Abstract.

This is the first in a series of four papers. The series builds on the premise that design is not a gift but instead are processes that can be learned by anyone. It uses a university class built around observing well known designers and artists to launch a journey to tease out various universal processes and demonstrates how they can be assembled together and applied to one's own individual creative process no matter what one's design specialization. The paper uses examples from my own design career and from my observation of other creatives along the way. At its heart, the paper advocates that as a creative person, one can also design one's own creative process to meet different situation and to continually evolve one's creative self. Part I deals with the adaptable role of prototyping in the design process.

Full Disclosure.

As a sound designer I am necessarily using sound cues for the examples, but the process described is not just for sound design. These are some of many possible universal processes of design and the way they can be optimized.

Innovating the Design Process – Part 1

"Creativity is not an… innate talent you either possess or lack, but it is a "process" people can learn and improve". Attributed to Sir Ken Robinson.

Lawrence Muganga - *You Can't Make Fish Climb Trees.* 2018

For over a decade, I have taught a capstone class to interested BFA and MFA students in their final semester at UNCSA. The essence of this *Innovation & Creativity* class is to watch documentaries and read books about other creative/innovative people or teams (creatives) and try to observe and uncover their creative/innovative processes and assess what aspects could be useful to bring into the student's own personal innovative/creative process toolbox. The class includes such creatively diverse subjects as Black Mountain College, Twyla Tharp, Andy Goldsworthy, Evelynne Glennie, Marina Abramovic, Louis Kahn, Gerhardt Richter, The Vignellis, The Eames' and Cai Guo-qiang amongst others**.**

The structure of the class is to watch the documentary and read the assigned chapter, then come prepared for class discussion. The students also write their own notes while watching and reading and send them to me beforehand so I can better target my questions (and know they have done the work). I originally developed the class for students in our conservatory here at UNCSA, in order to give them a much wider perspective before we unleashed them upon the unsuspecting outside world. It also serves to give them practice in the skill of *'stealing like an artist'*, to continually add to and develop their own process after they graduate. I purposely try not to use the words *art* or *design* when discussing these processes, as the class is made up of students from many different disciplines including technical majors and management majors and not just designers. Not everyone sees themselves as an *artist* or *designer*, but they do feel they are innovative and/or creative – hence the title. It is, I believe, this myriad of diverse voices around the table from very different backgrounds that give the class its richness.

It is surprisingly hard to observe and uncover someone else's creative process. It is so easy to be distracted by what a creative is doing, what they are making, their tools, their surroundings, their product, whether we think they are nice, smart, kind to their partners/spouses, creative, successful… or not. Observing and uncovering is also especially difficult these days when social media commands our every waking moment. Under social media's influence, we have all been purposefully addicted to casting an opinion about everything – even things that previously never required an opinion. Those opinions don't now require any thought or understanding - expertise or experience - we just have to Like 👍 (or not as the case may be) and move on as quickly as possible to cast the next opinion. The need for this *next opinion endorphin hit* is so insidious and continuous that there is no time for rumination or reflection or any sense of owning the consequences of expressing them. Any flicker of guilt or responsibility is quickly ameliorated by the next Like 👍 with its associated little *high*. Sadly, these days, firmly held opinion seems to trump any depth of consideration, empathy or appetite for ambiguity – the very abilities that are necessary for observing and uncovering someone else's creative/innovative process. It requires observation without judgement and uncovering without immediately moving on.

Observing without judging is a hard thing for anyone to do, perhaps especially students. My process in the class when confronted with "I like…", or "I dislike…" is to always acknowledge it and dig deeper. Why do you like (or dislike)? What aspect did you most like (or dislike)? I also have to train myself to ask questions in such a way that they cannot be answered with either "I like", or "I dislike". Once the student has explained what they meant and have dug a little deeper, I always try to restate their original response using this new deeper explanation and show how this leads to a much more interesting conversation that can now be opened up to the wider group for further discussion. Statements such as "I like", or "I dislike" leave nowhere else for the conversation to go except agreement or disagreement which is the antithesis of observing and uncovering.

