrative media. While music and film are interconnected in many ways, the pathology of emotions is more predictable in a film context, rather than in the highly subjective taste buds that music relies on. Strictly following the model as is would forgo the more manipulable, empathic, nature of emotions in film. In traditional narrative audiovisual media, the goal is to play on empathy within the audience. It is achieved by creating contexts within which the audience can relate to. When talking about music however, we don't have the same narrative potential, and so we lean on our audience's preconceived contexts within their memories and attached emotions to those memories. Empathy is the key word for our new model.

As we are defining our scope, we have to realize that in order to make a model such as ours transdisciplinary, it must be able to distill into the full spectrum of creators that are required for film and games. Including all into the model would be a daunting undertaking requiring each discipline to properly integrate their tools and theories. It would make this into a universally complete model, but I couldn't even begin to cover all areas. In this thesis, I will begin nibbling in one of the ends, namely Sound Design, and use current problems in the industry to both argue for, and define a model that potentially could translate into disciplines other than film audio.

What spurred inspiration to do research on this topic is the idea of path dependency (Schmeizer, 2017). The notion that free will is but an imagination, and every choice we make, emotion we feel, and idea we come up with only happen exactly because of the sequence of previous experiences and events we've encountered. While the philosophy can be endlessly debated, research in sociology supports the pathological nature that makes up path dependency theory (Mahoney, 2000; Marquis, 2013). I believe that we can learn from this idea. What matters the most in the end, is the ability to deliver an emotional experience to our audience. Considering how emotions can be unpredictable from person to person, path dependency may just be the key ingredient to reliable elicitation of emotion, potentially helping the creator to deliver on its promises.

Research Questions and Aim

How does a sound designer develop a highly emotional experience? All of the theories and practices in the film industry established to this day have nurtured the rise of filmsound schools preaching them. The theories about emotion manipulation are broadly accepted as they have been proven to work. But many times movies don't reach the hearts of the viewers in a powerful manner, no matter how well the templates were followed. They are inconsistent. Or rather, it's unfair to call them inconsistent. They are merely tools, and it's the craftsman's responsibility to use them correctly. Then again, if there is a universal lack of information of what decision to make, one can't blame the craftsman either. My goal here is not to bash the sound designer, but point out underlying problems in the industry. The question that started this paragraph is too broad to answer concisely, many more variables need to be considered first.

Let's begin with asking, what do we know about getting the most out of our toolsets?

There is plenty of literature out there aiming to maximize the results of sound design. Michel Chion (1976), Walter Murch (2000, 2005), David Sonnenschein (2001), William Whittington (2007), the list goes on. And they too tackle these questions in an overarching manner, making their theories applicable for most scenarios. If we were to keep searching outwards,

expanding our toolset, we could be forever broadening our reach, sure. But potential gaps between creator and audience may not be patched up. What makes it even harder is the segmentation between sound designers and writers/directors. A lot of movies today are unfortunately plagued with sound being merely an afterthought, where sound designers often get invited into the creation process at a later stage nearer completion (Thom, 1999). As a result, being familiar with the context of the movie, as well as having a pre-existing understanding of the target demographic, becomes a prerequisite when choosing audio people. Sometimes, there will be no such understanding, which doesn't necessarily have to end with a poor final product, but most likely ends up drifting further away from an ideal emotional ride. Unfortunately, there is no official model for sound designers to follow in this situation, but it is something I would like to address.

Even though all of these theories that we've been taught are important, we have to remember to not stare ourselves blind with them. What it boils down to is not our tools and ourselves as practitioners, what truly matters is the audience we are creating for. Emotion rides on the basis of empathy (Ekman, 1973), so the result always hinges on the audience's relatability to the movie context. The key to eliciting emotion is playing off of people's previous experiences. That's where we could use our innate biosocial mechanism. We get to know who we are creating for, learn about them, and put them in hypothetical scenarios until our empathy kicks in. From the reformed focus arises my final selection of research questions:

What sociocultural/experiential factors define a target group? How do we study these factors?
And, how can a sound designer apply knowledge of these factors in a meaningful way?
Replace sound designer with discipline of choice.

The aim of this thesis then, is to begin developing a design framework around empathy. It is directed towards creators ranging mostly within the film and game industry, but stretches to any work with narrative implications. Now, this model would be more potent if we were to apply it earlier in the creation process, especially when talking about films and game making in general. However, as previously stated, that would require effort from many different disciplines to be waterproof. So keep in mind that while this model can be applied to film and game production, it is not encompassing all the knowledge and factors required for specific

disciplines within those fields. Rather, this thesis embraces only the points relevant to film sound and scores, where my knowledge and experience reside.

The model is tested in the audio portion of two pilot episodes of the film web series HYENOR. The episode visuals were completed before the inception of the model, so it presented an opportunity to isolate a singular discipline, and test the model in a post production scenario for that discipline, which in our case was sound design. The two episodes acted as a baseline upon which a gestalt for this thesis could be built. With that, I am hopeful to kindle this topic to life.

1. Previous and Concurrent Research

In this chapter I bring up pieces required to form the backbone of our model, upon which further hypotheses can be conjured, leading up to later chapters where the theories get tested. Here, I mainly recite relevant facts and propose venues for extrapolation, which will be brought up in greater detail in later chapters.

1.a - Sequential Check Theory

Scherer's (2001) sequential check theory claims that emotions are governed by our mind reasoning through The Four Appraisals: Relevance, implication, coping potential, and normative significance. Our brain tries to assess the severity of a situation, based upon these appraisals, sifting through memories and attached emotions or values to events or objects of those memories, after which a new corresponding emotion is, or isn't elicited. This means that a different past will elicit different emotions between people. That does however not exclude the possibility of different individuals reaching the same emotion. A scenario in this case could be a poorly made decision leading to an accidental death at work. As the individuals ponder, their brains scan through memories of related scenarios as well as attached emotions and values to those scenarios. Some may feel guilt, others anger, or even no feelings at all. Between certain people, all four appraisals will overlap. I want to suggest that these common denominators shape the target group and that they're mission critical to this model. Knowing the overlapping points in relevance to the scenario beforehand could give us a better idea of consequently generated emotions, and when knowing the emotion we can manipulate them to higher levels using established music and sound design theories (Murch, 2000; Chion, 1976; Sonnenschein, 2001). Mentioned overlapping points could simply mean shared opinion of something. Luckily, one can find plenty of accessible sociocultural information online to draw upon, such as various social media or Wikipedia and Google Scholar. But there can be times where the internet and our preconceived notions don't immediately contain the answers. It is with the question of what direction to take, that I suggest Sequential Check Theory can help us answer.

