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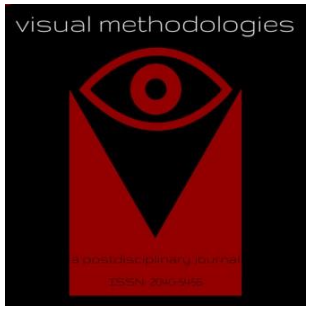

Research Article

Visualizing Research: Crowd Sourcing Technology for Global Understanding

Scott R. McMaster
Concordia University

scottmcmaster@gmail.com

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Abstract

This research details the results of a twofold pilot project that explored the use of Image-based his research details the results of a twofold pilot research and a new method of collecting visual data online. With visual culture and literacy as the pretext, further elucidations of visual methodologies in an online and global context were examined. Using Amazon Mechanical Turk, a crowdsourcing technology, requests for drawings and video analysis were submitted to a database where members selected and completed them. Preliminary findings suggest that using an image-based approach coupled with online mediating technologies hold much promise for the fields of art education and research which could be used to further investigations on cultural interpretations of imagery globally. It strongly supports Image-based research as the primary method for examining and informing visual, media and digital literacies.

Keywords: *Image-based research, visual culture, Mturk, art education, globalization, crowdsourcing*

Introduction

How can we thoughtfully explore imagery and attempt to make sense of our diagrammatic and increasingly digital world? How do we interpret this sophisticated salvo of imagery that surrounds our day to day activities and what can be said about its influence on us? In the context of a globalized information based society, what ways are the impact of images and popular visual culture being studied? This study endeavours to break with more conventional methods in attempts to develop new means of data collection that privilege visually based heuristics and provide access to more global ways of knowing and communicating.

"Today… we are living in one of the most artificial visual and image-saturated cultures in human history, which makes understanding the complex construction and multiple social functions of visual imagery more important than ever before" (Kellner, 2002, p82). There is an important interplay between text and images (Clark and Paivio, 1991; Heiligmann and Shields, 2005; Lester, 2006) and the visual syntax of this relationship, manipulates our understandings of news, advertisements and day to day activities, playing on our previous knowledge; to perpetuate dominant ideals and persuade people to buy products or validate a particular message (Harris, 2006). This research seeks to further legitimate image-based research and the collection of data using online methods to further an understanding of visual literacy and culture and hopefully reveal strategies and ideas of how to develop further inquiries with imagery and the new media delivering them to us. However before we begin to interrogate the visual world we must first prioritize imagery via the development and use of emerging research methods and novel visual methodologies.

This pilot project was developed under the supervision of Dr. Richard Lachappelle in Concordia University's Department of Art Education. It was part of a PhD seminar designed to examine social science and art education research methods and applications in a small cohort of third year PhD students. This seminar built upon an earlier session in which students were able to develop and conduct their first pilot project, submission to ethics review and creation of informed consent. It was designed to allow students to further explore possible topics and/or methodologies in the field of Art Education or continue research that began in the previous session's pilot project. The outcome being that the seminar would lead towards the development of students' seminal dissertation research topic and/or methodology.

This pilot project proposed to extend and build upon an earlier original pilot study, '*Drawing and Representation*', conducted during the winter of 2011 on Amazon Mechanical Turk (Mturk) (MaMaster, 2012). The 2012 study was possibly the first project in art education (and possibly other fields among the social sciences) employing the use of crowdsourcing technology to reach out to a global online community to gather imagery. The original pilot's goals were to test the mechanics of Amazon Mechanical Turk to see if it was a viable method of collecting image-based data online. To build upon this the author sought to replicate and improve upon the earlier pilot study with the expectation of expounding on two aspects of the initial project;

1) Assessment of the credibility of results of the initial pilot's image data by attempting to replicate a similar drawing based task.
2) Comparison of the online portion of the study with a duplicate offline pilot to further examine the benefits and drawbacks of this method versus a more traditional one.

The resulting pilot study suggests that not only are crowdsourcing platforms a suitable, albeit slightly controversial, choice for data collection online but it also displays several inherent benefits over traditional methods. It also notes several interesting findings in the drawings gathered that prompt further revision of methodology and investigation into the connections between globalization and visual culture.

Crowdsourcing & Mechanical Turk

Crowdsourcing is a relatively new form of online collaborative communications networks that recruits people for the purposes of micro-tasking, fundraising, or reporting; it employs the power of many individuals to work in unison to complete a particular objective by each person contributing a small portion (task, money, information) towards the main goal. An example of micro-tasking would be many people working on separate pages of an anthology being translated, reCAPTCHA is an example of this that most would be familiar with as you are asked to 'prove to be human' by re-typing somewhat illegible text from a display into a text box to register for a website or send a message.

