

Chapter III

Steps of Design

The question posed in this study was, How is creativity integrated into the design process of apparel textile designers? The steps of design that were found were acceptance, analysis, definition, ideation, idea selection, implementation, and evaluation. (Figure 1) The themes and findings of this study of the weaver and the costume designer are presented as they relate to the design process model of Koberg and Bagnall (1981) and the creative performance components of Amabile's (1988) model.

Acceptance

In this step of design we examine the reasons the designers were motivated to work on a project. For both the weaver and the costume designer the produced items began with a goal. The goal of the weaver's work was determined by a goal of making gifts, custom-fitted clothing, consignments, and items to sell. She suggested that "It isn't from a absolute need to paint (or another activity)...(but) I need some pictures for the wall, or I need to give gifts, or something like that....(With) my quilting, again it was, I want something for this wall. I want something for my bed, and go from there."

The weaver described a goal of making a gift in these examples;

...It isn't from an absolute need to paint (or other activity), as, "I need some pictures for the wall." Or, "I need to give gifts", or something like that.

...Occasionally as I said somebody asks for something. My daughter called the other night and asked for a baby blanket to give as a present.

...I did a scarf on the loom and that was a present, a Christmas present. I had a person to give a gift to and I decided she'd like a scarf, mittens, and a hat.

At one visit the weaver was knitting white socks with red toes that were for family Christmas presents.

In spite of stating she only made something for a specific need, many times the weaver expressed a more intrinsic motivation. The weaver had to have something to do with her hands. Her creative activities included, "a lot of quilting and all sorts of just basic handwork." She had the ability to talk to people while she created. She knitted a gray vest while participating in a weaver's guild meeting, and did hand-sewing on a woven jacket during the interview. The weaver said, "People would come visit me, instead of

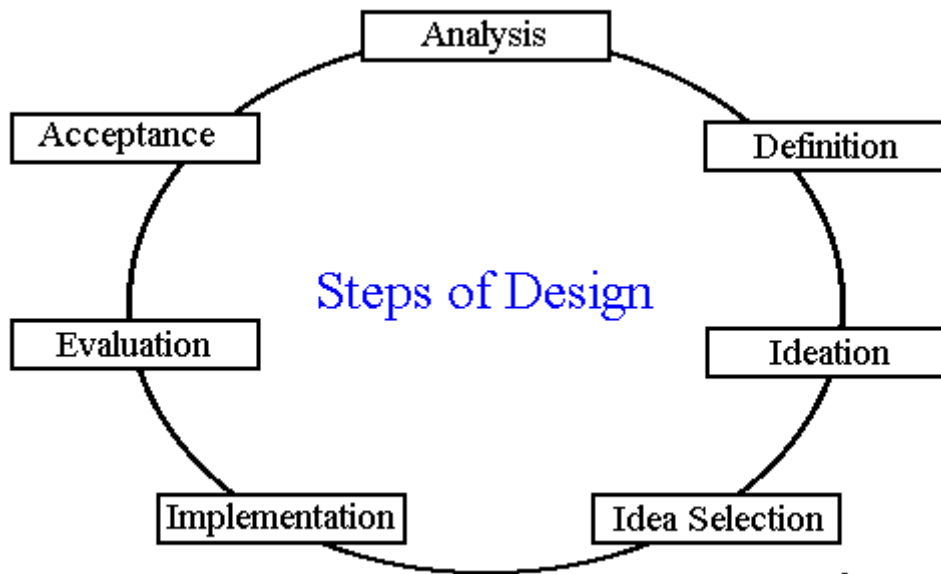


Figure 1. A Mapping of the Steps of Design of the Weaver and Costume Designer (Koberg & Bagnall, 1981)

me go visit them so I could work while they were there. I'm not good at sitting around without doing something with my hands."

The weaver had an urge to be engaged in doing. She spoke of it this way:

...getting rid of something that I don't like, is a big thing too. Or that I don't know what I'm going to do with, or it doesn't appeal to me. So I've got to make it up into something, because I can't really just let it sit there...I think it must also be a personality trait. I always think back to that, "Well I started it, even if it doesn't look really good, I think I'd better finish it...maybe it'll be OK when I'm done, now occasionally it's not--period.

The costume designer said, "A designer who's successful has "it" internally, others can work at it and never achieve the desired results." She explained, "It's the sense that what you're doing meets your own standards. If you don't have that sense, that internal sense of "that's good", then no outside validation will give you that." She went on to say successful designers have a strong interest in art and/or fashion and that interest causes them to be tuned into and explore those things more than the average person. In explaining the movement and flow of design in her creative work, the designer said, "I think that's beautiful and I think the world needs a little more beauty, and that's my way, one of my ways, of providing it." Both the designers expressed an urge to engage in the design process.

At one time the weaver lived in Africa. For about five years she sold handmade macramé items, for example jute pothangers, for use as gifts. She described the motivation this way: "The people there when they went on leave had to take something home and there wasn't very much, I mean once you've taken all the other African souvenirs you kind of ran out of things to take and to go back to England." At the same time she spoke of how beautiful it was there and of using any materials that were on hand and experimenting to see what she could make from them. Also when living in other countries she had a goal to make clothing which would fit her family. Her mother-in-law provided her with a sewing machine, and she talked about the goal of making clothes. "When I went to New Zealand, there was truly very little made up. And my husband was too tall...to buy clothing. They didn't sell anything in a tall. And my kids were...little American children... and the clothes you could buy were very stocky..."

More recently the goal was for Christmas presents of a scarf, mittens, and hat for a friend, white woolly socks with colorful toes for family, or a gift for a new baby. "My daughter called the other night and asked for a baby blanket to give as a present...the ones I had don't appeal to her, because she doesn't like that much white or off-white. She

wants more colors. So I went downstairs and I looked and I said, "I have just the thing. I have some peach I haven't even used--and like the baby green and peach. And it's a little girl, and most of her friends and I myself really don't like pink." Many times the weaver will weave two baby blankets at a time--one for a gift and one to sell.

Selling items at an annual arts festival prompted the weaver to produce many of her creations. The annual arts and crafts festival she mentioned was the largest outlet for her creations. The items she had for sale included baby blankets, scarves, woven jackets, knitted sweaters, a lacy black knitted shawl, placemats, and children's vests. She said, "When the (arts festival) is coming or I know that I can sell something, I do try and get it ready, in that I like to pay for my materials. I don't expect to make money to live on, but I like to be able to pay for what I feel like buying--to play with and make things out of. If I don't sell something, it doesn't bother me at all."

Another way of selling was through commission of specific items, such as a gray mohair wool vest the weaver was knitting at a weaver's guild meeting. She wrote, "Have an order for a mohair, wool vest like mine, but in the natural grays I have. Need to blend the two into bats for spinning." Often when an item was made, a second one was made at the same time to be sold or given as a gift. When her daughter ordered a baby gift for a friend, the weaver said, "Have only one baby blanket available so wanted to make at least one more. Will put two on the loom at once so I have one available to give away or sell. Should make another out of the lavender and white I have." So, the weaver's creative work usually began with a goal, though she expressed times of being motivated internally as well. The costume designer's work style was very similar, though the type of endeavor was very different.

Consignments were frequently done on request by individuals. In the past the weaver had sold items through stores on consignment or booth rental. She described the experience like this, "... Have been in several craft/mall situations. I always used to make my money. I never ever lost money on those. I didn't make a whole lot, but I never made less than the rent, and I got rid of some of my stuff. I actually came out ahead, always...The ones where it's consignment and you give them twenty percent or something. I don't go as well as the ones where you pay your booth space, because you don't have to put on as high a price on those." So even the sub-system of selling and gift giving had many variables that allowed for flexibility and variation from one situation to the next. The costume designer's stated her main goal was to create a good show. But the overall goal of the costumes was to enhance the characters and fill the needs of the play. "ultimately whatever you design has to support what's in the script." "What kind of personal qualities do they have that you can help communicate to the audience?", and a

distinction between the characters; "How can you tell which family an individual actor belongs to when they walk on stage? That's where the costume comes in."

So the goal was to convey to the audience the world of the play-its mood and its style.

Is it a comedy? Is it a drama? Is it a fantasy? Are we supposed to laugh and have the costumes help us do that? If it's a non-realistic world, how can the costumes transport us into that non-realistic world? Beyond that you look at the individual characters. What kind of personal qualities do they have that you can help communicate to the audience? And what distinction between the characters can you help the audience clarify in their minds? And this comes into play quite frequently in large cast plays, like Shakespeare, where you have like the Capulates and the Monteques in Romeo and Juliet. How can you tell which family an individual actor belongs to when they walk on stage? That's where the costume comes in--you have the Monteques in one color or style, and the Capulates in he other and it doesn't matter what period you're doing it in.

In ensemble development pieces there is no script, so the goal was to clothe them in things that enhanced the action and helped the audience understand the action--whatever it was. The costume designer said, "If it's a dance piece, you try and delineate the body. If it's a sort of performance piece, you try to help whatever the communication is."

In the final stages of finishing the character's costumes visual details were checked and specific goals were developed. On my first day of observation the designer needed a squeaky boot for one of the lead male characters of a play. Taking three puppy squeaky toys, she listened to the sound of each to determine which one had the most appropriate sound for a squeaky boot. After choosing the "shoe-shaped" toy, the actor put the boot on and the ankle was checked for room, but there was none. They then tried putting the toy inside the top side of the boot. When this idea did not work, the toy was cut open and flattened, but again no success. An other idea was to have the actor hold it in his pocket and squeeze it by hand. As the actor walked the timing and squeaky sound was perfect. Everyone present in the room laughed and agreed, "That's the one!" This example illustrates how the costumes need to support the happenings and action of the play, as well as the visual requirements of a character's identity.