Laura Sizer's (2000) research on her functional mood activation theory is also significant. Depending on the current mood of the subject, memories and feelings will be skewed towards certain traits that these moods bring with them. Potentially significantly altering the subjects reasoning and final decision and/or emotion. Being the great mood setting tool that music is (Saarikallio, 2008; Yomaboot & Cooper, 2016), pairing it up with information from Sizer's research presents the creator with a potentially greater control over the intended emotion.

Muk Yan Wong (2016) builds upon this with his mood-emotion loop dissertation, diving into how the two are interconnected and inevitably play off of each other. With the combined knowledge of this theory and our audience's common denominators, we can get a step closer to understanding their emotions. An ideal situation for the sound designer would mean that if we were to reach an initial mood, or emotion, it would grant access to manipulate them both indefinitely, given the right conditions are met.

1.b - Sound Memory

Sacchetti (2010) tested on rats if sound is stored in memory in combination with an attached emotion, and proved that it does so long term. Given the similarity of rats cerebral structure to that of a human's (Chiba, 2015), it is relatively safe to assume this will apply here as well. A sound designer may look through the target group's appraisal-goggles with greater confidence, while working with audio, knowing that what's heard during previous emotional experiences will have been recorded deeply into the audience's memory.

The memories were also strong short term, which in part backs up the theory of musical synchresis (Chion, 1976; Carlsson, 1994), where music couples with relations and characters important to the narrative. There are various other forms of synchresis that Carlsson (1994) brings up, like perceptual and humour synchresis, however these among the others rely more on the innate systems that pre-exist before watching the movie. What makes musical synchresis special to us is its' relevance to the audience's short term sound memory. Pixar, the movie production company, utilises this to elicit sadness in their films (Sideways, 2016). Monsters Inc., and Up, to name two well received ones. The phenomenon begins by playing a piece of music, over a scene which establishes a relationship between two characters. If said scene has a happy connotation, the music in turn becomes imprinted onto this relationship as

such. To trigger the effect, the same music is played on top of a conflicting connotation, including the previously established relationship. For example in a scene with context that goes against what was previously established, resulting in diegetic (Chion, 1976) remorse. The music doesn't belong to one character, it belongs to the established relationship between the characters in question.

Perceptual synchresis refers to how lenient the mind is towards emphasized sounds. Sound designers often hype up movement and objects to enhance its properties for filmic effect. On the flip side, despite the margins that perceptual synchresis brings to the table, the audience can leap a risk of cognitive dissonance (Festinger 1957) if sound design is mismanaged. Cognitive dissonance can happen any time something acts outside the laws of the reality that our subject has created for itself, when it grinds against their core belief. In film terms, it can be when what we see doesn't realistically match what we hear, like footsteps being severely out of sync or misaligned voice over. Other causes can be when an actor/actress goes out of character and doesn't deliver on their lines. It could be seen as the opposite to suspension of disbelief, but in addition also leaves the subject in an uncomfortable state. Cognitive dissonance, alongside the potent sound memory that humans inherit, can create situations where the audience hears and remembers a sound they have previously associated with a completely different context. If there wasn't a purpose behind designing it like this, chances are that the audience will get struck by cognitive dissonance. Therefore it is in the creator's interest to be mindful when re-using sounds that might have been in previous movies, and even in previous scenes in the same movie. A good example of this is the wilhelm scream, which is a stock sound effect that has been heard in over 360 films (IMDB, 2017, 27 Jan). When a duplicate like this becomes apparent it can make the film world feel artificial. Unless the design requires it, making sure that every sound is unique decreases the chance of cognitive dissonance, allowing more time for emotions to flourish.

1.c - Ethnographic Interviews

101 Design Methods is a book that presents a structured approach for dealing with unique situations. One of the modes, know people, contains methods which are designed to find out and learn about your target group. The methods lean heavily towards ethnography, and they aid the user in understanding the values and morals of the interviewed. Thanks to this, it

equips the user with knowledge to more accurately deal with contexts from the perspective of the interviewed. From a sound designer's perspective, having such knowledge could ease uncertainty about design-decisions. A benefit of an ethnographic interview is it builds empathy (Vijay Kumar, 2012), which is also what makes up the core of our model. Therefore, ethnography has been chosen as a prime source of knowledge generation.

1.d - Musical Structures

Willimek & Willimek (2011) write detailed work on the effects that contemporary musical structures have on emotion. David Sonnenschein (2001) touches on this topic as he reiterates various characteristics that music has in accordance with prognosed emotion. But emotion in music can be a deep trench of uncertainty. Apart from the innate human sense of pitch depth, determining physical size, there is very little that humans are born with in terms of shared musical traits. Attached emotions to scales and intervals mostly grow up from culture (Sideways, 2016), raising another point for learning more about the culture, and values of the target group. Previous musical studies on topics relating to scales, structures, and intervals, will be fully endorsed in this model as means of eliciting target emotions.