What you may not have realized is that this an ongoing project in which old texts are being digitized one word or phrase at a time, each time an individual completes the CAPTCHA test it is added to the current database for the particular text. Crowdfunding sites such as Indigogo or Kickstarter are sites that seek funding from individuals for startups for business, personal projects, charities, art, music and other endeavors, each individual can contribute any amount from just a few dollars to much more to help the person or association reach their financial goal. Wikipedia would be an example of a type of crowdsourcing which enlists the help of persons to share their knowledge, experience or expertise on a specific topic in order to provide us with a free open source encyclopedia. Crowdmap is another example which also uses open source software to gather information and visualize them on a map, examples include elections, weather phenomena or, as their website puts it, documenting zombie attacks (unknown, n.d.).

What each of the above examples has in common is an online platform that recruits people and has the software (or code) in place to promote, organize and structure contributions to help meet the goals of a requester (the person or organization seeking assistance). These services range from free (reCAPTCHA, Crowdmap) to paid services (Kickstarter) with the service chosen for this project being a paid service provided by Amazon Mechanical Turk (Mturk). Mturk derives its name from a fake nineteenth century chess playing machine known as mechanical turk (unknown, n.d.). At the time of this research Mturk boosted over 500,000 registered users in over 150 countries (unknown, n.d.) and it was chosen after researching the work of Aaron Koblin and his artistic projects such as the Sheep Market (2006) in which he gathered 10,000 drawings of a sheep facing left. This led this researcher to question if this same method could also be used for educational research.

Amazon's Mechanical Turk refers to its micro-tasks as Human Intelligence Tasks (HIT[s]), these are problems that cannot yet be easily computed by artificial intelligence and still require a human's discerning analytical gaze to complete. The Mturk system is fairly simple, requesters create an account, create their task and charge their account with funds to pay workers (or Turkers as they are known) small increments usually between ten cents and a dollar depending on the time, attractiveness and complexity of the task, Amazon charges requesters approximately ten per cent of the total cost of each survey/project. Tasks range from simple company surveys, requests for image or website tagging and translation etc., once a worker completes a task they submit it for approval and compensation. This approval system is of one of the points of contention a few researchers have recently had with Mturk, being deemed less than fair that will be discussed later on.

In terms of credibility tools, Mturk provides requesters with an array of preferences to select or to assess its users on language skills, geographic location, and number of tasks successfully completed and of course an overall user ranking based on the quality or accuracy of tasks they have submitted. A requester cannot solicit any personally identifiable information on Mturk's users, protecting their anonymity. For each task a requester can select the highest quality of workers however these workers are more discerning and tasks recruiting these members take longer to complete than ones that set no specific criteria for the workers at all. Once options have been selected and a fully designed HIT published, the requester can submit their task to the database where users are then able to find it listed among thousands of other tasks. Tasks are organized based on type (survey, tagging, keywords etc.) and users wanting to work on tasks must search and select the tasks that they are skilled for, pose interest for them or are attractive for their compensation or other reasons. This project sought registered users who had completed at least 100 tasks with a 70% accuracy rating to try and balance between expediency and accuracy. Further task details can be seen by viewing Appendix A which shows a published task for the original survey along with a list view showing various tasks found by searching using the keyword 'image'. This keyword search also exhibits how Turkers must search, find, refine and then choose a task that suits them; demonstrating an active, conscious participation devoid of any specific conscription.

Respondents and Incentives

Mechanical Turk was the principal source for participants for this project who are commonly referred to as 'Turkers'. Buhrmester, Kwang and Gosling (2011) made several findings as they tried to discover more about the people who participant in crowdsourcing tasks online, as well as data creditability citing that; (a) Mturk participants are slightly more demographically diverse than are standard Internet samples (b) participation is affected by compensation rate and task length, but participants can still be recruited rapidly and inexpensively; (c) realistic compensation rates do not affect data quality; and (d) the data obtained are at least as reliable as those obtained via traditional methods (p1).

They also found that Turkers often complete these tasks for enjoyment which is also supported by McMaster (2012). Buhrmester, Kwang, and Gosling's (2011) finding is also noted by Ross et al. (2010), that the demographics of Mturk are slightly more diverse than the usual Internet samples, citing that participants come from over fifty different countries. Furthermore their research debunks some general criticism (Aytes, 2011) concerning participation on Mturk being directly or solely linked to monetary compensation and seems to counter some of the other findings of Ross et al (2010) which indicated that about 18% of workers relied on Mturk for income; despite this fact Buhrmester, Kwang and Gosling, (2011) found workers willing to complete tasks for almost nothing (one cent) suggesting monetary gains were not their sole motivation. In addition to this discovery they also found that the amount of reward provided for a task did not affect the quality of the data, further supporting its creditability, which is also supported by McMaster (2012), who found the level of compensation only affected the total elapsed time taken to gather participants and complete the study.

