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# Guidelines for a Costume Designer's Workbench

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**Abstract**

Costume design presents an opportunity to study image search, selection, and use within the context of visual communication. Interaction with images is fundamental to supporting many collaborative design practices. This paper presents emergent guidelines for a costume designer's workbench based on three case studies of costume-related image use during the design and production of three plays. Future work will implement such a workbench and then test it with a wide variety of costume designers.

**Keywords**

Costume Design, Visual Collaboration, Image Use

**ACM Classification Keywords**

J.5 [Computer Applications]: Arts and Humanities--  
Performing arts

**General Terms**

Design; Human Factors

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**Introduction**

Costume designers use images to inform and inspire. These images convey factual information such as the play's period and culture, the character's social status, and the garment's construction as well as affective information such as the scene's mood, character's personality, and play's essence. Costume images communicate this visual information between costume designers and other theatrical staff such as directors, set designers, lighting designers, costume shop staff, and actors resulting in final costumes for a production.

Previous studies of image search and selection have either been removed from the context of use or have focused on images used for primarily cognitive communication and illustrative tasks [1,2,3,4,5,6,7,8,9,10,11,13,17]. Studies of image and artifact use in design practice have not looked at the entire lifecycle of the image [12,16]. This study attempts to bridge these areas by understanding how costume designers search for, select, organize, and use images to communicate.

The goal is to understand how images are used within the context of costume designers' work in order to provide effective technological solutions for this less studied and supported group of practitioners. This research assumes that technology cannot replace designers' interactions with paper, paints, pencils, fabric, or other physical materials. Rather, the

research attempts to understand where technology currently fits within design practice and identify where it might enhance existing tools and methods.

### **Methodology**

A pilot study and two additional case studies were conducted according to methodology presented by Yin [18]. A list of theatres in the Washington Metropolitan area was used to identify a pool of potential participants. Cases were selected, using purposeful selection, to capture variation in historical time period as well as the inclusion of some non-historical, fantasy elements. The production time available and budget were considered when cases were selected, but variation was fairly low based on the cases available for study. Research findings were compiled for each case individually and then compared across cases.

The study data consists of observation notes and interviews as well as over 150 artifacts such as sketches, photographs, videos, and forum postings by 25 participants. Observations were recorded in notes. Interviews were tape recorded and transcribed when possible, but when environmental conditions made taping difficult, notes were taken during the interview and confirmed with the speaker immediately afterwards. Images collected and created throughout the design process, including the final costumes, were photographed. Electronic communications were printed and compiled in a notebook for future reference. The data collection methods were selected to be as unobtrusive as possible to encourage natural behavior. Consequentially, videotaping and think-aloud methodologies were not used.

Grounded theory as presented by Strauss and Corbin was used to code the data [15]; however, as appropriate, coding was guided by existing theory and data was fit into various displays such as flowcharts and timelines as suggested by Miles and Huberman and Yin [14,18].

The researcher coded the data and wrote initial code definitions then provided a second coder with the data and a coding dictionary. Because of the nature of the data and because of the exploratory nature of the study, 80% was used as a cutoff for acceptable intercoder reliability. When agreement occurred in less than 80% of the codes, the researcher and coder worked together to refine the coding dictionary. They then both independently recoded the results using the revised coding dictionary. The researcher and coder then discussed the remaining discrepancies and agreed on a code.

### **Emergent Guidelines**

The following guidelines for a costume designer's workbench evolved from the research findings. A member check of the guidelines was also conducted. The participant validated the guidelines and also made some suggestions which were incorporated. The general guidelines are provided first along with examples from the research. Because of the limited sample and qualitative methodology, these guidelines need further testing but present a starting point for designing a costume designer's workbench.

#### *Collaboration & Negotiation*

Support synchronous and asynchronous communication between one or more individuals. In-person collaboration requires a method to display images to a

group of approximately 2-10 individuals. Remote collaboration requires a method for indicating specific areas within an image and supplementing communication with video. Provide a change history to support image use as boundary negotiation objects.

The costume design process in all three case studies involved individual and collaborative activities. Image research and initial designs were typically individual activities, usually by the costume designer or director. Participants brought the results to discussions between the director and costume designer or to a larger production meeting. The costume designer in the third case study described her process, "I gather my own images for my book. [Then] presented my book. Its available at all times. If I come across something sporadically, randomly, we put it on [an electronic] forum." During discussions, participants altered image content, eliminated images from groups, changed image format, or shifted the concept behind an image forcing a redesign. Often the designer or director would print out images to support discussions or participants would gather around a single computer to discuss an image.

Participants used gesture and body movement to reiterate, develop and detail ideas during face-to-face communication. For example, in the second case study, the costume designer and two actresses were discussing hair. While looking at portraits, one actress stated, "The front would be up with volume and the back could be down and curled." She demonstrated using her hair. Participants also gestured to indicate a specific part of an image. In the second case study, the costume designer and a mask builder traced parts of a rendering while discussing how to build a mask.

#### *Interaction With Multiple Media Types*

Allow designers to display, modify, and easily transition between all types of files. Provide a mechanism to isolate specific segments of these media and to "collage" the results. In addition, allow designers to add notes and tags to files as a whole and to specified segments.