1.e - Diffraction

Putting the pieces together, the model metaphorically begins to look like light diffraction. The mechanics of the process, how the element of light reacts, finally leading into the various data that get revealed, changing drastically even from small shifts in the grating. "Diffraction does not produce 'the same' displaced, as reflection and refraction do. Diffraction is a mapping of interference, not of replication, reflection, or reproduction. A diffraction pattern does not map where differences appear, but rather maps where the effects of differences appear." (Haraway, 1946). Much like Haraway (1946) and Barad (2007) have used diffraction to illustrate their thinking, the phenomenon permeates our model and the data it is meant to find. Morals and values that make up emotional response come in different shapes and colors, I hypothesise the model to bring those forth, similar to how a diffraction pattern reveals a spectrum we couldn't foresee in the original light. Important to remember though, is that while the generated data may have unpredictable variance, it is not the differences that we're looking for, but rather, we're looking the similarities that would make up our group.

Even then, I find that diffraction paints a relatively good picture of the inner mechanics of our model.

Learning the target group's morals and values unlocks doors to topics and ideas that they embody. Embracing these diffracted patterns is where I propose that we can learn about the building blocks that make up our target group, ultimately building a stronger empathy for them. And so, Scherer's theory of the four appraisals will act as the backbone towards our model, in conjunction with research circulating the topic of emotion, memory, and empathy.

2. Methods - Crafting the Model

This chapter is dedicated to defining the use case for, and the shaping of, the new model. The model is intended to solve a problem which can come in two variations. The two variations are written as questions, upon which the ‘how’ will be explained.

2.a - Defining the problem

- How do I find a target group for my film? (1)
- How do I make a film for my target group? (2)

As a creator, there can be one of two possible entry points to this model. (1): The product is novel, with origins purely from the creators own previous experiences, and audience has not been taken into account. This action consequently forms a brand new group. (2): The governing factor is a target group which the root of the project is built upon. We may not have a deep understanding of this group, but we want to create an emotional experience tailored to them. No example can be made if there’s a lack of both film scenarios and target group, since this model requires at least one of the two. Otherwise it would require an exorbitant amount of both test-scenarios and people to start producing meaningful results. On the other hand, already having *a priori* understanding of both the target group and the film context, would render the model meaningless other than confirming the pre-existing knowledge.

2.b - Core Functionality

In either of the two examples, there is room to find common denominators between people. The first goal is to get the two entry points onto the same track to avoid making two different models. I propose that the appraisals from the sequential check theory (Scherer, 2001), are the Y-crossings required for the task. It is here that the diffraction method can be used to illustrate the mechanics of this method. The subject being diffracted is our interview group, consisting of multiple random (1), or like-minded (2) individuals. Placing them in the hypothetical scenario forms the beam of light. The scenarios would be either taken from

within the movie in question (1) , or hypothesized scenarios (2). The grating slits act as the four appraisals, with results being moral choices and values of the interview group.

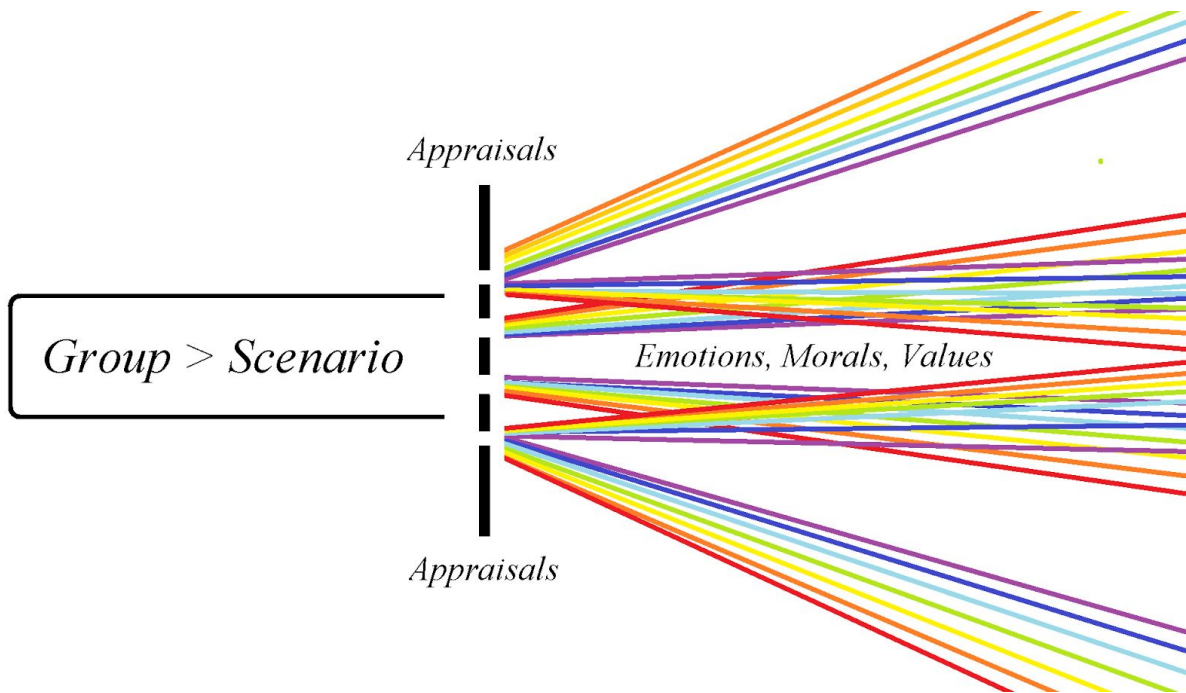


Fig 1. Basic Illustration of the method through light diffraction.

In other terms, we ethnographically interview people by giving them a scenario, and have them consciously appraise the situation based on the Sequential Check Theory (Scherer, 2001).