Project Overview

The original pilot study, completed early in 2011, was purposely simple and sought only to test the crowdsourcing mechanism as a means to collect imagebased data online. Therefore the survey was kept short and although ethics approval was sought and approved, the pilot did not go beyond three basic demographic questions (sex, location and age) and asked for accompanying drawings to represent only three words (open, power, solve). Due to the resulting data yielding curiously similar drawing representations across distinct geographic locations, it was determined that a more decisive selection of words along with more detailed survey questions would be useful in cultivating and pursing the topic and methods further. Using the original pilot study (McMaster, 2012) as a basis for comparison and improvement, efforts were made to replicate and extend the original pilot study in several key ways:

- Replicating a similar task drawing task on Mturk, but with a more careful word selection as well as gathering more demographic information (income, education, motivation etc.)
- Testing the viability of using a video clip to gather feedback (interpretations) from respondents about the nature of the clip presented (to test interest in this type of task).
- Comparing the results of both these online tasks with a duplicate offline (in-person) model, to further scrutinize the viability of online and image-based research by comparing it with traditional methods of data collection.

The first alteration needed was a more carefully selected set of words to create a more robust project and prompt richer, less ambiguous, results. From several sets of words and after some feedback from colleagues the words *meal, marriage and funny* were chosen to elicit drawings for this Human Intelligence Task (HIT). An additional 'pilot within a pilot', was also created to test the feasibility of gathering responses to a popular film; respondents were presented with a video clip from the Disney film 'Hercules' which has been criticized by academics of in the field of visual culture. Thirdly two offline studies, identical in content to those conducted on Mturk, were piloted onsite at Concordia University to compare with the data gathered online and determine how on and offline (in person) data gathering may differ and to lend further credence to online methods of qualitative image-based research.

A secondary set of criteria this pilot references are the benefits of online research and a brief comparison with more traditional in person methods was also developed. Traditional research methods can be fraught with limitations, according to Dunn (2002) some of the main reasons and advantageous for conducting research online are:

- Geographical: using online methods you can reach a much broader (and possibly more diverse) audience to recruit participants from (Lefever et al., 2007). One is also able to overcome funding issues and gather data from remote areas that have internet access
- Economic: Studies are almost always influenced by funding concerns; those involving travel are particularly subject to budget constraints. Online methods eliminate most economic issues, they are simply more cost efficient (Granello and Wheaton, 2004; Griffiths, 2010).
- Time (and Place): Traditional methods involve gathering people, booking or arranging a place to meet, setting up a schedule all the while making sure both the time and the physical space are conducive (or at least non-disruptive) for gathering the data you want. Because online research can take place asynchronously participants choose a time and place (where they contribute from) at their leisure and are less inhibited, thereby contributing more

sincerely, than they might be in person (Griffiths, 2010) and participating becomes less disruptive to their daily lives (Lefever et al., 2007).

That is not to say that online methods are beginning to trump traditional ways of conducting research. The drawbacks and disadvantages facing online research and data collection, such as reliability and creditability, are the same as those that effect traditional methods (Griffiths, 2010). In terms of image-based and online research one added benefit is the "flexibility and control over format", graphics, video/animation and sound can all be used in one setting (Granello and Wheaton, 2004, p.388). Online data collection also makes it possible to collect multiple forms of data from participants, which was evidenced in the original pilot project (McMaster, 2012) collecting over four different kinds of image data in both word processing and graphics formats.

Also reflecting upon the original pilot, some concerns were raised as to originality of the data submitted and credibility of the participants and whether or not they simply provided the survey with what they thought was a suitable representation for the task (HIT). Although a cursory literature review seems to indicate that there is ample evidence to suggest that online methodologies and data collection are indeed equally valuable compared to traditional or offline research (Dunn, 2002; Granello and Wheaton, 2004; Lefever et al., 2007; Griffiths, 2010) there did not seem to be much documenting or supporting image-based research specifically. Again this is likely due to image-based research being as yet an obscure method of educational and academic research. Although one could argue that since there is literature to support various other forms of online research and that it is not a great leap to extend or extrapolate these findings and apply them to imagery as well. However this study has attempted to add to existing literature and fill the gap lending further support to both image-based and online research, towards a better understanding of visual methodologies in general.