Before the dress rehearsal of the play being produced, the costume designer conferred with her shop supervisor and make-up and hair assistant to determine how to give each character an authentic look. At dress rehearsal the designer checked the details

of each costume to evaluate whether the needs of the script and goals of the costumes were met.

Throughout the process of designing costumes for a play, there were many specific goals met by the designer. She described taking notes on the script, "...so I can make sure to have a costume for everyone who's in the scene. And so that I know based on what's happening in the scene if the costume is appropriate to what they're doing or can accommodate what they're supposed to be doing." An example of this was "...If a character comes in out of the pouring rain he's dressed for it, or not as the context of the play maybe. But you have to sort of keep that in mind. There were a lot of descriptive things in the script about the costumes. And I just make note of those, so that I support that and also don't make choices that run counter."

Other examples of the creative work being influenced by a goal were; the goal of dyeing a blue bow to match Onyah's evening dress, the goal of making a lace ascot to add stage interest to a blouse, the goal of having movement in a dancer's skirt, the goal of a squeaky boot, the goal of adapting and altering rented suits to fit the actors, the goal of making a smaller handkerchief for on-stage in a different color than the original, and the goal of aging the characters and giving them the style of the period of the play through hair and make-up. Of course this was just a partial list.

In the work of the apparel textile designers, acceptance of the problem or task was an important source to their creativity and design process. It was found that for both the weaver and the costume designer, the produced items began with a goal, though both also expressed intrinsic motivations to design. Even though the nature of their work was very different, they both expressed extrinsic and intrinsic motivations to engage in creative activity.

Analysis

The gathering of information about a design problem was a part of the design process of the designers. This step depended on the creative performance component of domain-relevant skills. The designers used these skills to recall and add to their knowledge of their area of designing. The costume designer's work required this more extensively than the weaver, who's first steps centered around preparing the fibers for use and letting the materials determine the outcome. The costume designer's information gathering began with production meetings that were held to discuss the play's goals, including costumes. After these meeting paperwork was done on the script. The designer said, "you do paperwork so you don't waste time designing things that--so you can focus your actual pen and paper time on the task at hand. And so you can do appropriate research, so you know what you're looking for. It really is worthwhile to do

the paperwork...I spend maybe an afternoon on it, on this kind of thing...you've been through the script once, so you just read through it again and make the notes...you know it's basically how long it takes you to get through the script. It doesn't take long and it's really worthwhile to solidify your focus in your mind. It helps huge amounts." This notetaking's purpose was to record planning details and guidelines of the script, as opposed to a listing of initial ideas.

The costume designer used books, such as costume history books, and other research sources more extensively than the weaver, due to the nature of her work. For example when beginning work on an Irish play she stated, "There were many terms-Irish terms-when we did *Dance of the Lunatic*, that everybody had to find out what they were. So, fortunately when we did this I had just been to Ireland, so I had actually a book with pictures of Irish Army chaplains. Otherwise I would have had to research it, but by good fortune I brought that research home with me so."

At other times the costume designer was called to do a play in a period unknown to her. She conducted research to obtain ideas. This research was described by the designer; "I go and do the research that means...if I have no idea what the period looks like...I just go to a general costume history book and get a sense of what the basic line was...if it's a modern period. If there was specific designers I should go look at or specific people who photographed people... if it's a period farther back, I try and get a sense of who the painters were that I should be looking at." The designer goes to books to get a sense of the basic line and to know if there are specific painters, photographers, or designer's to check. The costume designer said, "then I go and do the research, and that means...If I have no idea what the period looks like, I just go to a general costume history book and get a sense of what the basic line was. If it's a modern period, if there was specific designers I should go look at or specific people who photographed people. If it's a period further back, I try and get a sense of who the painters were that I should be looking at." The designer photocopies research materials or gets a book. The designer described her research like this,

I xerox a lot of things if I find I have got masses of books. Some of which only have one pertinent reference in them, I'll xerox from those. Otherwise I'll just bring the books out with me, and bring them home to my workroom and kind of spread them out and try and keep the dogs off them. And then I'll start in with my sketchpad and say, "OK, for this character I'm going to take maybe a little bit of that, a little bit of that, add in something I invented of my own." Try and pick and choose from what you know of the period the things in your mind suit what the audience needs to know about a character. Frequently I will look for something that will give me a sense

of the color scheme. Sometimes it's defined by the play itself or the director. Sometimes you just find something that looks to you like what the play is about. And it doesn't even have anything in its context that deals the play, but these lines, color and texture says "This is what this play is about." You go from research and you don't stop. I mean it's sort of a give and take, back and forth. You may get to one point in that particular design and you know you don't have the missing piece, and so then you'll go back and look a little further and say "Where can I find a clue for what this should be?" Sometimes you don't find it until you're actually building the costume. You think you've found it, but you haven't.

Through the use of domain-relevant skills the designers added to and gathered information for solving their design problems.

Definition

In this step of design the problem to solve or the design goal is defined. This steps entailed the use of domain-relevant skills also. The formal and informal education of the designers gave a base of information on which they could rely on in defining the design problem. In the process of doing this the costume designer did extensive paperwork on the character of the plays. Part of the paperwork was listing the characters and organizing them into groups, for example families. The designer described this saying, "One of the things I do if it's a particularly large show...and when I read that play, I could not keep the people straight--who was who and what was what, and what team they were on, and what the groups were. So the first thing I did was sit down and do that. So I knew who I was designing and who they needed to go with. And that's fairly common with a big show. "

Next each act and scene was described in one sentence, answering the question, "What's going on?". In the designer's words, "This is another kind of thing particularly with huge shows that I do...starting with Act I, Scene I, what it is that happens? Where does it takes place? In one sentence or less what happens. And then who's on stage at that point? So I can make sure to have a costume for everyone who's in the scene."

Also notes were made on functional needs, for example a money bag for coins:

I'll sometimes make notes. For example if one character has to give another character a bag of money, that has to come from one somewhere on the one costume and go somewhere on the other costume. So I'll make notes about a functional thing like that. If a character comes in out of the pouring rain he's dressed for it, or not as the context of the play maybe. But you have to sort of keep that in mind.

A list was made of any unknown terms in the script:

There were a lot of descriptive things in the script about the costumes. And I just make a note of those, so I don't do anything that--so that I support that and also don't make choices that run counter. So this is sort of paperwork. And the reason for it is--one of the things I have students do is make a list of terms used in the play that they don't understand. If somebody is suppose to be wearing a doublet, do they know what a doublet is? If you don't, you go look it up.

The costume designer was self-described as not a planner, and used a plan only as a guide in her actual production of costume, but organizing and defining the play's characters was extensive. An example was the original sketches that were planned for each play character, but were used only as a blueprint. She said, "Sometimes you don't find it until you're actually building the costume. You think you've found it, but you haven't. That happens to me a lot. I very much use my renderings as a blueprint, not as a final print. I feel fairly free to elaborate or cut back if necessary as the thing is created."

Another way a design project was defined was through use of experimenting and improvising with the materials themselves. The materials were used to determine the methods and the end product of a creation. In describing making macramé in Africa, the weaver said,

I had to use what I had available and adapt anything I was going to make to what I had. And that was rather interesting actually...rather than being able to say well I'm going to make this jute pothanger and go out and buy it, I had to adapt. It was kind of interesting. I would make my own beads and make my own ribbon. (What would you use?) Oh, I used clay and wood and just about anything. Bamboo I tried, but it was real hard to cut. So I tried a lot of everything.

Materials were the most important element of her work-- the color, the texture and the "playing" with the fibers, yarns, and woven cloth. The weaver described it as "an experimental thing." An example of this was in dyeing fiber to be blended and spun into yarn, she stated,

I much prefer that it's not one color. But I was getting rid of some dye. The dyepot still had a lot of green in it and I had dyed some gray that was dark and light, and that was beautiful. It was forest green and but it was different colors of forest green. [She was showing me examples of yarn from a basket by our chairs] That was gorgeous and then I just threw that in to get rid of it and the same with this. I poured a pile of dye together and threw that in... See there was the original purple. And I used them together

in what I knitted. I did a scarf on the loom and that was a present...(using) the original purple and then white that I had, blended. So I do a lot of that rather than dyeing it afterwards.

The weaver told of buying cones of gray and white wool and cotton blended yarn, with no idea what she would use it for. She had been fascinated after touching and feeling the texture. We discussed the fabric of the jacket she was sewing and I asked if the yarn used to weave the fabric was silk, this was her answer.

No...the gray and white is a wool/cotton blend that I bought on a cone and it just fascinated me when I touched, and felt, and looked at the little sample that they had on a card. And I said I've got to have some of this. So I bought a couple of cones and when I got it, I still loved it, but I had no idea what to do with it. I must have had it for four or five years. And this is some mohair, I spun when I first started spinning--it's really poorly spun, but the color is wonderful. And again this is the sort of thing that most people would take and card it all together so that they had a real blend, where as I spun a lock of blue, and then a lock of red, and a lock of purple, you know like that, so that I had all the stripy effect. Now I didn't do anything special to get stripy effects, that's what the yarn was like. (After you'd spun it?) After I'd spun it.

The materials were experimented with to discover the possibilities--evaluation of these possibilities helped define the design project.

Fabric was the main material for the costume designer. The experimenting and discovering possibilities was done with silks, cotton, wools and other quality cloth. Sometimes fabric was dyed to achieve the needed color. The designer told of trying to get a certain color of blue to make a bow to match an evening dress.