Sequential Check Theory defines a process that normally acts autonomically in our body, but in the same manner that Scherer describes this process, we can do it consciously. Just like breathing is an autonomic process that we can bring into our consciousness and control at will. It is what's generally called manual breathing. One might therefore call our skew as a 'Manual' Sequential Check Theory. The main strength of this approach lies in the exploitation of the sound storage tank that is deeply rooted into our memory (Sacchetti, 2010). Tests also showed stronger emotional response from stimuli triggering auditory memory, than from visual memory. This makes the method not only potent, but also more reliable. Since this practice extracts a function out of our subconscious, answering these questions should feel natural. One advantage to extracting this process from subconscious to conscious reasoning is that we can record information on why a certain emotion is reached,

rather than just recording the emotion. The grammatical structure can be refined to the creators liking, but below is the line of questions I compiled:

- Is this scenario relevant to you or could you move on without caring? - **Relevance**
- How hard would this event impact you? - **Impact**
- How well could you cope with this situation? - **Coping potential**
- How would you normally want it to be? - **Normative significance**
- Facing this scenario, what emotions rush through your body? - **Emotion**

Finally, the data is recorded alongside age, sex or any combination of possible metrics of the interviewed that the creator may deem relevant to its' project. After establishing scenario and asking these questions, finding the target group comes down to one of the two starting points. Either, (1): identifying what types of individuals connected similarly on appraisals from the scenario, or (2): identifying what scenarios your group unanimously connected to. The resulting data consists of attached emotion to displayed scenario. Below is a hypothetical example case for entry point (1), followed later by how to apply it to entry point (2).

Film scenario: *(A leader of a construction project has made a decision causing a worker's death accident.)*

Metrics	Appraisals
Name: Morty Age: 34 Sex: Male Profession: Accountant Skill of profession: Moderate Moral compass: Righteous Personality: Compassionate Social Status: Family man Religion: Atheist	<p>Relevance: High. Morty may not know what an Engineer is, but the decision is heavily associated to Morty's moral compass.</p> <p>Impact: High. Leaves a mental scar, creates grief for the victims close one's.</p> <p>Coping potential: Moderate. Morty has the ability to speak to the victims close one's.</p> <p>Normative Significance: Negative. The scenario would label Morty as an indirect murderer, which strictly goes against his beliefs.</p> <p>Reported Emotion: Guilt and Anxiety.</p>

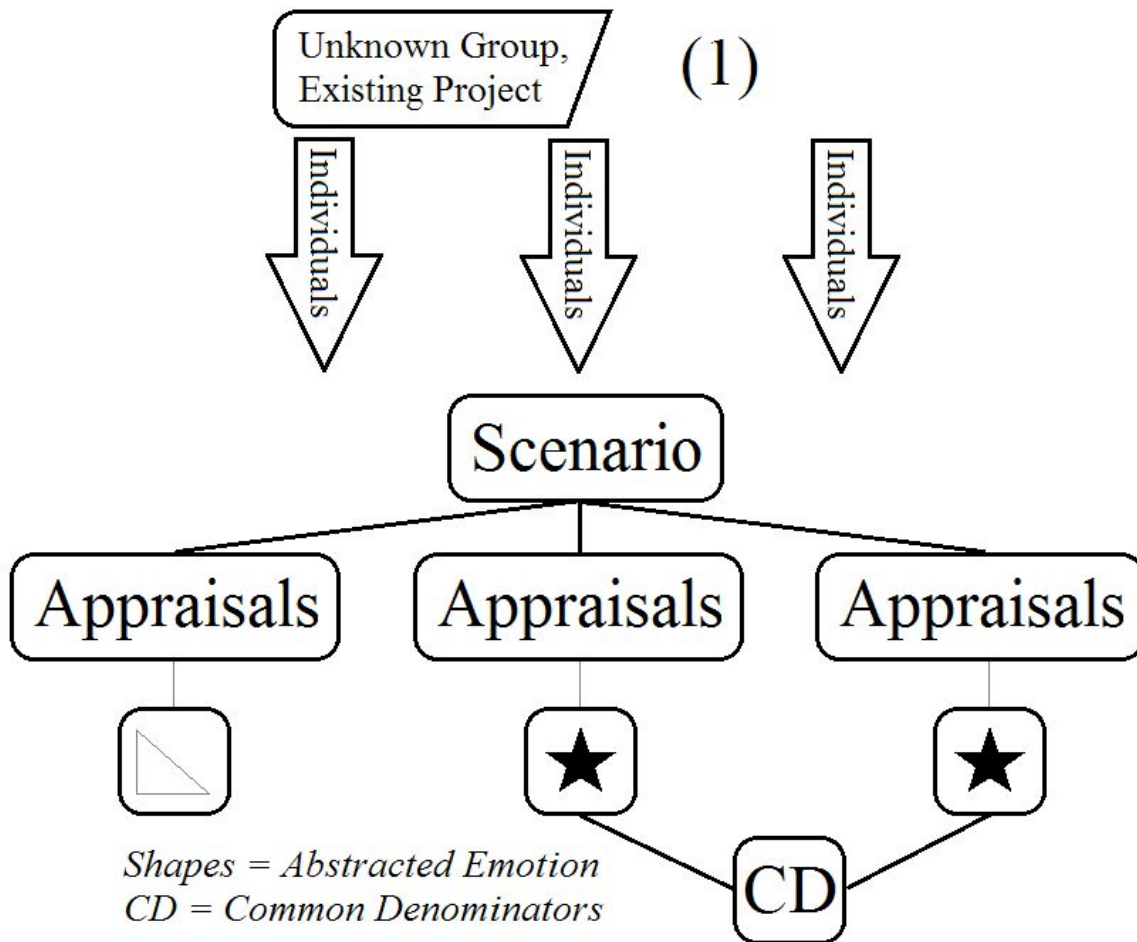


Fig. 2 - Rough illustration, possible hierarchy of the first entry point.

What happened here is two of our hypothetical test subjects reported the same emotion. This data alone prepares the creator for upcoming design decisions. For example, picking the right style of music, or drone to set the mood, is now not as much of a guessing game. The fact that our subjects may be different to the core doesn't change the fact that their bodily reaction to the context is similar, a reaction the designer has the power to further manipulate. Before we go deeper, I'd like to make it clear that there is an almost infinite number of "target groups" one could imagine. And rather than endlessly chasing one, we just created our own "phantom group" based on meaningful scenarios of our own movie or game. The group could simply be described as people who will enjoy the narrative. Embracing the plot context as intrinsically shaping our target group, eliminates the potentially endless search for a compatible target group, and a shift of focus can be made to sounds correlating with the context. More on that later.