Participants used a variety of resources including static images, text, video, and audio. These media complemented each other by providing various types of information. Participants used entire images but often wanted only a smaller portion. During the member check, the designer stated, "A lot of times, I find shoes but the skirt will not work. It works both ways [the whole picture is important sometimes too]."

Costume designers often printed images and text and collaged the results or kept them together in a book. In the third case study, participants placed related videos and articles in postings to an electronic forum. Participants occasionally provided a link to a video and specified the part they were interested in since they could not isolate the segment.

Participants added notes and tags to images as part of their work. The designer in the first case study tagged images she printed or photocopied with names of characters or with a note about what part of the image was important such as the tag "Hat for Kate." In the third case study, images were shared on a forum and always had notes associated with them. Technology can potentially use this associated text to provide searching and grouping for an individual or within an online community.

*Mobile Capture & Display*

Support mobile capture and display of images, including a mechanism for easily transitioning between analogue and digital formats. The costume designer in the second case study took renderings on shopping trips. The hair stylist in the same production took a cell phone photograph of a textbook painting in order to take it home with her to search for information about creating the hairstyle. In the third case study, participants videotaped rehearsals and shared the results on an online forum. Participants in all three case studies printed images in order to move, share, group, annotate, or recombine them.

*Grouping & Comparing*

Allow designers to create groups of images found during searches, created using digital tools, or captured from an analogue form. Images or parts of images must be able to exist in multiple groups simultaneously and changes to or removal of the image in one group must not affect the image in another group. Multiple participants should be able to make changes to these groups to support collaborative meetings. Provide mechanisms for comparing images during search, by allowing the designer to set aside images in a temporary queue, and during negotiation, by displaying multiple images on a larger screen or easily transitioning between images on a smaller screen.

Grouping images and altering groups of images was key to the costume design practice in all three case studies. An observation from the second case study illustrates this. The costume designer printed several images of masks and provided them to the director.

**Costume Designer:** "...I know you said simple. I just pulled images." She pointed to top image. "I

don't know if this is getting more elaborate."

**Director:** "I am not crazy about the feathers. I don't like this." She removed an image from the group. "I like that one, I like this one."

This situation also illustrates comparison's role as the director compared alternatives to make a decision. When selecting images from search results, participants often compared multiple images before making a selection.

*Collecting & Sharing*

Support long term collecting and information sharing activities within the broader costume design community of practice. Do this in a way that strengthens existing ties within the theatrical community and leverages activities that already are part of costume design practice such as tagging and note taking. In order to be successful, also address intellectual property concerns within the costume design community through clear regulations.

The costume designer in the first case study stated, "I try to amass books that I think are relevant to what I do." The director from the second case study stated, "When I went to the Louvre this summer, I just took photo after photo of the hair on the back of the statues." Participants added to personal resource collections which they then used as needed for individual productions.

The costume designers within the case studies used personal networks developed through previous productions to solve constraints in budget, time, and availability. When describing the difficulty of locating clothing in a short period of time, the costume designer in the first study stated, "Originally I didn't think I'd be

able to find anything, and then I found a few things that we could pull...from two different theatres, one of which luckily I had a contact through...a friend of a friend, and they actually do Shakespeare." Resource sharing such as this relies on networks that technology might be able to strengthen.

*Search Using Existing Information & Serendipitous Finds*  
Provide mechanisms to 1) input an existing image or part of an image as a query, 2) use text documents to expand text searches, and 3) recommend images that might be of interest based on recent queries, images located in the temporary queue, or images located in more permanent groups.

During the third case study, a participant used queries that described insects she was looking for based on a documentary she had seen. During the second case study the designer wanted paintings from the late 18<sup>th</sup> century so she located a list of painters from that time period, then searched the library for books of their paintings. During the member check, the designer stated, "Sometimes I sketch something out and try to find research to go with it." This type of searching is not currently supported by Google, the most common search engine used by participants.

Semi-directed awareness, rather than directed searching, was also used by participants to locate images. One participant described this as, "I knew in the back of my mind, I was hoping to be inspired for a costume but didn't know what it would be. And when I saw one costume I knew it had the detail was what I was looking for. I didn't go to look for it but I found it." Another participant stated, "I kept looking around in

my world...trying to find something that was...kind of unknown to me."

### **Limitations**

The exploratory, naturalistic paradigm for this research supported the goal of understanding how costume designers use images across the entire design process and independent of any given system; however, because of the methods and limited sample, the findings may be transferable but are not generalizable. Additional research is needed to validate and refine the findings with additional costume designers.

The researcher coordinated observations with the participants to minimize intrusiveness. Since many activities occur spontaneously, it was difficult to ensure representative coverage of various events. Because of this, the researcher placed less weight in analysis on the number of times an event occurred within a given case study and more on whether an event occurred across multiple participants and multiple case studies. Additional case studies and a more quantitative methodology are needed to validate the guidelines.

### **Future Research**

This research presents a starting point for developing technology to support costume design practice. The next step is to create a prototype and test it with a wider variety of costume designers and theatrical venues such as opera, ballet, and film. Iterative testing and refinement will be required. The design and refinement process will also help refine the guidelines

Technological support for costume designers presents an opportunity to assist an often overlooked community, but it also provides insight into visual

communication. If extended through additional qualitative and quantitative studies, technology resulting from this work could support designers, illustrators, artists and other visually centered professionals through development of improved visual search, retrieval and communication tools.

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