I was trying to dye the fabric to match the dress that I wanted to make the bow out of, and it was every single color of blue except the color of blue that we needed. And I said, "I can't spend anymore time on this" and then forgot about it. So I am trying once again to dye that piece of fabric the right color. (Do you do a lot of dyeing?) Yes, it's how we get a lot of things to match. We also do it to age modern fabrics so it doesn't look so modern.

In the step of definition the theme of multiple projects at the same time was found. Both of the designers described planning and working on more than one creation at a time. The weaver might be planning how to use homespun yarn in a dress ensemble, while knitting a vest, and weaving baby blankets on the loom. She wrote after spinning mohair wool to begin a vest for a commissioned creation, "Hard work--took four evenings of

about one to one and one-half hours to get all the mohair used up. Probably have more than enough--maybe two vests! Wonderfully soft and luxurious feeling. Less color variation than I'd like. Look forward to starting spinning--will knit as I spin. Must finish light tan to go with orange for a throw first."

The costume designer stated she was thinking about three productions at once, though one was on hold. She had ideas spinning around in her head, but until she had the actual people--after auditions--plus a production meeting they could not be developed. A production also has many costumes which are planned and designed at the same time.

The last theme using a combined approach was using the plan as a guide. The weaver was a self-learner. She described reading a book to learn to do something, but did not follow the directions exactly. "When I want to learn to cook, I'll read a cookbook. When I want to learn to sew, I'll read a sewing book." She also stated, "I have had friends show me things, otherwise I read a book and I figure out how to do things. I can not look at a book and say "Oh yes, I want to produce this," and go out and buy the exact thing they ask me to buy. I very, very, very rarely do that. I will use patterns, etc. in books and things. But generally I choose my own supplies--my own yarns or what ever."

The themes found pertaining to the step of design, definition, illustrated the apparel textile designer's use of creativity through the component of domain-relevant skills.

Ideation

In the step of ideation a designer generates ideas for possible use in solving the design problem. When a combination of task motivation and creativity-relevant skills is present the generation of idea possibilities is increased. The findings in this study for the step of ideation were extensive. For this reason the themes discovered concerning idea generation was mapped and shown in Figure 2. The themes were divided into idea generation from experience and individual process of information.

The designer's own experiences with the design process provided many ideas and knowledge that fed the current creative activity. The weaver's early creative experiences were drawing, painting ceramics, making doll clothes, and pottery. More recent creative activities, other than spinning, weaving, were quilting, oil-painting, macramé, and knitting. The costume designer's early creative experiences were in music, dancing, and art. Later her many years designing costumes for productions had given her knowledge and ideas for designing for present and future plays.

The themes found for this step were experimenting and improvising with ideas that were found in books and other sources, relying on storage and retrieval of ideas, a flow of time experienced, incubation of ideas, and experimenting and improvising with

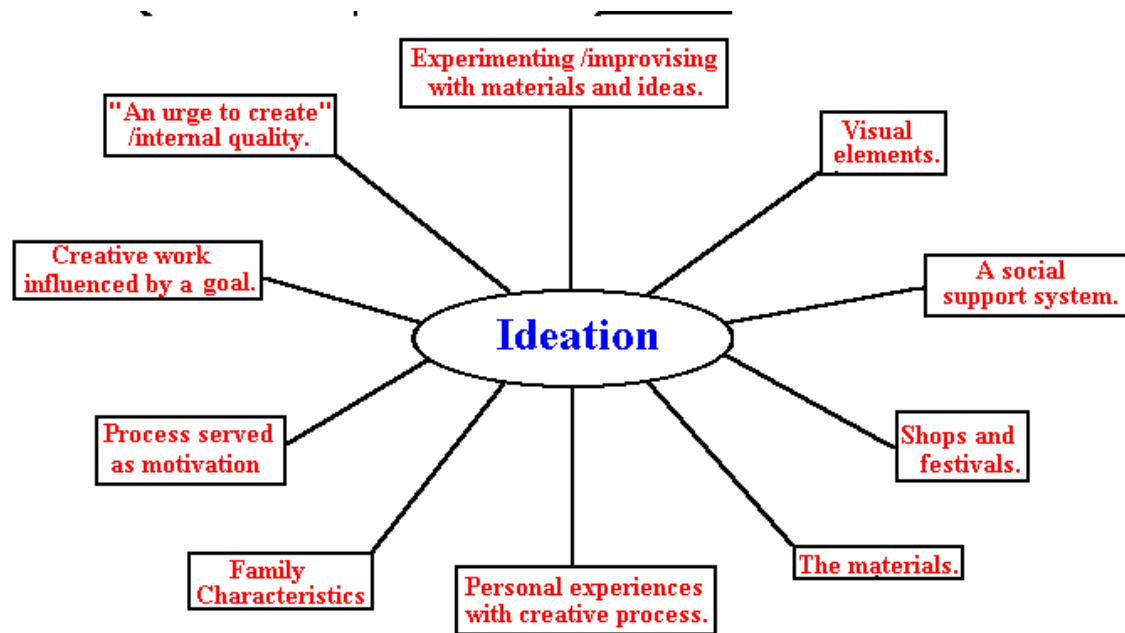


Figure 2. A Mapping of Ideation of the Weaver and Costume Designer

materials.

There were many ways that the designers formed and revised ideas. It was discovered that both used experimenting and improvising with ideas found in books and other sources. The weaver might borrow an idea from a book or pattern and then experiment with the materials she had on hand. The exact pattern and supply list was never used. After spinning a fleece into yarn and discovering it was not soft enough for clothes, she decided to make a rug. "And again I went hunting for a rug pattern, and I found exactly what I wanted, but I made it longer than it was supposed to be. And you know, it was something that I had spent a deal of money buying a fleece that I couldn't do anything with except made a rug out of (it)--I mean it's really harsh...the fibers were really long. It should have tipped me off, but...you learn. And it really wasn't nice at all, other than its color, which was beautiful. Yes, it made a great rug. But see, that's where a mistake led to a rug. To something that I'd always wanted to do" The weaver would take a pattern, adapt it to her own needs, experiment with the yarn, and produce an item not originally planned. The rug was a new variation of a pattern that had an interesting design and was useful. Similarly, she used a book for the design idea for a jacket made from hand-woven fabric, varying the fabric type and colors to suit her own ideas. So experimenting and improvising with ideas found in books and other sources was found to be important to both the designers.

The last theme found for ideation was a social support system. The weaver and the costume designer both had people who encouraged and supported the designer's creative activities. The apparel textile designers both described a background of creative activity in their family of origin. The weaver had family members who encouraged and supported her creative growth as a child. She said, "I really was very encouraged. I was an only child with older parents and an older grandmother. And my parents would much rather do something intelligent with me-and this was before T.V. too." She told of her mother who provided opportunities, "My mother got me into painting and drawing. And I did a lot of ceramics. In that she just encouraged it. She was always encouraging me to make something, doll clothes--either with paper or with cloth...If there ever was a class in the little town...she'd let me go. And she was the one that paid for my oil painting class."

Presently the weaver's husband has been very supportive. She continued saying, "So I had a lot of encouragement as a child, and my husband encourages me too. You know and he's the one that says well, "I really like this picture. I'd really like for you to paint it? Will you paint it?" He always been encouraging. "I want a bedspread." "You know, that's what you should paint next." Things like that...And he's never complained

how I've spent money on things and he's bought me lots of things for my three spinning wheels. You know my loom, but he's very encouraging to me."

A strong influence by example was the weaver's grandmother. She spoke of her grandmother's creative activities: making wonderful quilts, crocheting, and other handwork. The weaver said,

My grandmother did everything by hand, basically. She made the most wonderful quilts. She never threw garments away, she always kept garments for quilts. And she crocheted a lot, and my mother crocheted... But I have samples of wonderful tatting and this sort of thing that my aunts did, rather than my grandmother. My grandmother didn't do tatting. But it's just, I guess, where it comes from.

Exposure to diverse textile activity and encouragement to learn served as a foundation for generating ideas and the weaver's creativity.

The weaver was a member of two groups that acted as a resource for learning and provided a social environment for encouraging and acknowledging the designer's abilities. The regular meetings with other spinners and weavers allow for an exchange of ideas, and information on new supplies. The weaver's guild participated in an annual arts and crafts festival that gave members an outlet for their creations. The spinner's group was an informal gathering for people interested in spinning and knitting fibers, especially wool.

The costume designer's social support system began in childhood with parents, grandmother, and a school and community that supported arts education. She described this saying,

Virtually everybody in my life encouraged it. Both parents were very encouraging to both my brother and I, in any creative endeavor we undertook. They saw very early on, that we had music lessons and dance lessons and art lessons. And I had the advantage of going to an elementary school with a really interesting philosophy for its time and for its place of arts education. It was essentially a mill town...and the school system felt they were responsible for the cultural education of the students. So we had art and music and field trips, and social and other kinds of dancing non-stop when I was in elementary school. I mean we had lots of it! We put on plays--I mean Gilbert and Sullivan. We did MacBeth when I was in fifth grade. So it really was a combination of my family life and the school system which was just...When I look back on it, I appreciate how unique it was--for its time and place, because it really did assure every student of a cultural education. And then music lessons and dance lessons beyond that. Well, it was in those dance classes that I got my love of costume.

Currently her support comes through the production teams for the plays and interaction with her shop manager. During production meetings, she interacted and brainstormed with the producer, director, stage manager, and others involved with the production. As she finalized ideas and plans for costumes, she communicated with her shop manager who helped carry out the construction of the garments and helped with the scheduling of the actors fittings. It was found both the weaver and the costume designer had social support that served as a source for their design processes.