Despite these inescapable hurdles, as a class, we discuss the material week by week over the semester. As we slowly dispense with the *drive-by* opinions and push through the *rabbit-hole* distractions, we start to unpeel the layers to uncover and dig into the different process(es) being practiced by these diverse creatives. It is quite transcendent for the class when we start to differentiate the process being practiced from the person, their work and their product. This requires a lot of coaxing and cajoling, and I am very fortunate these days to have some other particularly enlightened members of the faculty team-teach the class with me, especially since the class has recently doubled in size and popularity.

As with any journey, our discussions each year take their own unique path through the same terrain. As we can imagine we don't always uncover and discuss exactly the same process(es) every year. However, despite the slightly different *'way* [that] *leads on to way…'*, what consistently becomes apparent is that it is also hard to observe and uncover one's own creative process(es). The complete concentration on the task that is necessary when we are in the throes of creation, where self-conscious actions and awareness are merged together (as described by

Csikszentmihalyi[1] in *Flow*), precludes any sense of being able to observe ourself at the same time *as if from the outside* and identify the process(es) that we are undertaking.

If we can't easily identify process in ourselves, how can we then add to it or decide to use a different process entirely? There is this maxim that one of the signs of attaining adulthood is recognizing and accepting that other people think differently to us without us wanting to change them - a kind of recognizing and living with difference. Similarly, I believe that a sign of creative maturity is when a creative can observe their own process and change it if they want to or need to. A kind of second order recognition and control – designing design. The Innovation & Creativity class is structed to develop this in the students. By watching and reading they cannot change the way the creatives work, they can only observe them – and learn from their observations.

One of the documentaries we watch in the Innovation & Creativity class is Maya Lin's *A Strong Clear Vision*, (1994). I am particularly struck by the comment she made on the plane while on her way down to Alabama for her first site visit for the Civil Rights Memorial…

> *"[I needed to] come up with a definition in a verbal way before I found a form for it… I need to understand conceptually what the piece is about before I visit the site, because once I visit the site, I tend to start designing"*

In essence Lin seems to be articulating this recognition of her creative process and her control over it. She has to first recognize and then hold herself back from kicking into an automatic mode of design so as to purposefully practice a more considered process.

I personally can identify with this. As one of the designers on a theatre show, I have often been contracted at the last moment to come and help a production out of a sticky situation. This is usually because the previous contracted designer has either dropped out at the last moment or the production has blossomed into something needing a more experienced or nuanced touch. Either way, I have to hit the ground running and my automatic design process kicks in. This process obviously produces credible results otherwise I would not be employed to do such things, but I find it less than satisfying. Like other creatives, I also need my design process to *feed me* creatively so that my *well of creativity* doesn't run dry. Like Lin, when I can, I purposefully choose a different process as I believe a better creative journey always leads to better collaboration and a better outcome.

At this point we should also draw attention to another part of Maya Lin's quote above. She also seems to be saying that not only does she not kick into an automatic process of form finding using (one would imagine) visual sketches and renderings etc., but she substitutes a completely different medium in which to practice this alternative creative process – that of verbal definition. She uses words and sentences – the materials of that new medium - to first prototype meaning and engagement before she finds form for it. We can see this in the documentary as she always

[1] Mihalyi Csikszentmihalyi is a psychologist who conducted a long-term study that used pagers to randomly interrupt creatives while working and report how they felt at that moment. This allowed him to uncover a focused creative state he called Flow.

starts her designs by asking herself "*what does it mean to be…*" a such and such. "*What does it mean to be a Civil Rights Memorial*". "*What does it mean to be a Vietnam Veterans Memorial*".

Every field of design in theatre uses a different prototyping medium than they use for the actual design. A set designer uses sketches, drawings, renderings and models to manipulate and communicate their design. The actual finished set on the stage is not made from any of these materials or mediums. A costume designer uses renderings and fabric swatches, and maybe draped muslin on a body form. Apart from the small swatches of fabric, the actual finished costume on the actor is not made of most of these materials and does not use any of these mediums. Similar statements can also be said for lighting. A gel (or color) is not the light it casts and even these days where the look of lighting can be incorporated into the Photoshop 3D walk-through rendering, the image on the screen is not made of the same materials as that used on the stage. A similar argument can be made for the newest field in theatre design, that of projections.

We can quickly think of some obvious reasons for these different materials and mediums being used for prototyping a design.