Procedures

Online Pilot

Initially, based on past experience, it was conceived that the HITs for this pilot would be fairly straightforward to design, after all not much more was being adding to this task compared with the original one (McMaster, 2012). Again it was to be a simple one page survey and surveys are one of the primary usages of Mturk. Yet after browsing the list of Mturk survey templates it was realized that none of them would accomplish what was needed; the allowance of both a text survey and the uploading of multiple image files. So the same method as was employed in the original pilot had to be used; asking respondents to cut and paste the survey into a word document along with the images they drew and then upload them via Mturk. This was less than adequate as it was asking individuals for more effort and possibly working with at least two programs on their own computers. Based on the response rate and duration of McMaster's (2012) project, there was little optimism. Still, however slow, this somewhat cumbersome drawing task was still achieving results, and was able to reach an adequate number of respondents (15), which was almost half of the original but acceptable considering the added effort required.

In contrast the film survey was able to employ one of Mturk's pre-designed survey templates, after some testing of the survey's HTML code and correction of errors a link was set up at the top of the survey (see Appendix 'B') that directed respondents to a short video clip from Disney's Hercules (1997). Once the film survey was posted it had received all 30 desired respondents in less than 24 hours, with only 1 incomplete survey. This was considerably faster than the original drawing project which took more than four weeks to reach 27 respondents.

Offline Pilot

The offline portion of the pilot study was also not without its challenges. Having been somewhat preoccupied with the coding and technical difficulties experienced with Mturk the in person data collection fell behind. The date set for the in person session with respondents was mid-November, and seemed to clash with a number of other events on campus. In order to recruit people several emails were sent out to different departments in attempts to gather interested respondents and postings were made on the main Concordia Facebook page as well as the graduate student pages. Still despite having possibly been read by hundreds or more, none replied. On the day of the pilot, fearing a low turnout, a 'Plan B' was enacted, wherein if too few respondents showed up, a small display would be set up in Concordia's Engineering and Visual Arts main lobby on Ste. Catherine St. to try to wrangle traffic from the student body and throngs of subway-goers at one of Montreal's busiest stations. This too, proved futile as on that same day the lobby was transformed into registration booths for winter convocation and there was a scarcity of seats, let alone tables and space to set up a display.

Thus having exhausted contemporary methods of attracting respondents a more traditional route was pursued and a few eye-catching posters placed around the university as well as an easel, in the high traffic area between the subway exit and Concordia's first floor corridors, advertising '*Popcorn and Pilot Project*'. From these posters just enough people were attracted over the course of an afternoon to help the study reach 10 respondents (the minimum desired). All things considered this was deemed an acceptable turnout since the project had aimed for between 15~20 respondents.

Results of Online and Offline Data Collection

During this project substantially more demographic data than the original pilot was collected; including social-economic status (income), education, occupation, as well as age. Summarized in the tables that follow are the respondents survey answers, perhaps worthy of particular scrutiny are the language and residence (or origin) of respondents as it is believed they may contribute significantly to the understanding of the data, also prompting the need for further inquiry. Also of particular importance are the comments made by respondents for both pilots in response to the open-ended request '*Please add any relevant comments/information*'. What follows are basic graphic representations and tabular summaries of this data, first showing the online groups then the offline group. This is followed by a discussion of the results and a comparison of the on and offline data.

From the Film survey the following data was gathered, it should be noted that SES data was not gathered on this survey due to the lengthy film-based questions already present.

Online Group (Film Task):

Questions (see Appendix 'B')	Responses
Gender	11 females / 18 males
Age	all 29 respondents reported age 18~29
Language	9 English / 9 Tamil / 4 Hindi/ 3 Malayala / 2 Indian/ 1 Kanadam / 1 Marathi / 1 Oriyu / 1 Urdu
Residence	18 India / 6 Unknown / 2 USA /1 England/ 1 Philippines
Familiarity	10 were familiar with the clip / 19 were not
Consumption*	2 TV / 3 Internet /1 theater / 23 N/A
Classification	7 animation-cartoon/ 7 comedy / 9 drama / 5 multiple genres
Film Message	17 relationships/ 9 race relations/ 4 consumerism / 7 gender roles/ 4 other (freedom/revenge/ethics/angry man)
Character depiction	7 good, kind/ 19 bad, evil/ 6 indifferent / 1 other (evil)
Worldview of the filmmakers	8 democratic/ 6 socialist/ 9 Christian/ 10 capitalist/ 5 authoritarian/ 1 other (not sure)
Moral influences	3 religious/ 6 political/ 18 cultural/ 1 corporate/ 5 other (1relationships)
Cultural/ religious references	5 African/ 4 Asian/ 6 European/ 5 Latin/ 15 Western/2 other (Greek)
Historical Context	15 not historical event / 3 Greek myth/ 8 other (2 evil/2 kings/ 1 Aladdin/ 1 Trojan/ 3 N-A
Symbolism	3 religious/ 9 male/ 12 female/ 4 racial/ 1 other (skull)
Overall impression	28 positive/ 2 negative
Use of Mturk	17 money/ 7 knowledge / 4 work/ 4 enjoyment/ 1 bored / 1 N-A
Comments	15 left comments: 7- thanks, interest, enjoyment, good HIT / 5 liked film/ 1 interest of learning and interpreting from film / 2 N-A