The procedure for entry point (2) is similar, but without any content to go by, it requires a bit more prework. Adding more scenarios allows us to find the right type of context that our audience craves. The hierarchy looks different from Figure 2, where it's intended to illustrate that all three subjects go through each of the scenario. The interviewing part is the same however.

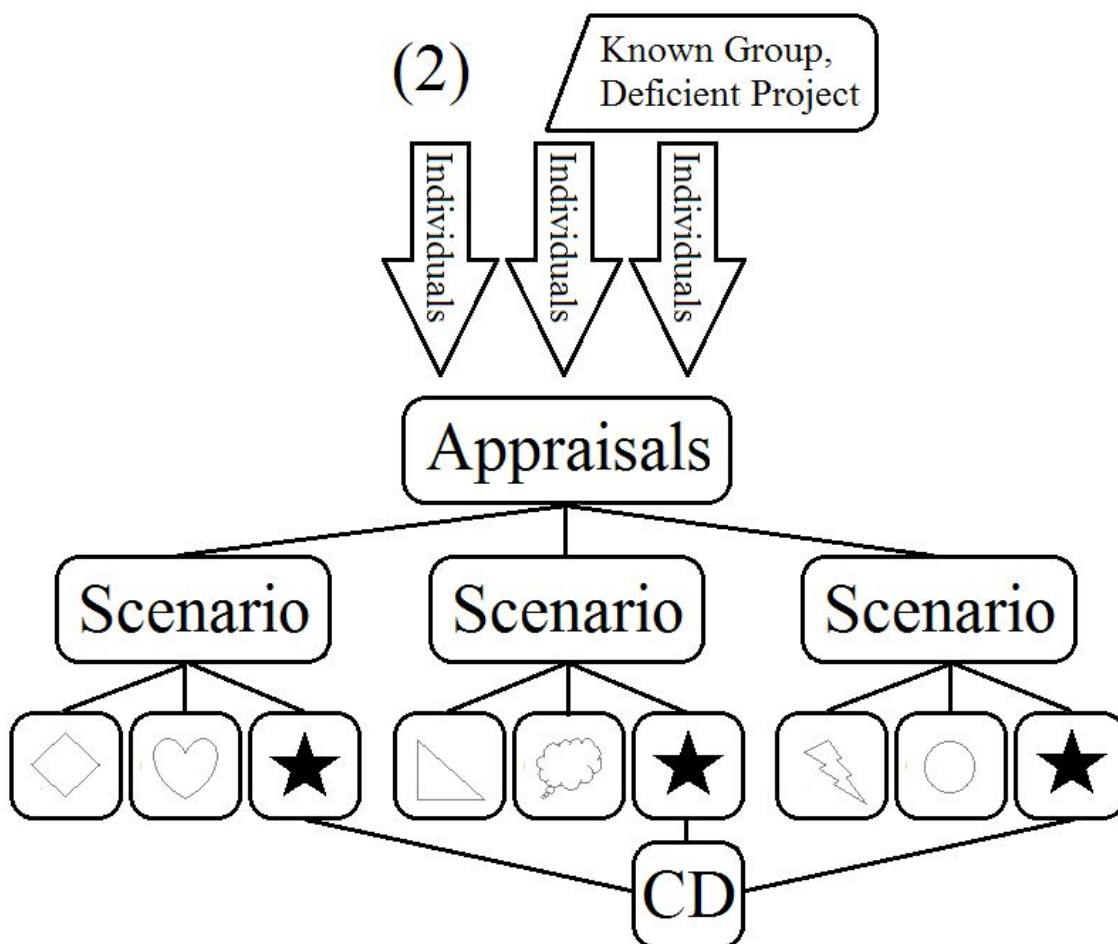


Fig. 3 - Rough illustration, possible hierarchy of the second entry point.

These shared emotions are the first usable points of data generated by our model. There can be a shared emotion by multiple, considerably different people. Apart from the emotion, the common denominators (CD) between this group of people are the shared metrics between them. At this point, both entry points have arrived at the same type of data. While the data on reported emotion alone may have helped the creator with decision making during design, the

model so far hasn't actually contributed to elevating the emotion above the initial potential levels.

2.c - The Hook

Ever since early days of audiovisual cinema, when the creator knew what emotion it wanted to elicit, established music theories like ones by Friederich Marpurg (1718-1795), Cross & Morley (2008), and the like would often be relied upon. While I endorse this practice, I suggest that it's at this point that we can go beyond. And that I believe, is in the sociocultural metrics we recorded for each individual. After finding common metrics between the individuals with shared emotions, we can begin looking through our own *a priori* repository of culture and social norms. What metrics contributed to them reacting this way, religion, social popularity, physical condition? When a link has been found it opens up a different avenue for learning about your target group. Direct knowledge, from indirect sources. Rather than tunneling onto the people of the group, we can learn the intricacies of their common metrics, what is emotionally hinged within them. For example, if the shared metric is a specific religion, then research about objects, rituals and gestures which brings about emotional attachment can reveal sounds emitted during those happenings. I suggest that it is these emotionally loaded sounds that may push the audience over the edge, into the realm of goosebumps, and the almost transcendental emotional explosion that the Frisson phenomenon describes (Colver & El-Alayli, (2016); Harrison & Loui(2014). That is, of course, if all stars align in every department of production, and all criteria are met sound-wise.

When some shared metrics have been identified, and an emotionally loaded object or belief has been picked within that metric, the model approaches its end. All that is left is to locate the sound and apply it to the film scenario. I would like to suggest that sounds mirroring the action of a fictional character, as well as mirroring the intent of the audience were they to be put in the fictional characters position, may result in a potentially higher emotional response. The simple question to ask would be: What would the audience do in this situation? And pick

a sound reflecting the moral and social intentions, which hopefully are prevalent from the previous ethnographic interview.