- The materials cost less than the real thing.
- It takes less time to use them.
- It can be made by one person.
- It is easier to change.
- It is much easier to transport to designer meetings with clients etc.

However, there are also some less obvious reasons for using a different medium and materials for a prototype. Let's explore some of them.

Over the last twenty-five years, the West Coast design company, IDEO, have been one of the major players in moving prototyping to earlier and earlier into their process of industrial and transformational design. Historically, prototyping was very expensive and required considerable expertise, a product would only get prototyped at the end of the design process when everyone had completed all the changes and decisions. A prototype was used as a confirmation tool of the final design rather than an intrinsic part of the design process itself. As materials and techniques got cheaper and easier to use, people started to realize that they could make many more low-cost *rough* prototypes, so there was potential to move prototyping to much earlier in the design process and to do it multiple times throughout the process. This encouraged the design process to move away from a process of drilling down to a tighter and tighter specification and becomes more of a quick and iterative process based on mockups.

At this same time, another trend was also happening. The clients of these industrial designers were wanting to collaborate more and more and get their own hands dirty in the design process. Gone were the days of contracting a design company and being delivered an end product without any input or confirmation of direction along the way. A physical prototype made out of a simpler material/medium is very different from a sketch or a rendering. I may not be able to draw but I can pick up a prototype of a device that I am supposed to use and see how it feels and how it functions. It doesn't require any previous training to prod and poke something. Presciently, this had been part of the set and costume design workflow for many years before it moved into industry. A model of a set allows directors and other designers to point to things and even move them around and rearrange them.

Additionally, the roughness and skeletal nature of prototypes usually requires a certain amount of imagination to complete. As soon as someone has to complete the prototyped design with their imagination, they have invested part of themselves in that design. They have formed some personal ownership with that design. This can initially be a problem if it is only the designer who is invested in their own idea as this usually leads to resistance to change, but in a collaboration with many people contributing their imagination to complete the design there is now a sense of shared ownership.

As we listed above, rough prototypes are less intimidating. Their simpler materials and sometimes reduced scale are immediately perceived by collaborators as being less valuable than would be the finished product, so they invite being changed and rearranged to the point of even breaking them. When the company IDEO moved the generation of prototypes to earlier into the design process, the prototype also became less precious. It turns out that it is this seeming preciousness of the prototype that is intimidating when a collaborator wants to change something or break it altogether.

For instance, although we assume that it is the reduced scale of a set model that makes it a more collaborative prototype it is really the material or medium that makes it more inviting for collaboration. In fact, the reduced scale can sometimes have to opposite effect. Frank Gehry addresses this preciousness specifically in the documentary by Sydney Pollack, *Sketches by Frank Gehry* 2006. Gehry and his design partner Craig Webb purposefully build their prototype models at different scales simultaneously so as to stop them from becoming an *objet d'art* and too precious to change. Something is obviously less precious if there are many instances of it (think milk cartons) and the different scales of the instances make it even less precious as it is hard for us to assess which scale would be more precious than the others.

It is this potential preciousness of the prototype that discourages client collaborations, so the answer to this issue is to make the prototype out of an obviously less precious medium, hence the muslin draped on a body form or a simple white foam-core or cardboard model. The obviously inexpensive material invites touch and allows for change. The prototype is not just a product, but a whole designed experience for collaboration and the perceived value of the materials and its scale, is just part of that designed experience.

To encourage this collaboration to happen the prototype medium not only has to be perceived as being inexpensive but should also be perceived as less involved and labor intensive. If the prototype is perceived as having taken many hours and a labor of love, then this added preciousness discourages change and therefore collaboration. I see this happen in a subtle way with some set designers. Some of the early prototype models they produce are really rough without much detail and made from stiff white paper. Like their sketches these invite much hands-on collaboration and are constantly changed by the director and design team. Sometimes they are even broken, or pieces discarded. However, by the time we come to the *Meet & Greet* when the set design has been locked down, the set designer presents a finished foam core model with many details – miniature props actors furniture etc., sometimes with the walls and floor of the set rendered like the actual set would be, sitting in a black box model of a theatre.