The costume designer described her heritage this way, "My family has some artistic genes on both sides...several of my aunts are painters, and my mother, although she didn't exploit it in anyway, certainly had talent. My brother paints. So we come from a family where there is that impulse, but most have expressed it on really a part-time basis, not on a professional basis." The family provided a background and influence to the designers' creativity.

Visual elements were an exciting source of ideas and inspiration for the apparel textile designers. The weaver's main visual sources were color and texture (visual as well as tactile). She said,

Yes, yes, color and texture are really what I'm interested in, and I've never had any urge what so ever to do watercolors--with the flats and so soft. I admire other people's...any dark colors. I'm not interested in pastels very often. Bright, brights and darks--vivid. I think that's probably more a description--vivid colors, fairly strong colors. I mean I do baby blankets out of pastels, but I almost always put dark with it. Color really does influence what I make a lot. It has to appeal to me. And yet, unlike some people I know who only like certain colors, I pretty much like any of the colors, as long as their strong enough to be interesting to me. But you know, I can't say "I like orange", or "I like greens". I like them all.

The weaver possessed an unusual memory of color. She described it saying,

I really enjoy color and I remember it very clearly. I suppose it was ten years before my husband finally said, "OK, if you say that's the color I'll believe you. I'd go and say this sofa is going to be fine on that rug. And he'd say, "How do you know? You only went in that house once. This is when we bought our first house... "How do you know this tan is the right tan for the carpet?" I'd say, "Because I know." (That is unusual. Most people don't remember exact colors well.) I do. I have a real good color memory. You know , what tone of red is it? Is it a red with a purple in it,

or is it a red with orange in it, or is it a real true red, or is it a peachy kind of--you know there's a difference between the purples--you know there's a peachy purple, and there's a bluey purple.

The weaver also preferred a gradation of color. In talking about coloring fiber, she said, "if you dye your fiber, you get a gradation in color and a, not exactly, a tweedy effect, but something that's not bought off the shelf dye-lotted, one color. There will be variations, and I think that is really much prettier. It appeals to me more. When I have a fleece that has multiple colors in it, I will not tend to weed out the color. You know, make sure that I card it often enough that it's all one color. I will often, I will usually use the variation in color and just let it be." Other visuals included baskets full of colorful handspun yarn, a view of the outdoors, the collection of yarn on shelves, a picture of different kinds of sheep, and an African environment. Once the weaver lived in New Zealand, a country of pastures of sheep and wool. At the time her husband worked as a sheep shearer. The setting provided experiences with natural fibers, a working sheep farm, and provided knowledge and ideas that served to influence her future creative work.

Visual element sources for the costume designer was the beauty of the world, including flowers--their line, color, and form. She used flowers as inspiration, and said, "I had been bringing in flowers to use as examples in my design class, as far as color and form, line." Also from nature, she described sunsets, "Ah, a good sunset does it for me. In fact when we were in our old costume shop down the way, we used to take regular sunset breaks to watch the sunset. (Could you see it from there?) Yes, it was beautiful! So I still will stop work when I'm working on design sometimes to take a sunset break or depending how hard I'm working... a sunrise break. If you're up you may as well look at something pretty, I'd say! But that it's mostly for visual inspiration." She experienced the joy that beauty brings.

Visuals from other designers served as an important source for the costume designer. She said, "certainly art--fine art--is a major resource, a major inspirational resource in every show I do. I invariably go to artists--fine artists, painters, sculptures, photographers perhaps, tapestry artists...for inspiration and it's inevitable. And I find it sometimes in the content of the things, but mostly in their use of color and line and texture--combinations of lines and colors that I think might be appropriate to what I am doing. So that's certainly an ongoing, continual resource." She admitted to relying on other artists and borrowing ideas. "I do rely a lot on other artists. I do have a clippings file for that sort of thing so if I see--or used to, I don't maintain that anymore--but if I was flipping through a magazine and saw some, say graphics design thing that I

found interesting--an interesting color combination, I'd file it away." Many times the designer would use clippings to make a storyboard--a photo collage for ideas of characters, as well as color inspiration. Both the weaver and the costume designer used visual elements as sources that drive their design process. As they conceived and developed their creations, these elements provided influence and inspiration to the overall system .

Another theme of ideation was the materials used to produce the designer's designs. The materials were an important source of elements, such as color, texture, and movement, that inspired, and influenced the design process. Both the weaver and the costume designer placed high emphasis on their response to the materials. When asked where her initial ideas came from, the weaver answered, "I think it's mostly material, although if some, you know it's an experimental thing." She asked herself, "What would it produce? (What the materials would produce?) Yes, what would the materials produce? I can not look at a book and say, "Oh yes I want to produce this", and go out and buy the exact thing they ask me to buy. I very, very, very rarely do that. I will use patterns, etc. in book and things. But generally I choose my own supplies--my own, you know, yarns or what ever. (Is that with color too?) Yes, yes, color and texture are really what I'm interested in." In response to whether the materials affected the final piece, she said, "Completely, it really does! ...Yes, I would say the material is more important than the final product." The weaver had a collection of fiber to spin into yarn. These fibers were of several different types, colors, and textures--white angora, brightly multicolored dyed wool, white and soft alpaca wool, raw white silk, gray variegated wool.

The visual color and the visual and tactile texture of the materials were influences and inspirations to the weaver. There were several examples of this. She described finding the yarn used to make a woven jacket, "this is, the gray and white is, a wool/cotton blend that I bought on a cone and it just fascinated me when I touched, and felt, and looked at the little sample that they had on a card. And I said, "I've got to have some of this." So I bought a couple of cones and when I got it, I still loved it, but I had no idea what to do with it." Also she told of the fleece she bought because of its color that eventually became a rug, instead of clothing. The fleece's beautiful color influenced her to buy it, even though its other characteristics were less than ideal.

Other references to the materials as a source were, "that obviously always makes me happy to use bright color and soft things and nubby things." The weaver wrote, "I found some thin, soft white handspun yarn I had forgotten. I'd finished all my knitting projects and this would make wonderful socks with some added colorful yarn." And "There's absolutely no need to sink a horrendous amount of money on stuff to weave

with. You can buy remnants and ends and find something to with them that's very, very pretty."

The costume designer's material was primarily fabrics. She said,

I'm really into fabric! And love it and really want the fabric to carry the weight of the design. I don't like tricks, you know? I like it to be there in the fabric. I try and get expensive fabric at bargain prices. (You do try to get quality fabric?) Absolutely! And I talk a lot about this with my classes. There is nothing worse than not having enough of the fabric in the costume. If there's a trade-off between buying a beautiful fabric but you can't buy enough of it and a less beautiful fabric that you can do something with? I'll buy the less beautiful fabric, because it's the quantity that's going to give me that sense of richness. And the most beautiful fabric will look skimpy if you use it skimpily. I try to keep in a range. I try to straddle the line by getting the most beautiful fabric that you can afford...You know cheap fabric doesn't move the way you want it to. You can't get it to do what you want it to. You can do a fair amount with cutting to get it to do. But if the weight and the quality isn't there, it looks it.

As a child the qualities of fabric caught the costume designer's attention. In describing the dance costumes for a dance recital, she said, "It was sequiny, satiny type of stuff and I thought, "Isn't that neat!" It continued to serve as an inspiration for the costume designs for productions over the years. She told of the problem of locating fabrics that worked for her ideas, "One of the incredibly frustrating things for someone working at my level of work, is the lack of any kind of fabric that you can call even remotely inspirational these days. Big-time designers go to Europe. Small-time designers on a teensy-time budget, can't do that. And the quality and interest of fabric available to anybody who can't go to Europe is just appalling!"

A fabric's quality and movement was very important to the designer. She described it saying, what she valued was "the way fabric moves in and of itself...I look at the skirts in...(a play) and am so glad they're made out of that beautiful wool flannel, because it moves beautifully. It has the weight and the movement. That's what I value."

A challenge of the costume designer was finding the appropriate fabric for each design and using the necessary quantity of material to achieve the desired effect. She told of the construction of shirts for a medieval play saying,

This much fabric in that one sleeve?" And I said, "Yes, that much in that one sleeve." But that's how much was needed relative to the body, to make the point, about those costumes. And it was, I mean there was a huge amount of fabric in those shirts. But to me every millimeter of that fabric was needed to make the point. Every millimeter of that trim that was on those things was needed. And there was--I mean there was fifty yards of ribbon on each of those costumes. That's what it was. Sometimes you just need it to make a point. And there was a set designer that I worked with at graduate school, who's motto was "When in doubt, make it beautiful." And I think..Yes! When in doubt make it beautiful. And that's what I try to do. When in doubt make the beautiful choice. Pick the one that's pretty. You can rarely go wrong if you do that.

Locating and preparing fabrics (materials) and sourcing shops and festivals as sources for ideas, inspiration, and materials are themes found in this study. The costume designer described driving around to several fabric stores trying to find "just the right piece" for a costume. Due to the scattered locations of the stores much time was spent driving. She described this saying, "And now days I have to drive long hours to come even close to finding anything interesting. If I can...go to G-street, and can afford what I find there...that happened on this show. I went to Mary Jo's...looking for specific things, and it's a horrible feeling after driving that distance, to have to stand in the store and redesign your show--on the spot, because the things you had in mind that you really wanted don't exist. And if they don't exist there, they really don't exist at a price."