As Pixar manipulates conflicting relational messages with music to elicit sadness (Sideways, 2016), audiences should theoretically react in the same way to non-diegetic sound effects planted in a similar way (Chion, 1942). It may not be any different if the relationship between two characters is imprinted with a sound effect instead of music. After all, that doesn't look like more than what Pixar seems to be doing in this matter, planting beliefs and contradicting them. Maybe employing this idea on top of the previous paragraph would increase emotional response.

After one sound, for one scenario in the film, has been found and applied, the creator can repeat the last stage, without rinsing the rest. Now that the target group and its shared metrics are established, the creator would only need to repeat the procedure from the object/belief stage to keep finding relevant sounds to the target group out of the shared metrics.

Would the creator feel an inadequate understanding of the objects and beliefs picked out, Kumar (2013, pp.198) still has one more relevant method. *Cultural Artifacts, leverages the emotional charge found in cultural elements of the group to discover peoples' perceptions traditionally overlooked by other research methods.*

So to recap the model concisely in a step by step format, below is a list:

- Begin by choosing a scenario
- Pick out an interview group
- Interview through the four appraisals
- Pick out people who share emotions
- From these people, find what metrics overlap
- Dig deep into those metrics to find understanding, and potential emotionally loaded sounds.

3. Applying the Model

In this chapter, the model is put into practice in a real world scenario, reflecting one of the problems in question: An audiovisual production, where the sound designer was invited late in the production process. Specifically, the sound design decisions of the web series ‘HYENOR’ were influenced by the model.

HYENOR was a film web series that I had the pleasure of working on as the lead sound designer. Like it generally goes, my work began at the filming stage, when the vision, story and tone had already been set in stone. A live example of the aforementioned problem, where audio got no more than a minor focus during the ‘sonically muted’ writing. I want to reiterate that this is not to put blame on anyone, but rather to mirror Thom’s (1994) sentiments, encouraging involvement of audio much earlier in the process, to potentially boost narrative impact of the film. In any case, the director never specified a target group, which puts us in the first entry point (1) of the model. As per formality, our goal first becomes finding out what our target group is, and then work from there.

3.a - Scenario

I chose a scenario from the second episode, involving a climax of tension. It was picked specifically for its’ properties of moral implication. Who to prioritize? I hypothesized that a scenario of a dilemmatic nature such as this is what would grant greater clarity, were opinions to split. This is the scenario that was given during the interviews.

It goes as follows:

A group of apocalyptic survivors surround a seemingly innocent person and conclude that the person might be a danger to them. You are one of the group. Your group starts moving aggressively towards the innocent person.

3.b - Interview

The chosen interview group consisted of people from three different locations and social circles to decrease potential effects of bias. Even with such measures, the model requires a greater number of participants to develop data integrity. Important as social circles could be, specific ones may be too small of a factor for production teams to consider in design, in comparison to the bigger outreach that is often intended for their films to encompass. However, this doesn't stop our case from being an indicator to discuss, so it should be treated as such, and less as a proof of concept backed up with rigorous validation testing.

During the interviews, I noticed that some people tended to extrapolate further than the information that was given through the scenario. This skewed the results since the conditions were altered from one person to the next. In the following interviews I therefore implemented the following extra paragraph of info before giving out the scenario: *The context isn't deeper than the information given, try not to extrapolate to find the answer. See them more as a heat of the moment, search your feelings type of answers.* After the implementation of that paragraph, the remaining people's interviews got more concise. Again, due to the insufficient number of interviews, the data quantity is too low to verify if the questions are received consistently between people. But to give the model a chance to evolve, continuing from this point on, discussions involving interview data will be assumed as well founded.

Below are excerpts of the interview results.

Metrics	Appraisals
Name: Erik Place: Karlshamn	<p>Relevance: Yes, but he could go on and forget if it meant surviving with his group.</p> <p>Impact: Very High, It would be something he'd be thinking about and maybe even regret.</p> <p>Coping potential: Low, Depending as well on how the group wanted to handle the "threat".</p> <p>Normative Significance: High, There should be a better approach than grouping together on individuals.</p> <p>Reported Emotion: Fear, Discomfort</p>

Metrics	Appraisals
Name: Emil Place: Gothenburg	<p>Relevance: Yes, no particular reason given.</p> <p>Impact: High, Because it is about survival, especially when an innocent person's life is at play.</p> <p>Coping potential: High, A natural leader, therefore believes he could avert the mishap</p> <p>Normative Significance: High, Human instinct will prioritize itself and its' group. Naturally go into defense when feeling threatened. Believes we could solve many conflicts by talking about what we feel and think first, to find a common ground.</p> <p>Reported Emotion: Adrenaline, Anxiety</p>

Metrics	Appraisals
Name: Phop Place: Gothenburg	<p>Relevance: Yes, If he's part of the group he can't walk away</p> <p>Impact: Low, It doesn't affect him much</p> <p>Coping potential: High, He's pragmatic</p> <p>Normative Significance: High, Stopping them, make them listen to reason, detain the person, depends on apocalypse. (an intelligent unanimous decision)</p> <p>Reported Emotion: Adrenaline</p>

Metrics	Appraisals
<p>Name: Ted Place: Karlshamn</p>	<p>Relevance: Yes, He is an empathic person so he couldn't just look away. At the same time it is a post apocalyptic world meaning survival of the fittest. He feels it's hard for himself to abandon the kind human nature.</p> <p>Impact: High, No particular reason given.</p> <p>Coping potential: Conflicted, 'Hard to say', but he would've tried to get the rest of the group to reason and think before acting.</p> <p>Normative Significance: High, In one word, prejudice. Wanting the group to not assume evil at first thought. Cautiously evaluate the situation and person, conclude after that.</p> <p>Reported Emotion: Helplessness & cowardness(Fear), Anger, Remorse</p>

Metrics	Appraisals
<p>Name: Stuart Place: Scotland</p>	<p>Relevance: Yes because he's "chicken shit".</p> <p>Impact: High, Might cry, not in front of the group though.</p> <p>Coping potential: High, he could handle it for a while, but it would likely haunt him for a long time.</p> <p>Normative Significance: High, most satisfying would be an intelligent reasoned unanimous decision, but emphasizes that survival of the fittest laws apply. You may not survive without the group which makes you do things you wouldn't otherwise do in a non volatile scenario.</p> <p>Reported Emotion: Regret</p>

Note the lack of metrics in the left column. Up to this point of the process we did not have any basis to work up from. It is in the next step that we fill this column up.