The set designer has subtly turned their prototype into this precious model like an overly ornate birthday cake that we don't want to cut into. This detailed model communicates 'hands off'. This is what it is, and no more changes can happen as the drawings have now been produced and the shop has already started building the set from the drawings. I have witnessed many a director after this point go back to the model to start to change something because it is not working out in rehearsals and be put off because they start to damage this precious object. What has happened is that the original rough prototype has now been transformed into a confirmatory model (which as noted above) is the end of a traditional design process. Whether set designers realize this is what they are in fact doing or not, we have to admit, it is a masterful move to deter changes that would now be costly and hard to implement.

Rough and early prototypes also help with the designer's own perception and organization of thoughts about the project. They allow them to take the idea out of their head and see it sitting in front of them on its own, where they (and others) can prod it and poke it and change it and rearrange it and look at it from different perspectives. This is another important aspect of turning an idea or a design into a prototype early in the process, it separates the work from the worker. If the prototype gets criticized and changed it doesn't mean that the person whose idea it was gets criticized or their design skills challenged. On the other hand, ideas that have not been prototyped just live inside the head of the originator. It is hard for that person to separate criticism of their idea from criticism of themselves. We all want the cleverness and completeness of our creative ideas to be appreciated by others and it sometime hurts a bit when others try to make them *even better*! So… separating the idea from the person generating that idea by using rough prototypes as early as possible in the process helps designers let go a little, and not take criticism of the design personally.

Another aspect that also helps with this process of separating the idea from the person having that idea is by having more than one prototype. Yes, we are talking about options! The more options that a collaborative team has in front of them (within reason) the less likely any criticism of any one of those options is felt by the original creator. This is in fact the whole idea behind the design process we call brainstorming. Once again, IDEO really pioneered the increased use of brainstorming many ideas at the same time as part of their design process they call their Deep Dive. For a Deep Dive, IDEO assembles a team of people with diverse backgrounds and skills, even sometimes including clients and customers. In the early stages of a Deep Dive, after all the team members have each reported back to the group on what they discovered during the empathy and anthropological research phase, the team then starts coming up with ideas, lots of ideas, crazy ideas, good ideas and bad ideas. Each team member coming up with an idea represents that idea by writing a brief sentence and/or drawing a rough diagram on a Post-it-note. They then briefly tell the others about their idea as they stick the Post-it-note on the wall with all the other Post-it-notes. The Post-it-note becomes symbolic of the brief story behind it – the idea (If we think about it, this is in itself is a form of very rough prototype). By each member of the team coming up with many different ideas as possible and posting them on the wall, they have in effect, started to relinquish ownership of their own ideas.

Actually, IDEO takes this relinquishing of ownership a step further in the next stage of their brainstorming process. Once all the ideas have been generated, the team then groups similar ideas together and distills them into a new Post-it note that now speaks for the group of similar

ideas it represents. This new Post-it-note and associated distilled idea is now not owned by any one individual but is now owned by the team as a whole. As soon as the idea is not perceived as being owned by any one individual, it is freer to be questioned and adapted and changed by the team.

A prototype, being essentially a low value early-stage analogue of the eventual product, is also a way of conceptualizing and theorizing in its own right. It is a different way of thinking that is very much based on trial-and-error problem solving. This aspect is also alluded to in Lin's comment about needing to "…*come up with a definition in a verbal way before I found a form for it".* If we further refine her use of the word *definition* to include theory and concept, then we see that prototyping, rather than just being a search for a product – a final form - is really a trial-and-error search for concept and theory on which to base that form. It brings to mind all those Monet paintings of haystacks. Painting them over and over again in different light and in different weather conditions (essentially prototyping them) could also be seen as a search for the underlying concept or theory of *Haystackness* as well as a search for diversity of form.

We have now added to the list of reasons for a more basic prototype medium. Here is the full list.

- It costs less than the real thing.
- It takes less time to use.
- It can be accomplished by one person.
- It is easier to change.
- It is much easier to transport to designer meetings etc.
- It becomes part of the creative process and not just used for confirmation at the end.
- It encourages collaboration with the client and other creatives
- It requires imagination and personal investment to complete leading to shared ownership.
- It mitigates any preciousness that would discourage collaboration and change
- It takes less time to make… and make again.
- It separates the idea from the idea originator making any change less personal.
- It allows for many prototypes from the same idea diluting the resistance to ownership.
- It develops and becomes a symbol for the group and not just the individual.
- It is a way of thinking. A method of problem solving.