Occasionally a specific specialty cloth was needed and it might be ordered by phone. An example of this was discussed here, "you can call and describe--we needed some yellow for a musical we did, several years ago. We wanted to make a set of yellow slickers. Rain slickers and rain style Western hats for this group of chorus girls. So we phoned around to all the fabric stores and said, "Do you have any of this?" And I don't remember who eventually had it, but they just packed it up and sent it to us. So there's not much doubt that that's what you wanted. Say bright yellow slicker fabric. It's not sold. And they either have it or they don't. That was totally not a problem."

Fabric to be dyed was mail-ordered from a California-based company. The designer said,

We get yardage from them all the time...basically white or cream colored. And you can get white China silk in colors. But we usually get it in white

or black, depending on what we are doing, and then dye it ourselves. But their prices are really good and they'll just box it up and send it to you. If you want to pay the freight, but obviously silk isn't that much weight- you can get it overnight. So virtually all of our silk comes from them, because why bother? They don't have much in the way of pattern silk, but if you want just plain silk yardage of any weave, they're really good. And much, much cheaper, even in coming from California.

The next theme found that served to support idea generation was shops and festivals that the designers visited. The weaver annually attended several wool festivals and area yarn shops. She said, "There are shops around that provide for spinners and weavers." She mentioned a sheep and wool festival, a sheep dog trials and fiber festival, a rare breeds festival, and a fair. The Rare Breeds Festival was described, "it is a rare breeds--sheep, goats, rabbits, and alpacas, llamas, that type of thing. Plus a small fiber show, you know things like that to buy. So there are many places to get this sort of thing. She went on to say, "I went to a fair...that is the best fair! Different and unusual crafts, they have singing all day long you know people on stage and you just sit under the trees. You know totally free.... And, it's a wonderful! We drive three hours or so to go to that for a day. We always go. It's a great little festival!" These events allowed exposure to new materials, was a gathering for craftspeople to exchange ideas, and an inspiration to continue creating.

The costume designer shopped many fabric stores to find just the right piece for a planned design and to get inspiration from looking at new fabrics. She described visiting Mary Jo's store,

You conger up this vision of Mary Jo's cloth store, one room schoolhouse kind of--well, no! It's a treasure trouve. And really has been quite a wonderful find...Now G-street has more of certain kinds of things. Mary Jo's has a good selection of wools and things like that. G-street has a wall full of suit fabrics-every printation of gray pinstripe that you could possibly want.

In designing a particular costume for a production, sometimes just the right fabric is hard to find. Many stores may be visited before a solution was found. She described this experience, saying "I couldn't find anything for weeks for that. And then on the same day...I found a piece I thought was almost right and so I bought that. Then I happen to stop by Schoolhouse and they had just gotten in a bunch of remnants that were just the right thing, so within an hour and a half of each other, after searching for weeks

for nothing, I found two things that were absolutely right for the coat. So it's like "O.K. well, now we can make the coat!" But you get a little panic stricken putting off a decision over something that long thinking you're going to find something, and knowing you might not."

In the past the costume designer's fabric stops were along a route traveled cross country. She said, "I could take my whole spring break and just do fabric shopping. I frequently did the bulk of my fabric shopping here. And then routinely on my way driving to Utah, I routinely stopped in Kansas City, which has several fabulous fabric stores and is a logical stop along the way. And finished the shopping there. I frequently stopped in Louisville, because they have a good fabric store." The designers both used shops and/or festivals to gather materials, inspiration, and ideas for future creations.

The weaver's advice to others was, "til I tried it, I really thought spinning was kind of a strange thing to do. Somebody in New Zealand tried to talk me into doing it. She said it was just wonderful and I said that's weird. And so how many years later, somebody left their spinning wheel in my house and said I won't take it back until you've learned. And I did find it wonderful. And it's very relaxing." The work of the weaver evolved around trying new types of fiber, new techniques, and new avenues of selling her creations. In her description of experimenting with various materials used in making macramé, she said "rather than being able to say well I'm going to make this jute pothanger and go out and buy it, I had to adapt. It was kind of interesting. I would make my own beads and make my own ribbon. (What would you use?) Oh, I used clay and wood and just about anything. Bamboo I tried, but it was real hard to cut. So I tried a lot of everything."

As the weaver and the costume designer gathered their ideas from different sources, they relied on their memory to store them--the theme of storage and retrieval of ideas. The weaver stated she just hoped she would remember her ideas. "No, I don't write any ideas down. I'm not a planner. I might mark something in a book. And if I open that book again, I might find it." When asked how she remembered her initial ideas for use later in creative projects, the costume designer stated,

The honest answer is, I don't know but I just do. I don't usually write them down. If it's something that strikes me as useful, I file it away, mentally. My brain is still capable of remembering...unfortunately because I don't write it down and I've seen something in a book, I won't always remember where I've seen it. And that's a bad discipline habit, but I'll remember what it was, I won't sometimes remember where I saw it. But I have no method other than filing it away in my memory banks. And fortunately I have a facility for that, but as far as writing it down, I don't--I don't do that at all.

Incubation of ideas, allowing time for solving problems and contemplating ideas, played an important part in the development and revising of initial ideas. The weaver would spin fiber into yarn and "after it's done it'll sit around for awhile usually, and I'll finally decide what to do with it." She described buying cones of colorful yarn that she loved, but had no idea what to do with it. It stayed in her collection for about four to five years before blending it with mohair wool, weaving the yarn into cloth, and making a jacket from it. In speaking about her collection of yarn, she was very aware of what was there and what possibilities she had for using it in the future. The jacket was the first item sold at an annual arts festival. The weaver collected different types of fibers, wool, silk, flax, and cotton, to spin into yarn. The spun yarn was also collected. In her mind she began thinking of possible uses, but varied lengths of time go by before actually beginning a project. She had a bag of variegated blue, green, and purple dyed silk yarn bought for one dollar and a cone of natural colored silk yarn that was destined to become woven cloth. Possibly, the end creation will be a top and skirt ensemble--but time will tell.

The costume designer used incubation of ideas in a variety of ways. At a production meeting for an upcoming play, the designer brainstormed with others for ideas concerning the production's goals. After a time of discussion and questions, it was agreed that the questions and problems needed time to be solved--to wait for an answer.

A motto of just "going to bed" was used by the costume designer. Through the use of dreams and the semi-conscious state prior to waking she solved problems and contemplated ideas. She stated:

I solve a lot of problems in a dream or a semi-conscious state...and this is a hard thing to convince yourself. The first couple of times that I did it, I thought "This is a fluke". And now I know it's not. If I have, at bedtime, a list of things that are just needing to be decided, or needed to be sorted out, or a solution found to them, I no longer will sit up worrying about it. Because I know if I go to bed, in that time period between my first eye coming open and fully being awake, which is about an hour in my life, my mind will solve all that. And it does, routinely...I'm awake enough to know, to be conscious that process is going on, but not awake enough to interfere with it on a conscious level. And it's, this is what I'm going to do with this, this will work, do that today, I can devote all my waking energy on these things. And it's very useful. So by the time I get out of bed, my day is all solved for me. It's a really useful thing to develop and have faith in. That's the thing--To understand it truly is more useful to go to bed. Invariably it's more useful to go to bed. And your mind will solve the problem for you. I do frequently use things that come to me at full dream state...You have to use your brain in all of its modes.

The planning and fitting of costumes was another time the designer allowed time for solving problems. During the fittings for the current play, it was found that the rented suits for the three main male characters did not fit. This presented many problems and required adjustments to the original plan. The designer needed to think and ponder many ideas to make the suits work inspite of the mix-up in sizes. After a time, she announced to the shop supervisor that she would check the costume storage and have fun coming up with answers--to have the actors return the next day. With time the ideas were explored and the problems were solved.

Another example of the incubation of ideas is prior to the cutting and construction of the costumes. The designer described this saying,

I really try not to have things built unless I'm forced to the wall, unless I'm really sure that that's the fabric it needs to be. And that's another thing that frustrates one's shop supervisors, because they want to get to building it. And you have to say "Are you going to be happier building it and having to rebuild it?" or "Can I take another day or two to think about it?" Because I'd personally would rather not build a thing and then rebuild it again...And frustrating as it is to sit around and wait, ultimately it's more efficient to do that.

A "flow" of time was experienced while the designers engaged in creative activity. This is a time of "an almost automatic, effortless, yet highly focused state of consciousness" (Csikszentmihalyi, 1996, p.110). The weaver said she really enjoyed "playing" with the fiber, yarn, and loom, and spoke of a time when she "had no trouble working at it, ten hours a day." The costume designer designed at night, usually between ten o'clock and two o'clock, though mornings were her preference. This was described as a time after a busy day that she could switch gears, relax, and work in her workroom with no interruptions.

It was discovered that moods and emotion affected the creative work of the designers. The weaver agreed saying, "Oh, I think they do. I think that's why I like strong, bright colors, because they make me happy. I'm very easily depressed by very dark weather--and rain. Very easily depressed in rainy weather that lasts for three or four or five days. Although I like "grays" very much. I always go back to some color, you know? And that obviously always makes me happy to use bright color and soft things and nubby things."

Sometimes the mood ran contrary to what was needed in the design, as the costume designer illustrated in this story: "I was in a job I hated. And when I sat down to

design the show I had just quit that job and was about as happy as a person could be. And I was trying to design a tragedy. Every line that went on that paper and every color that went on that paper could have been "Richard, The Musical!" It's like," No, no, no, this is a tragedy we're doing here." So yes, sometimes when you don't want it, the mood can affect." She also used listening to music or watching T.V. to serve as distraction away from a mood that wasn't helpful to the need of the design. She stated, "I watch television a lot when I'm designing, because at least what ever mood I'm in, I won't notice it. Or listen to music. Whether it has any visual point doesn't matter." The approach of allowing or disallowing mood and emotion to influence work served to feed the process, and acted as a variation on the theme.