3.c - Shared Emotion

The one common emotion most people shared was fear, and kinds of that emotion. Ones reported cover the range of anxiety, discomfort, guilt, and interestingly, adrenaline. Now, adrenaline is not strictly speaking an emotion, but a sympathetic body reaction, which spurs in correlation with fear, panic and anger (Panksepp, 2004). The results seem to indicate two major camps, revolving around the fight or flight response. They are also wholly divided by two of the social circles, where people from one circle leaned towards the flight response, fear and guilt, leaving the other circle with feelings of panic, anger, and fear incurred by the adrenaline. Notably, two ended up not completing the questionnaire, due to the lack of relevance and impact of the scenario to these two people. Like the Sequential Check Theory suggests on the autonomic level, the emotional state remains equally invariable when consciously appraising something as irrelevant or impactless. The third camp reported feelings of guilt as well. We end up, largely, with the biggest group representing fear. Second biggest representing adrenaline, even though it is not an emotion, it entails a certain mix of emotions which this context seems to elicit. For clarifying purposes, continuing from this point on, I will call the groups by the names of the Fear Group, and the Adrenaline Group, respectively.

3.d - Overlapping Metrics

Out of the countless different possible variables, only one of the compared traits stood out consistently across the fight or flight split. What defined the groups was leadership qualities, or lack thereof. The adrenaline group was made up of natural leaders, whereas the fear group consisted mostly of feelings of indifference towards leading.

3.e - Choosing a Sound

In the scene from the film we used in our interviews, the character *Sebb* is in fact the person we replaced with our interview group. What happens in the next moment of that scene is *Sebb* stops his group from attacking, talking them into reason. The peak action however, is so sudden that no time for reasoning is given to the audience, making *Sebb's* true intentions irrelevant. So because there is no time to consciously appraise the situation, the

audience is left in the hands of the subconscious, autonomic system that the Sequential Check Theory describes. It is around, and during these limbos that I propose the sound designer to have untapped power of manipulating the resulting kind of emotion, and the resulting strength of that emotion.

It is now time to pick a sound, reflecting the intended morals of the action, were the audience to be put in the fictional character's position. At long last, the subjective decision-making required as a sound designer is back in full swing. With that said, I assumed a shorter length sound would best accompany the action in picture. Starting with the version for the Adrenaline Group, an iconic, unforgettable sound is the leather whip. It reeks with dominance, and consequently establishes control for the user. In comparison to *Sebb's* action, the whip echoes the stopping action, and adds ferocity to give him a greater amount of perceived control. While leadership doesn't have to come with a negative connotation such as fear, there is always a form of control, to some degree. With this reasoning, I elect the sound of a leather whip to be mixed into the existing audio during *Sebb's* action, for the Adrenaline Group.

With the Fear Group, I couldn't identify a clear connection such as the whip. Fortunately, music can be by the film maker's side as a tool to enhance emotion. To tackle this particular scenario I chose to follow Sonnenschein's (2001) compilation of theories on characteristics that music shares with emotion: First table being *Acoustic Expression of Emotional States* (pp.108), second being *Harmonic Intervals*, (pp.121), third being *Music-Story Relationship* (pp.175). Noting that our audience feels fear and anxiety, and that the scenario implies conflict, lastly that the resolution of the scenario is sudden, the tables guide us to the following sound signature: *Tumbling downwards progressions, mainly in the lower register* (to mirror the characteristics of fear), *in minor second* (to paint the uneasiness of anxiety, and mystery of what is about to happen), *with a dissonant climax* (to enhance conflict resolution).

The design decisions throughout the post production of the two episodes were guided by the model. Note that this whole chapter is influenced by the two episodes from HYENOR, which is wholly what our gestalt is based on.

4. Duscussion

The following segment is dedicated to discussing the situation in and around the industry, in relation to our research questions. It will be used as a platform to discuss the theories that were just hypothesized, but in a broader perspective.

4.a - Purpose of the Model

Factors that define a target group, and how we study these factors, has been a large portion of this thesis. But the sound designer did not get as much attention. How does one transform this generated knowledge of target group factors into sound design decision making?

There is no real guide to that, and the model's purpose is not to make decisions for the sound designer, but to indicate and advise. To help the sound designer, which was already technically, theoretically, and practically capable of making decisions, to make even better ones. To help tune decisions closer to the chord that strikes with the audiences emotions.

The nature of the model makes it difficult to talk about the sound design aspects in a manner which respects a lower threshold of audio knowledge. That would hold unequivocally true to other disciplines making use of this model as well. It doesn't stop anybody from using this model though, and even a complete novice following the model could end up with a great result. Anybody can tell you if it sounds or looks good, but not everyone can tell you why it does so. Because of the disparity of technical and theoretical knowledge between the experienced and the novice, there may be cases where the experienced has a wider spectrum of decisions to choose from. There may therefore also be a disparity in how much the model affects the available decisions and to what degree. It may seem fallible, and it probably is to some degree, but the most concise answer I can give is as follows: By trusting our subjectivity and experience.

4.b - Perfect Solution Fallacy

Looking back at the earlier chapters, the sentiment was that this model could solve an industry problem for audio. I'm beginning to realise however, that this model is not a solution

to any problem, and is merely an attempt at alleviating the symptoms of audio getting the back seat. The topic is broad enough to make it potentially impossible for one single solution to exist. I believe however, that the strongest contender is what Randy Thom (1999) suggests, and that is involving audio much earlier in the process. While Thom's sentiment is just that, and not an end-all solution, being in such a position would refocus the sound designer to start building the next elevating bit of knowledge, rather than allocating resources on damage control.