Some may have noticed that I left sound out of the list of theatre design fields earlier on. There is an insidious problem with the current process of designing sound for live drama. What is our prototype medium? "What do you mean?" we ask. "We just quickly edit it on our laptop and play it to the director." Sound has unfortunately cornered itself into a situation of having to use essentially the same material/medium for its prototyping as it does for an actual show and the problems it causes are all too evident. Let me list them.

- The prototype takes as much time and work to build and edit as it does to build and edit a real cue for a show.
- Even when the sound designer is brainstorming ideas themselves before any collaboration takes place, the time/work overhead means that necessary iterations are not as plentiful or agile.
- Because of the time and work involved to get a sound cue to where it can be played to someone else, there is no ability to move a rougher version to earlier into the process of designing.

- Also, the time and work invested makes the sound cue *precious* with (once again) the potential for resistance to change.
- Additionally, due to the time and work involved, it is hard to build many different options with the associated relinquishing of ownership.
- Since this is all done on a laptop that is either owned or being controlled by the sound designer it works against disassociating the work form the worker with its sense of shared-ownership or non-ownership necessary for equal status collaboration. A director is not going to prod and poke our laptop!
- Also, since there is no sense of it being a rough early prototype and different from the end product there is now no room left for a collaborator to complete the rough prototype with their imagination thereby buying into a shared ownership of the creative process.
- Whereas a director or other designer can pick up a piece of the foam core model and move it themselves, the sound designer has to do the edits for them and play back to them the altered piece. In this role, the sound designer is now acting as a sound technician/engineer - a *functionary* working for the director or other designer and not an *equal* designer collaborating with them.

All these issues are caused because there is no apparent rough prototype material/medium for sound as there is with the other design fields. Or is there?

Think about the IDEO brainstorming process detailed earlier. The Post-it Notes contain words or short sentences or rough diagrams which remind the other collaborators of an idea, a thought or a concept that was contained in a short story or fact that they were told when the idea was first presented and stuck on the wall. It is not the Post-it Notes that are the rough prototype medium, it is the words and the concepts and thoughts encapsulated in the story behind those words that are the real medium. The Post-it Notes gives the ideas presentational persistence in front of us and also allows those ideas to be moved around and rearranged to make sense (problem solve) but they are just the vehicle for the idea using the medium of words. Look again at Maya Lin's quote above, she says *"[I needed to] come up with a definition in a <u>verbal</u> way before I found a form for it"*. Why verbal? Why words?

We are now eight pages into this paper, and I am about to state what may be the obvious. The universal shared rough prototype material/medium for all creative collaborations are… words.
Words = ideas = concepts = theory behind practice.
Let's look at the Pros.

- *Experience*. We all have a lot of experience using them (unlike draping muslin or editing sound).
- *Agreement*. There seems to be a general consensus of opinion about what each word represents or means in context.
- *Many Choices.* If there is poor consensus on what a particular word means, there are plenty of others to choose from with potentially greater consensus of shared meaning.
- *Adaptable.* They are easily changed and rearranged to help develop an idea or even completely change the idea.
- *Collaborative.* They allow for a two-way dialogue between collaborators (whereas, not all collaborators may be skilled at altering or re-draping the muslin or editing sound).
- *Imagination.* Words allow room for imagination to complete the picture.

- *Low cost.* Words don't cost anything more than the original time and effort of acquiring them and don't require any specialized equipment.

In fact, if we are honest with ourselves, each creative collaboration starts out as words anyway. The first designer meetings for the shows I get to work on are usually held around a restaurant table with the director and other designers discussing the script and the possible directions that our particular production could explore. All the design fields seem to intrinsically understand that these early creative explorations need to be… conversations using words. Let's for sake of argument call this use of words to discuss ideas a *pre-prototype* material/medium. Now we can clearly see that the process of putting on a show goes through the stages of universal shared pre-prototype using words, then into each field's own specific prototype material/medium, then into their own specific build material/medium finally culminating on stage in front of an audience.