The next theme found common to the designers was relying on storage and retrieval of ideas that might be used later in creative projects. Instead of using a systematic form of recordkeeping or journaling, their approach was simply remembering what they considered important. The costume designer said it was a bad discipline habit not to have a system, but she had confidence in her ability to store important ideas in her memory. At other stages in the overall system the costume designer used extensive recordkeeping and note-taking, particularly when planning and organizing the individual character's costumes.

Incubation of ideas was the last theme pertaining to the designers' approach to idea formation in the design process. Taking time to allow thoughts to formulate into ideas and for problems to have an answer was characteristic of both the weaver and the costume designer. The weaver's experimenting with the dyeing and blending of fibers, then waiting to decide how to spin them was an example of this. Often yarn would be spun and kept in her collection for years before a decision was made on its final destination. The weaver said, "After I'd spun it, again it sat around for five or six years before I did anything with it." Also, "I produce the yarn first. Depending basically what I feel like doing with that kind of yarn. I try to make it fit the type of wool I'm using, or the type of silk, and after it's done it'll sit around for awhile--usually--and I'll finally decide what to do with it."

The costume designer's approach was to collect information, take time and wait, having confidence that in the end it used less time. She said, "And frustrating as it is to sit around and wait, ultimately it's more efficient to do that." Many times "just going to bed" was the best method for figuring out the answer to design problems. The designer's extensive use of dreams and semi-conscious state was not shared by the weaver. Using "all the brain's modes" was a holistic approach, tapping into information and ideas that were gathered at an earlier time.

Both the weaver and the costume designer had many ways to gain and generate ideas. The themes found were divided into experiences and individual processing of information. These experiences and the ability to generate novel ideas were qualities that both the apparel textile designers demonstrated in this step of the design process. Their creativity-relevant skills and the level of intrinsic and supportive extrinsic motivation enhanced their use of creativity. Many types of experiences they held in common. They both used experimenting and improvising with ideas that were found in books and other sources. Visual experiences with life, such as sunsets, flowers, and color. The experiences gain through childhood and family of origin, as well as formal education added to their design process. The materials themselves aided in ideas generation. The shops and festivals that were attended supplied materials, inspiration, and new ideas.

Individual process of information included several themes. The described a storage and retrieval of ideas, not recording them in any manner. Each saw the design process as enjoyable and expressed being able to do their work for long periods of time--a "flow" of time being experienced. Both designers used incubation of ideas in a similar way, to give time to contemplate possibilities and to solve problems. The costume designer described an extensive use of dreams and semi-conscious state, but the weaver did not acknowledge this as being her experience.

Idea Selection

In this step of selecting a few ideas that appear most promising to meet the design criteria. Using the knowledge of their domain, each designer tested idea possibilities that might solve the design problems. This showed an example of the domain-relevant skills, a component of creative performance. Several themes were discovered, including trying things. This was used extensively by the weaver and the costume designer. The weaver was observed weaving, where she randomly choose colors to try as she weaves a plaid pattern in the cloth. In dyeing fibers, she tried several combinations of colors, in blending she tried different weights, thicknesses, and colors of yarns together. The costume designer drew original sketches as she looked at the resources spread out on the floor to view. She stated, "it's sort of a give and take, back and forth" endeavor, with a lot of changing and adapting." From several pictures and visual inspirations she tries several combinations of ideas to draw a sketch of a character for a play.

Patternmaking and fitting was another way to try designs and the effectiveness of an ensemble for a character in a play. The costume designer or her assistant would make patterns by draping or flat-pattern methods. They "will discuss what the desired look is and generally who's going to be doing the cutting on it. And then we'll do a muslin mock-up usually, as a fitting shell...we do some draping. It depends. I tend to be more of

a draper, just because for some things it's way faster than flat-pattern. But I do both. We all do both. It just all depends on what we're doing." The sub-system was patternmaking, but multi-methods could be used depending on different needs and various assistants might be used. Also at this stage, fitting problems and design details would be worked-out. This was further described by the designer,

Another theme found true of the designers was an elemental focus on the creative work. The weaver's focus was color and texture. These elements seemed to stimulate the creativity of the designer. She stated, "Color and texture are really what I'm interested in" and "I really enjoy color and I remember it very clearly." For the costume designer the focus was the "flow of the fabric" in relation to the body. She described this saying, "I'm really conscious in my work of the way clothing moves relative to the human body, and the way fabric moves in and of itself. It's interesting because many years ago I heard Misai Miran...and he was talking about I think the pronunciation is "flue"-what he meant was the flow of the fabric around the body. It always seemed like an interesting concept--the flow of the fabric around the body and the fluidity of the fabric just in general. And if you look at his designs you can see the consciousness of the fabric relative to the body. And it's really beautiful. I think fabric in motion and put in motion by body movement is really, is something that fascinates me and I'm very conscious of in my own work."

The costume designer made changes as she worked at every phase of her design process--designing original sketches, finding appropriate fabrics, cutting the muslin and fitting, during construction, and the final fittings. She also described examples of this:

I very much use my renderings as a blueprint, not as a final print. I feel fairly free to elaborate or cut back if necessary as the thing is created. And then if you see something once the costume is on stage, if you see something that you think needs to happen to make it better--you do it. Or don't do it. Mary's first act blouse, that sort of plum-colored one, kind of damask plum, originally the design had like a lace ruffle here in front. And when I saw that blouse completed, I thought that doesn't need that. That additional element would ruin the blouse. When I designed it I hadn't anticipated it being made of fabric that was that interesting in itself, so the element that was to add interest originally wasn't needed in the final piece. And just the little cameo that she's wearing is all that's needed. So I don't feel any compulsion to stick with my original designs if things are turning out a different way that's better. The things I really wanted just weren't there. Sometimes that's really fortunate, because Mary's suit for the first act, that plum wool with the fur on it? That's NOT the color of wool that I went to Mary Jo's to buy. It's the color they had and I thought ultimately it was a much better choice than I would have originally made. And so fortunately...I wish I hadn't been in the position where I had to stand in the

middle of the store and make that decision, but it turned out...that was a fortunate thing.

Another way of experimenting with fabric and the costume's design was in making a "mock-up" of a garment in muslin. The designer told of a dancer in a summer play who was displeased with the way her skirts never moved well when she danced. "I said, "Let me mock-up the skirt I have in mind because I think you won't have any problem with it." And we put it on her and she was just so estatic...it hung down on her body, but when she started moving in it was just very...(great)" Changing until you get the desired effect was the designer's motto. She said, "You change it until it's cut a way that gives it the correct movement. The people downstairs tease me all the time... you know we'll be doing a sleeve puff, and they'll say "O.K. is this good?" I'll get to the point of just opening my mouth and they'll say, "Yes, I know it has to be bigger!" I say "Well, yes."

The costume designer stated it was important for designers to try things and take some risks, to not be afraid of making mistakes. The designer emphasized trying by saying, "Those are the two main things that hold people back. Is inhibition of their own talent and fear of not doing it "right"... the way to get through them is sitting down and seeing what comes out--with your pencil and paper. And understanding that whatever it is, it's O.K." Also in reflecting on the costumes in dress rehearsal she wrote, "This is the most overtly Russian production of this play I've ever seen. Usually the characters of Varya, Semyonav-Pishchik and Yepihodov are more European in their clothing. Doing them so Russian is a risky design choice, but the actors are all making it work."

In the design process of the costume designer, many things were being implemented--new ideas, various techniques of constructing garments, trying different dyes and fabrics, as well as trying different apparel items to create an actor's ensemble--or a "squeaky boot".

Another theme was improvising and experimenting. This activity gave energy and ideas to the overall process and was characteristic of both the weaver and the costume designer. The weaver experimented and improvised with the dyeing of fiber, the blending and spinning of yarn, and the weaving of the cloth. She believed in using materials on hand and adapting when necessary. In weaving a piece of cloth she told of experimenting and improvising until she was satisfied with the results; "I mean once I found the courage to do it, it did work out well. I had not intended to put white both directions in the weaving, but it didn't look good with out it. (So you tried it one way and decided if you like it?) And I didn't go very far because I looked at it and thought, "That's yukky!"

The costume designer's approach to the design process depended on experimenting and improvising to solve the design challenges faced in the production of costumes that

support the goals of the play--the historical accuracy, the fabric choices, the construction methods, the final fitting, and planning make-up and hair. According to the designer, "I like the luxury to go in and tinker." Experimenting and improvising provided information and ideas to solve design problems for both the weaver and the costume designer. Drawing on their accumulated knowledge and skills, the designers illustrated a high level of creativity in the testing and selecting design possibilities. (Domain-relevant skills)

Implementation

The actual production of the work of the designers had many methods and steps unique to each individual type of work. Themes found common to both the weaver and the costume designer were making changes as you go, using multiple methods to achieve the desired results, and a preference for free-form style of working. (Figure 3) The weaver's overall production system was 1) dyeing, blending, and carding of the fibers, 2) spinning fibers into yarn, 3) weaving the yarn into cloth, 4) producing an item by sewing or knitting, and 5) selling or giving the item as a gift.