Furthermore, we've only included some of all the available techniques and theories to reach higher states of emotion. A model like this may have benefitted from including many more. But realize now, that even if all of the successful theories were to be included in this model, new improved ones may keep replacing old ones, spurring a potentially endless iterative process. Another pressing issue is the validity of the model. The conducted testing lacked in both interview participants, and consequently also an audience for the gestalt. Thereby, there was no data to verify the potency of the Manual Sequential Check Theory, and if it actually suggested the right emotions and metrics.

And that is where we arrive, at an early stop for my grand, hypothesized vision which was an all-encompassing taxonomy of emotions, bodily functions and cognitive reactions for the sound designer to follow. As a creator I don't believe we will ever fully find the one, general truth to always follow. Each narrative will attract different sets of people, and that alone creates a myriad of unique design directions to take, only from that one project. When all general theories fail to help, knowing how to tackle a unique situation can really help, so at least this part of the model we can take with us. Because while the general details may get iterated upon over the years, molding the ever-changing 'truth', any knowledge of approaching unique cases will never become obsolete. Isn't such knowledge a part of what helps us iterating the general 'truth'?

4.c - Future Speculation

With years passing by, computer technology keeps getting closer to unlocking true artificial intelligence (AI). An interesting thought is, could a computer complete human tasks which require subjective decision making, i.e. becoming a designer? How well could a computer

design for another human? If a technology like deep learning gets to the point of limitless ability to store and process data, at some point it would get good enough to replace the human designer. What stops it from going even beyond, by continuously harvesting data?

Ultimately, it should be able to deliver emotional experiences stronger than that of what any human team could ever accomplish. Perhaps in a future age, a more pathological variant of our model could be appropriated for a systematic computing approach?

As AI and deep learning grows even better, we are approaching a future where potentially any individual human could have content crafted and applied specifically for them. The base technology is in fact already in place. Google's Youtube Ads platform picks advertisement videos according to the user's statistics, such as type of videos watched, content you search, and biometrics like age, sex & location (ASL). There shouldn't be much stopping us from arming the AI with 'sociometrics' and 'psychometrics' too.

Because of the unorthodox way Youtube video playback is built, audio is played as a separate stream (h3xed, 2015), layered on top of the video, rather than the traditional approach where audio is baked into the video file. This is what allows their accessible system of choosing different music after the fact. On the surface it doesn't do much more than potentially eliminating the need of a re-upload, but the implication a system like this is of much greater significance. The algorithms and mechanisms that are currently deployed for adverts can be adapted to audio. Giving the creator access to such a tool could allow for customized experiences based on who the viewer is. There are all manner of needed factors that would have to be added to the algorithms, but it seems doable, and is an exciting idea to think about.

Extrapolating further on this thought, future super AI could be armed with up to date theories and tools revolving around film audio and scoring, including even dynamic biometric variables such as the viewer's current mood. Deep learning would successively improve on its algorithms until every scenario was covered. It would be an era where every single view gets unique, on-the-fly crafted audio, tailored for the viewer's most emotional ride yet. Only to be greeted with an even stronger one in the next video.

5. Conclusions

I deem the current state of the model as incomplete, due to inconclusive result data that would've allowed iteration and possibly validation. But at least we can take with us the variable nature that a narrative audiovisual production embodies. This thesis only started to nibble in one corner of many, which even ended up being closer to symptom management than to problem solving.

So, what sociocultural/experiential factors define a target group? It can vary from one project to another, but it's not as simple as shared factors. That only defines a group. What separates any group from a target group for a film, game, or any narrative, is that the factors are directly or indirectly related to the context of the content. Connections of these factors are made based on the film in question.

As for how we study these factors after they've been established, this thesis dealt with the question through ethnography, specifically ethnographic interviews based on our film content, followed by a combination of introspective and extrospective research. Our model followed the idea of learning enough about our target group to naturally build empathy for them, and use that empathy to aid in decision making when creating narrative media. Due to a lack of testing, the potency of this method in regards to audience feedback couldn't be validated. But it did prove to be an effective way to generate copious amounts of data to work from, and provided valuable insight about our target group, were this method to be validated.

Because the sound designer frequently has to make subjective decisions, using empathy as basis for design decision-making suited the model. In the end, the sound designer's workflow doesn't change much since the model is meant to be more of a plugin, rather than an entirely different approach to sound design. The answer to the third question 'How can a sound designer apply knowledge of these factors in a meaningful way?' can then simply be: Trust your gut feeling. These questions are difficult to concisely answer, and may not have one single truth. But I do hope this thesis can stand as a proposal to the possibility of an approach like this.

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Nomenclature

Model:	Referring to the transdisciplinary structured approach that this thesis tries to define.
Creator:	A person which has a part in the production of a narrative audiovisual media, with tasks that may lean on <u>subjective</u> decision-making.
Group:	A group of undefined individuals.
Target Group:	The group which the narrative media is aimed at.
Scenario:	A situation which the <u>individual</u> is faced with, triggering subconscious appraisal according to the theory proposed by Scherer (2001).
Metric:	Referring to biological, social, cultural, religious and moral traits of individuals.
Common Denominator :	Innately shared data within metrics between people with shared emotions from given scenarios. Not intrinsically shared emotions.

Technical Specifications

FL Studio

A digital audio workstation. Used to produce and edit audio for the gestalt. Especially good for its flexible featureset for creating sounds from scratch.

Pro Tools

A digital audio workstation. Used to cut and EQ dialogue. Good for its toolset optimized for film audio editing, especially dialogue editing, in my case.

Zoom H5 + Sennheiser shotgun microphone + 2x Sennheiser lavalier microphones

An audio recording device alongside three microphones. Used to record dialogue and foley during shoot.