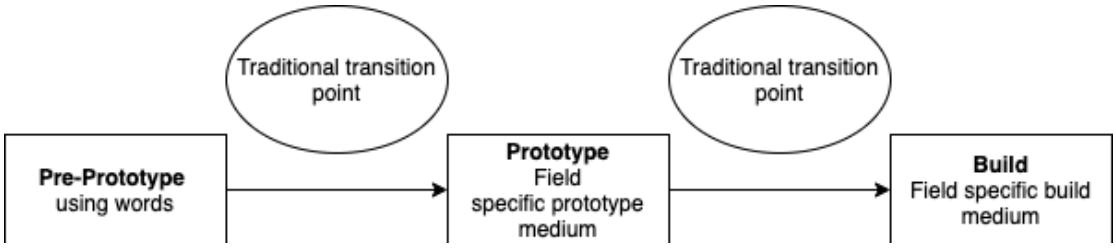

Fig 1. The stages of designing a show.

If we now go back and reconsider the innovation that IDEO championed with respect to prototypes as discussed earlier… we see that far from inventing the prototype or the concept of prototyping, they essentially unlocked it from its traditional position at the end of a chain of events - as part of a confirmatory process - and moved it earlier into the actual design process. IDEO's innovation was to have the creativity to see something that was thought of as fixed in sequence and move it around for better results.

With sound design (as discussed earlier) there does is not seem to be a readily available prototype material/medium that is different in any substantial way from the build material/medium, so the pre-prototype material/medium has to transition directly into the build material/medium. But where does that transition usually occur in the sound design process and can it be moved for better results? Traditionally the transition happens very early in the sound design process. I see this very clearly with our educational student productions here at UNCSA. By the time a director can take time away from the rehearsal process to devote to the sound designer, they usually expect to be listening to something and not just discussing it.

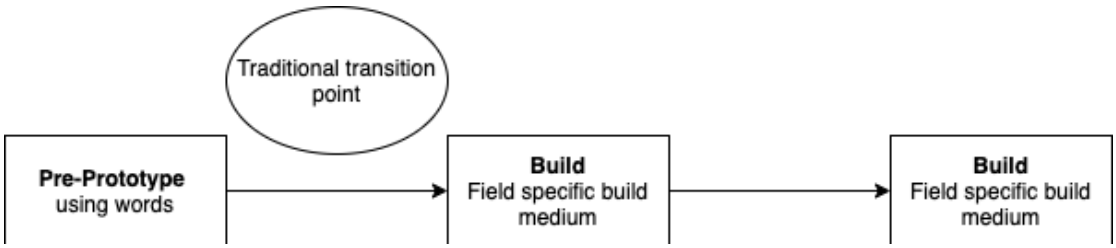

Fig 2. The traditional transition point from prototype to build.

This problem seems to be exacerbated unintentionally by stage management. Once rehearsals start, until the point where the director wants to meet and listen to something, the only communication from director to the sound designer (who usually doesn't get to be resident at the theatre until designer run) has usually been through rehearsal notes such as *"Bottom of Page 57. The director wants the sound of a car pulling up on Tyler's exit."* As a teacher I have witnessed communications like this from both ends. In rehearsal the actor asks… *"So why does my character exit at this point and not later?"* and the director muses out loud… *"How about if you hear Aunt Joan's car pull up outside, would that motivate your character to exit?"*. The student SM hears this and writes it down as a statement of fact in the rehearsal notes. By the time the student sound designer reads it, it is an instruction and has lost any sense of a request for exploration and collaboration. The student sound designer then spends countless hours building and perfecting the sound cue of a car driving up only to be told when playing cues to a director that… *"Oh! That was solved by another character exiting first"*.

Thankfully, the more expert SMs that I have worked with professionally usually change notes like this to something that encourages the continued design collaboration… *Bottom of Page 57. The director wants to explore the sound of Aunt Joan's car arriving or something else to motivate his character to exit. Can you discuss with them?"*. Or actually better still… they usually leave it out of the notes and email me directly to give me a heads-up as they realize how difficult it is when a designer is not yet on site.

As we see above, the point where prototyping sound with words stops and changes over to recording, editing and building real sounds cues is usually determined by receiving a rehearsal note and not anything to do with an optimized design process. What IDEO really achieved was to move the placement of prototyping and make it rougher so the creative process could stay in the prototype phase longer because of all the benefits we have already discussed. So, the question now becomes, how can we extend the prototyping process of sound design using words, with their inherent agility and shared meaning, before it has to transition to actual sound? Afterall, seen as part of a big picture process, the transition to recording, editing and building real sounds should really be more like a confirmation phase of the process (like the pre-IDEO use of prototyping) rather than part of the creative phase.