The weaver stated,

As far as the spinning and knitting is concerned, I produce the yarn first. Depending basically on what I feel like doing with that kind of yarn. I try to make it fit the type of wool I'm using, or the type of silk and after it's done it'll sit around for awhile--usually--and I'll finally decide what to do with it. (Is that what determines the color as well? Do you color it then or do you color it later?) I color it before, mostly I very rarely dye after I've made the garment. If you dye your fiber, you get a gradation in color and a tweedy effect, but something that's not bought off the shelf, dye-lotted, one color. There will be variations, and I think that is really much prettier. It appeals to me more. When I have a fleece that has multiple colors in it, I will not tend to weed out the color. You know, make sure that I card it often enough that it's all one color. I will usually use the variation in color and just let it be. (I never thought about you coloring it ahead of time.) I most always do, in that I prefer what I'm finished with. Now, this is something I dyed afterward and it's so, so really truly colored. I didn't dye it actually. It was purple yarn and white yarn. And I blended it with the carding machine and then spun it. And I much prefer that in that it's not one color...And I used them together in what I knitted. I did a scarf on the loom and that was a present, a Christmas present.

In this example the weaver mentioned all the steps in production of her work: dyeing, blending, and carding the fibers; spinning fibers into yarn; weaving the yarn into cloth; producing an item by sewing or knitting; and selling or giving the item as a gift.

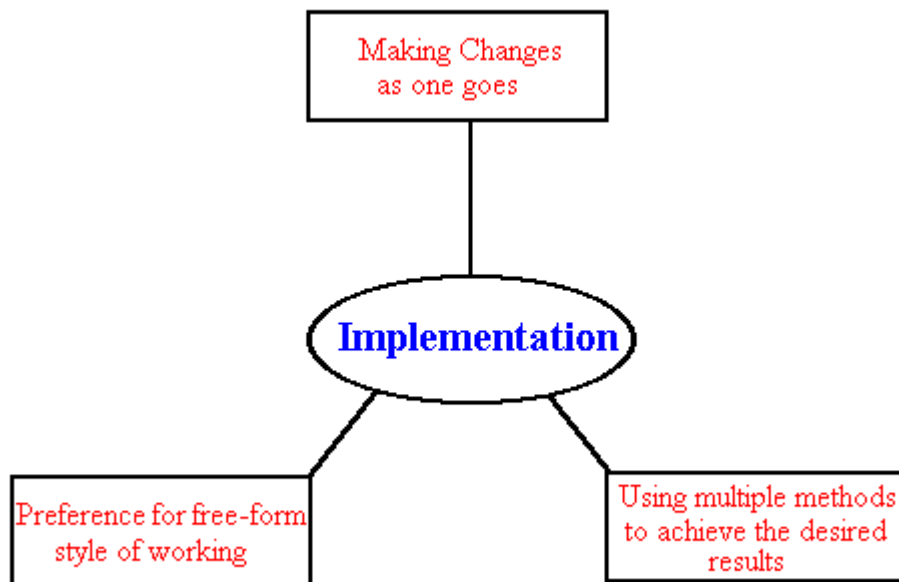


Figure 3. A Mapping of Implementation of the Weaver and Costume Designer

The costume designer's production was different from the weaver due to the nature of the creative work. Her overall system was 1) designing, 2) finding fabric, sourcings, and accessories, 3) patternmaking and fitting, 4) construction, 5) final fittings, 6) dress rehearsal. When asked if she worked using a plan, she said, "Plan, oh what an interesting non-applicable word. Well, yes because of the way theatre is, there's a process. I'm not sure I'd dignify it with the word plan. There is a certain step process that you go through, starting with the play. And once you have a good idea about the overall thing that way."

The first step for the weaver was carding the fibers. The fibers could be various varieties of wool, cotton, silk, or even flax. 1) Fluffing was done by pulling apart the fibers and picking out any "trash". This is sort of like fluffing a pillow. 2) Carding smoothes and straightens the fibers, and was done by hand or machine. 3) At this time the weaver could blend-mix types of fiber. The weaver said she'd prepared a blend that week by dividing and weighing two different types of wool fibers-Gray Englishluster Cross and Raven Mohair--to achieve a 50/50 mix. These were then carded together. So while this general order was followed, there could be variations made on types and color of fibers, and the blending of different fibers in various proportions.

The second step was spinning. The general order of this system was 1) setting up the wheel, 2) drafting the fibers, and 3) packing up work. The weaver was observed spinning at a spinner's group meeting--an informal gathering of craftpersons who spin and knit. 1) She set up her portable wheel by simply unfolding it and adjusting the wheel and cone of yarn already begun, and then joined a circle of spinners. 2) A pile of gray wool fiber was placed in her lap and she began by picking up the end of the strand of yarn already spun on the wheel and feeding more fibers to it from the pile. As she did this she moved the pedal with her foot to cause the wheel to turn. The fibers were fed through the fingers, keeping even pressure with fingers and an even speed of the wheel-this was called "drafting". 3) As the appointed time drew to an end, the weaver said her goodnights while quickly packing her spinning wheel and bags of supplies. There was a general order to the spinning, but it was done in a free, easy manner-talking to others, plus encouraging and giving instruction to a new spinner. Variations could be made in the type and color of fiber used, as well as varying the thickness of the yarn as it was drafted.

The weaving was next in production of the weaver's work. The steps were 1) string the loom with the warp, 2) throw the shuttle, 3) change the colors of yarn, and 4) end work. Within this framework, many adjustments and changes were made. While the warp was done earlier in the week, requiring preciseness and six hours time to set the color pattern, the weft was woven in a less rigid manner, making changes as desired. I

watched the weaver in her studio that houses an eight-harness loom. As the shuttle was thrown from side to side, beginning left to right in a smooth rhythm, the weaver stopped to adjust the sides, color, or length. The edges of the cloth were checked and adjusted. The pattern was studied and measured on the woven cloth. As the weaver felt like using a different color, she broke off the medium blue yarn and changed to a bobbin of dark blue yarn. An overall system was followed, but she worked in a flexible manner and had many choices along the way.

It was found that the weaver and costume designer followed a plan precisely when necessary. The weaver used convergent thinking skills when the job required it, though it was not her preference. She described this saying, "The things I had fun doing were the real challenges. I bought a Vogue pattern for my husband for a safari jacket. Had forty-nine pattern pieces! I hadn't been sewing a very long time...I made my husband's trousers with the plackets and the flaps over the pockets, and the suit jacket had the pockets. (Now, did you follow the directions?) Absolutely!... I did not go to step three until step two was totally done correctly. (So you can!) Oh, yes." The weaver told of a friend, a weaver of beautiful items, who could follow the exact directions from a pattern. The weaver voiced her preference by saying, "Well, that's the only way I'm really happy--if I have a pattern to follow before I get very far along I get so sick of it. I mean I have done a number of placemats and a number of things like that. But I still don't use the right thread or anything. I use what appeals to me or what I have. And I've tried, but I'm not ever very happy--doing it. I'm very happy with the results. Very pleased with my results, but it's always a torture." Another job the weaver had that requires exactness was stringing the loom with warp yarn.

The next step for the weaver was producing an item. Multi-colored scarves, colorful placemats and table runners, a brown wool rug, and soft cotton baby blankets were items that were finished on the loom. In items such as jackets or dress ensembles the woven cloth had to be assembled by sewing. Other items required knitting the yarn instead of being woven on the loom. These included children's brown wool vests featuring a furry white llama, knitted wool sweaters, a lacy black knitted shawl, and jazzy white socks with colored heels and toes. The weaver used an overall production process, but had a great variety of choices to explore and improvise with.

The weaver would plan several projects at the same time, then would work on them in varying stages. The goals of the weaver determined the methods she chose to use in her overall system. The work was started and stopped as she wished. An overall system was used as an order or framework for the creative work, but spontaneous choices were made as the creations evolved.

Construction of the garments began after the basic plan and fabric for the clothing was set. The designer used the help of others (the shop supervisor, guest cutters, and shop workers) to construct the costumes. She said, "For this particular show she did virtually all of the women's things. There was an auxiliary cutter that came in for a couple of hours, a couple of times a week that worked on some of the men's things, but (the shop supervisor) did all the dresses for the show --and I did the dog! On other shows I've cut a substantial portion of it myself. For...(the play) last year, we had a guest cutter who came and did the cutting on the important costumes. So it depends."

The costume designer also used multiple methods to obtain the costumes needed for a production. Different methods may have included draping or flat-patternmaking to trading or borrowing costumes with another college or theatre group. The situation and needs were studied and a plan was implemented to clothe each character in appropriate dress. The methods had a systematic framework (convergent), but the use of multiple types of designing and using flexibility and improvisation within the steps. (divergent) In the end a combination approach was used to create.

The manner that they implemented their designs was to make changes as they went. The weaver changed color of yarn randomly as she went when weaving at the loom. When asked how she worked, she said, "It varies completely. You know if you're going to knit something you need a plan. But when I start out to spin, as I say very rarely..." (did she use a plan). An example described by the weaver was, "I get bored with doing something, say I have two or three scarves or something like that. I will generally vary them, because I'm bored after the first one."

The weaver's method of random weaving illustrated the style of free-form working. She said, "if I'm doing a blanket that I've just randomly made into some sort of a plaid--not a perfect plaid, not a repeat plaid. I'm just as happy as anything just picking up, and "I'm tired of this color now, I'll start another one you know?" When throwing the shuttle at the loom, she didn't "always do it exact." The colors of the weft was thrown in a similar pattern of the warp, but not exact.

The costume designer planned a fitting schedule, but it was non-rigid. As she worked changes and adjustments were made, experimenting and improvising was used to create ensembles and perfect hair and make-up, and time was taken to solve problems. When a problem with rented suits for the male characters developed at the last minute, dress rehearsal was postponed.