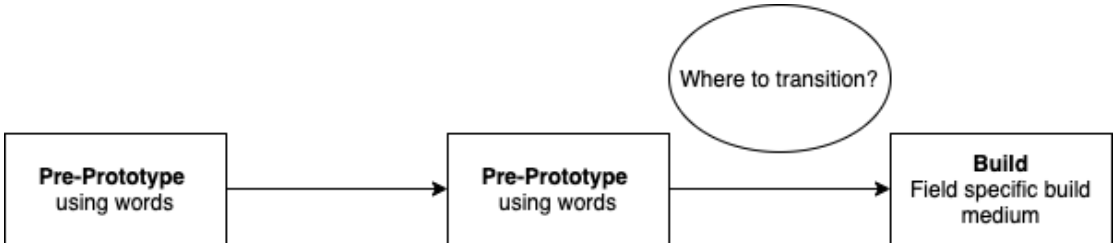

Fig 3. The optimal transition point from word based prototype to build.

I have discovered that there are two approaches to extend the prototyping process using words and they both have to be done together to be successful. The first is to fully embrace manipulating words as part of our own personal design process as well as when collaborating

with directors and other designers. The second is to always respond to anything such as a rehearsal note with words and not with sounds. Simple really! Let's explore each more fully.

Let's dispense with the second approach first as it is easier to understand. As a designer we always need to develop a separate channel of communication with a director that does not involve any production or management personnel. Think about it. We have been contracted to imagine and explore with the director and be creative, whereas the role of production and management personnel is to lock things down into a thing or list or sequence that is achievable and within budget. If we are working remotely, this separate channel of communication can be done using private messaging, or private groups on social media, or email, or videoconference. Whatever the method is, it should really not include any production or management personnel. As with all creative processes, we need to allow some really wild ideas to survive for a while even if they could never be achieved in the harsh light of day in order to make the leap to new original ideas that could be achieved. Any form of editing from the outside at this stage is usually the death knell to any true creative ideas.

Of course, if we are on-site, we need to cultivate some face-to-face time. We need to grab lunch with the director or buy them a coffee or have dinner with them or meet them at the bar afterwards. I am not saying we should never be in the rehearsal room, because we should if we can. But remember, in the rehearsal room the directors are wrangling numerous actors, stage managers and dramaturges, while going through their process of creative form finding with all eyes on them. It's like being a Plantagenet King on their wedding night, everyone is in their bedroom watching to see if they can perform! The pressure on the director must be enormous so their bandwidth for collaborative creative reflection and rumination is usually severely reduced. Yes, they are discovering exciting opportunities for sound as they stage the play, but the rehearsal room is not usually the place to discuss them leisurely and expansively. Also, there are usually production and/or management personnel there within earshot which may lead to curtailing an idea before it has been allowed to go on a creative journey and arrive somewhere unique and achievable. (Please don't misunderstand me. A good Stage Manager is worth their weight in gold but is not necessarily beneficial at this stage of prototyping process using words).

In short, we need to develop a creative relationship with the director and other designers that has its own private channel of face-to-face or remote communication. With this in place, any rehearsal note about sound should produce an immediate communication to clarify or explore further, or offer up other ideas – in essence to keep the prototype in the form of words and also to keep it fluid and agile – and not let it harden into fixed recorded/edited sound cues.

Now, don't get me wrong! We do need to sometimes play sounds to a director, but these are better if they are not potential sound cues. Sometimes I ask my questions by playing them sounds or music. Questions like… is this the *grittiness* you were mentioning? Does this embody the *purity* you were seeking? In fact, I usually have a few diverse examples and the questions follow the form of *"Which one of these sounds most feels like the [whatever descriptor] you talked about"*. It's like those Ice Cream stores that give out little scoops to taste before you buy. Sometimes we just need to get them to taste a few different ice creams before we can figure out the taste they are looking for!

Let's now return to the first approach I mentioned above as this is going to take some explaining. What I mean by fully embracing manipulating words as part of our own personal design process is that like Maya Lin, we need to develop a process that we totally understand and can freely adapt. A process that we can retreat into, that consistently produces results and that is easy to practice even when the *muse* is not close to us on that particular day or with that particular play or production. In such, we need a resilient process. Without a resilient process in place, we will not be able to keep the prototype in the realm of words.

Ever worked on a new play with the playwright in the rehearsal room? What sometimes happens is that the director and actors come across a difficult bit to stage or act and instead of continuing to dig deeper to overcome it, they ask the playwright to change the words to accommodate this impasse. Even when the playwright agrees to this, it sometimes takes them weeks to change even the simplest sentence. To change a '*the'* to an '*a'*. At first, we may think this is pretentious or part of a power play on their part, but after we read and stage play after play after play, we come the realize that the script is actually this beautiful intricate machine. I like to imagine it as this massive unbelievably complex kind of Antikythera[2] mechanism with many interlocking moving cogs, levers and dials. As with changing a word in the script, if even the smallest cog or lever is changed or replaced the mechanism will not work as well and may stop working altogether. I imagine it as even an order of magnitude more complex than this as the machine changes over time (the length of the performance) with groups of cogs and levers sliding out the way and others taking their place only to slide back into place before the end. There is an elegance and fluidity to this choreography of complexity that is easily destroyed if changed

To continue with this metaphor, the machine is not the story of the script, the story is whatever the dials are displaying moment by moment. In the traditional Form vs Content metaphor this would be the content. What is the machine behind the dials? That is the way that story is being told. The form of the story. The same story can be told in many different ways using many different kinds of mechanisms behind the dials – many different forms to communicate the same content. The underlying role of sound design, or indeed any other production element in a show, is to help tell the story. Clearly, the story can still be effectively told without any of these complex production elements, with just actors on a bare stage.

I witnessed this myself in 1988. I was on the Royal National Theatre's 'world' tour of Sir Peter Hall's *The Late Shakespeares – Cymbeline, The Winter's Tale and The Tempest*. After a stint in Moscow, we were due to play next at the Tbilisi Opera House in Soviet Georgia. To cut a long and interesting story short, the company flew to Tbilisi but our trucks with sets, lights, costumes, wigs and makeup and sound/music never arrived. Eventually the actors and musicians had to perform in their everyday clothes with some borrowed items on an essentially bare stage. These were some of the most electrifying performances. Without the gorgeous production elements that they were used to, they just acted their socks off instead. Now… we are talking some very good actors, Sir Tim Pigott-Smith and Sir Michael Bryant (both sadly passed), Geraldine James, Shirley Henderson etc. The point is that the story still got told, but just using the mechanism of the script without any of our production elements being added to it. In case you are wondering what happened to our trucks. They hightailed it out of the Soviet Union through Yugoslavia (as it was then), as halfway down to Tbilisi their fuel was spiked, and they had to rebuild their

[2] Ancient corroded unknown complex mechanism artifact from Greece.

carburetors in the middle of a desolate military highway. We were told after the fact that apparently the Russians did not want the Georgians to get to see *their* show! Whether that is true or not it does make for an interesting *Crime on the Orient Express* kind of story.

This difference between the story and the way it is being told is the reason that I have had a lot of difficulty over my years of teaching using traditional methods of script analysis. It turns out that even if the students understand and master that particular method of analysis (and some of the methods are really insightful) it doesn't seem to help the student design sound for a play. At best it provides an after-the-fact justification for what was already their opinion as, having completed the script analysis, the students would still choose the same or similar sound cues. Most of these published methods of script analysis are really meant for actors and directors to find character motivation or changes in tension over time between the characters. The job of sound design is not to muscle-in on the acting and steal out from under their feet what the actors are already contributing. That is probably why their method of script analysis is actually of little use for making creative decisions about sound. We help tell the story that the actors are acting out. These are two different things, but they are not often taught as such.

Over the years I have developed and perfected my own unique way of analyzing how the story is being told. In the second paper in this series – Innovating the Design Process Part II - I will show how I have grown this unique way I have developed into a whole process for designing sound and composing music cues that keeps it in the agile low effort prototyping realm of words until the last possible moments when it has to become sound.

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