As the final garments are made, several fittings are held for the actors. The costume designer described this process, saying, "We do one or more real fabric fittings. And we'll feel free to alter things. On some things, for example on Charlotta's first act

blouse, it's a tailored blouse with pleats in the front. And I tend to just scrawl lines on the sketch and say, "Uhm pleats you know?" Well when it comes to making it, it's "How many pleats you know?" How wide? Where do they end? Where do they start?" So we'll discuss that in the fittings process. How wide are these things actually on these bodies? Because when I do the sketches, I don't necessarily know who the body is --how tall it is, how wide it is. So all I can indicate is, "this is pleats here." How many of them are needed on that actual body to fill that actual space, that gets discovered in the fitting...But there are things that I feel can wait for the body to make the judgment about. And there's some things where I'll say, "Yes, put the trim here. That works." So that's sort of how it happens. And then if you see something once the costume is on stage, if you see something that you think needs to happen to make it better--you do it, or don't do it.

In summary, the step of design, implementation, included the construction or production of the design work. A plan would be used, but changes were made as needed. The domain-relevant skill of formal and informal education was extremely important to this part of the process in order for the creations to be high in quality and innovation

Evaluation

This step, evaluation, occurred at many different phases of the designer's process. The ability to critique the work at any point of the process increased the design possibilities and the quality of the end results. A theme found in this study was pleasing self. The weaver in giving advice to others stated,

You have to follow things that make you happy. Things that when you finish--well, while you're doing them you're enjoying it or you'll never finish it. And when you've finished it you have to be pleased more often or not, or you're not going to do it! So pick something that appeals to you. And something you're going to be happy with when you're done. Not like that lace shawl I did. I mean I'm very, very proud of it. But I never dress like that. So I'm just real fearful if someone will buy it...Because I don't want to give that away.

Most of the time the costume designer had confidence and encouraged other designers to believe in their talents, avoid the fear of making mistakes, and to please self--not others. She encouraged,

Don't be afraid? I think that's what holds most people back. Certainly I see that in my students. Being afraid of making a mistake. Being afraid that

they're not talented enough. Thinking that there's a "right way" to do it; that everybody's talent looks alike. Those are the two main things that hold people back. Is inhibition of their own talent and fear of not doing it "right". And if you can just get through that. And the way to get through them is sitting down and seeing what comes out--with your pencil and paper. And understanding that whatever it is it's O.K. And the only one who has to be satisfied with it ultimately is yourself. I don't, and never have, listened to anybody you know? Because I don't think you can and be true to yourself as a creative person. I think you've got the only person you have to listen to, and you must listen to is yourself. If yourself says, "This is not good enough for me." It doesn't matter whether it's good enough for anybody else or not. It has to be good enough for me. And if it's not good enough for me, then I need to work to make it good enough for me. And when it's at that point, I still don't care if it's good enough for anybody else. If it's good enough for my sense of my own fulfillment, that's good enough for me. And if you get to that point you're lucky. And then if someone else comes along and says, "Oh, isn't that nice!", then that's just icing on the cake. It's got to be, "Oh, isn't that nice!", in your own mind, for you, without that seal of approval. You can't need that as an artist. Though most artist do need it. But you've got to need it as icing rather than the whole cake. Because the whole cake is inside you, and...being able to step back from your work and making dispassionate judgments about it. Does it live up to my own standards? And if it doesn't, having the courage to fix it. And not being content with saying, "Oh well, this is the best I can do!" If you know in your heart that that's not the best you can do, then you need the courage to fix it. It's not enough to throw up your hands and say I can't do any better than that, because I have no talent. "That's silly!...I think--and my students prove it to me all the time.

She ended by saying, "And truly the only person you ever have to please is yourself, unless you're getting a grade. But ultimately as a creative artist you just have to please yourself. And you have to hold yourself to the high standards you set for yourself."

Also both expressed doubt in their own judgment--though not often. The weaver responded at the initial invitation to participate in this study that she was not the kind of person who followed the directions, made sketches, or kept notes on projects. She inferred that she "cheated" by not working in an expected manner. In her words, "I'm

sorry I'm not one of those people who does samples. I'm not one of those people who keeps records of their weaving. We have some photographs of some stuff I've done early on, but basically when it's over, it's over. And I probably don't want to produce it again, but if I did I could remember what I did. But I've probably used up that yarn, and I can't produce it again."

When initially asked to be a participant for this study, the costume designer also expressed some doubt that she was creative. Though later she used the adjective creative to describe herself and her work. She also described a time she questioned her decision regarding a dress design for a play, due to a nightmare:

And then one night I had a nightmare about it. And the gist of the nightmare was that that's way the wrong choice. And I came in just in hysterics, thinking "Oh my..., we're sitting here making this elaborate white dress and it's all wrong and what am I going to do?" And actually the dress hadn't been started yet--I thought it had been started, but it hadn't been started. So I said, "Well, O.K." And I went and talked to the director and I said "I had this nightmare, do we still think this white dress is the right choice?" And he said, "Well, what's wrong with it?" And I explained what I thought was wrong with it. And he said, "Oh, well go make the white dress." So I went down and I said to (shop manager), "O.K., we're going to make this white dress, but we all have to be prepared for the possibility that it's not going to be white dress when it gets on stage--that it may be dyed-not white. And she said "O.K., but we need to do a dye test on all these laces and things that are in this, so you can get a sense of what it might look like if it were all dyed a color." So I said, "O.K. (sigh)." But, I mean that's the kind of thing where it was, "Oh my..., I've just made this choice I've committed everybody to was way wrong. But as it turned out, I don't think it's wrong in the context. But it gave me a moment of hysteria there!

During the design process evaluation took place during many steps. An example of this was the final fitting of costumes, part of the costume designers work. A schedule was made and the actors arrived at specific times to try-on their full costumes. The hope was at this point only minor adjustments were needed, and hair, make-up, and accessories were finalized. It was a time of checking, adjusting, experimenting, and improvising. Notes were taken by the shop supervisor as the designer experimented to assemble an

ensemble for every act and scene of the play for each of the main male characters. Their rented suits had arrived in wrong sizes and the costume designer systematically worked through each ensemble, improvising and experimenting with various pants, coats, shirts, ties, socks, shoes, and hats. Any needed item was listed. After a session with each of the actors, she requested they return the next day. The stage costume manager consulted with the costume designer, planning and recording the dress changes between each act and scene of the play. The costumes were hung on racks, divided for each actor, waiting to be taken backstage. The make-up technician checked on details of make-up and hair with the designer. Some details were being finished on a few of the costumes. Constant activity went on directly until five o'clock, the beginning of dress rehearsal.

Dress rehearsal was the last step in the making of the costumes, because this was the first viewing on-stage. In the words of the designer, "Watching first dress rehearsal, I was surprised by how closely my choices of costume color paralleled the scenic designer's choices, as he and I had never discussed the subject or shared notes or color sources. But clearly we had both been responding on our own to inspiration in the same Russian source material and general art trends of the late nineteenth-early twentieth century. The influence of both the Impressionists, and the more traditional Russian poly-chromatic and religious icon art forms was clearly there in both the scenic choices and the costume choices." Also, she said on more practical matters, "The ladies' skirts are sagging-all now too big in the waist where they had fit snugly a week or so ago. As their bodies have adjusted to the wearing of corsets (and as the corsets themselves have expanded/stretched) the ladies have been tightening the corsets more and more, making the skirts looser and looser. Scarlett O'Hara eat your heart out...But the skirt hooks will have to be moved, or something. Nothing worse than a saggy garment." She went on to note how a handkerchief needed changing, because it appeared ugly on-stage and how a handbag needed to be eliminated for the same reason. The changes were made before opening night, but the procedure continued on even during the week of the performances. Any changes and alterations were continued to be made if necessary.

When asked what advice she had to give other designers, the costume designer said she said, "being able to step back from your work and making dispassionate judgments about it. Does it live up to my own standards? And if it doesn't, having the courage to fix it. And not being content with saying, "Oh well, this is the best I can do!" If you know in your heart that that's not the best you can do, then you need the courage to fix it." Evaluation was used by the designers in this study at many steps of the process. They held a common belief that to be creative you must please yourself, an example of intrinsic motivation and focus.

Summary

The steps of design were used by the apparel textile designers to accomplish their goals. The design process of the weaver and costume designer were different in the specific nature of their work.

Several themes were found in the data for the steps of design. Acceptance included the themes of the process motivating the work and the produced items beginning with a goal. Analysis included the input of others which added to the knowledge base and increased the design possibilities. Definition had the theme of using the plan as a guide and defining the design need. Ideation had themes pertaining to the development of ideas for use in creative activity. They were the experiences of visual sources, experimenting and improvising with ideas found books and other sources, a social support system, the materials, shops and festivals, and the individual process of information by relying on storage and retrieval of ideas, a "flow" of time experienced, family characteristics, incubation of ideas, and the use of convergent and divergent thinking.

The step of design, implementation, included themes of making changes as one worked, using multiple methods to achieve the desired results, and a preference for a free-form style of designing. The themes of pleasing self and a feeling of not "doing it right" was found pertaining to the last step of evaluation.

Thus, the designer engaged in a design process that included the steps of acceptance of the design problem, analysis by gathering information, definition of the problem or goal, ideation, to formulate and develop ideas, idea selection to narrow the design ideas to a few possibilities, implementation of the design product, and evaluation to analyze the results at any given step of the design process. As was shown earlier, the components of creative performance (domain-relevant skills, creativity-relevant skills, and task motivation) were exhibited by both the weaver and the costume designer during their design process.