** It should be noted that in an earlier version of this survey 6 respondents also indicated TV or Internet for this answer; these results were discarded due to HTML errors, resulting in almost half of the survey questions not being recorded.*

For the online Drawing group the following data was gathered in addition to the 3 drawings for the words; *meal, marriage and funny*.

Online Group (Drawing Task):

Questions	Responses
Gender	7 females/ 8 males
Age	12 aged 18~29/ 3 aged 30~49
Language	9 Indian / 5 English* / 1 Spanish / 1 German /1 Latvian / 1 Vietnamese
Residence	9 India / 1 Germany / 1 England** / 1 Vietnam /1 Columbia
Income	8= <$10,000/ 4= $10~$19,000/ 1= $40~$49,000/ 2= would rather not say
Occupation	6 students/ 4 self-employed/ 6 employed/ 1 trainer/ 1 photographer/ 1 banker
Education	10 college graduate/ 2 high school / 1 some college/ 2 post grad
Image Sources	2 cited *Google* and other English based websites as sources. The rest cited; 5 memory / 3 culture / 1 TV / 2 books / 2 imagination / 2 life / 2 other / 2 N-A
Comments	5 thanks / 2 good task / 3 interesting / 3 other

**Some specified both an Indian dialect and English*
***Originally from Latvia*

The next section displays the results of the offline group, who were the same respondents for both the film and drawing tasks.

Offline Group (Film Task)*:

Questions	Responses
Gender	3 females / 5 males
Age	3 aged 18~29/ 3 aged 30~49/ 1 aged 50~65
Language	7 English / 2 French / 1 Cantonese
Origin	8 Canada /1 Sri Lanka / 1 Vietnam
Familiarity	4 were familiar with the film / 4 were not
Consumption	2 watched at home / 1 at a cinema / 1 N/A
Classification	3 children's film/ 4 comedy/ anime 1 (product placement)
Film Message	4 relationships/ 1 race relations/ 2 consumerism/ 5 gender roles / 1 other (slavery)
Character depiction	1 good/ 5 bad/ 2 other (difficult to say/self-absorbed)
Worldview of the filmmakers	1 democratic/ 2 Christian/ 3 capitalist/ 1 authoritarian/ 2 other (derogatory/old world mentality)
Moral influences	2 religious/ 2 political/ 3 cultural/ 4 corporate (comment: buy, buy buy)
Cultural/ religious references	2 European/ 3 western/ 1 Christianity/ 2 Greek/ 1 N/A
Historical Context	5 Greek myth/ 1 good vs. evil/ 1 no (inaccurate)
Symbolism	1 male/ 3 female/ 1 racial / 1 other (corporate)/ 3 none
Overall impression	3 funny/ 5 dislike, offensive (comments: not appropriate for kids, shallow, stereotypical)
Comments	clip was nice/ out of context/ not for children

**It should be noted two less respondents completed the film survey than did the drawing task due to time constraints; there was also no question as to the use of Mturk since this was the offline group.*

** *All respondents resided in Montreal, Canada at the time the study was conducted*

Offline Group (Drawing Task):

Questions	Responses
Gender	4 females and 6 males
Age	4 aged 18~29/ 5 aged 30~49 / 1 aged 60~64
Income	3=<$10,000/ 1=$10~19,000/ 2= over $100,000 / 4 would rather not say
Occupation	6 students/ 1 unemployed/ 1 engineer/ 1 researcher / 1 secretary
Image Sources	3 imagination/ 3 daily life/ 2 memory OR culture/ 2 TV
Comments	1- 'love to draw!'/ 2- 'fine with same sex marriage as well'

Comparison of Online & Offline Data

As stated by Lefever et al. (2007) it seems clear that conducting research online can result in a more diverse sampling of people from a broader range of ethnic backgrounds and using a variety of different languages. With respect to this project although there is still a large contingent from India this issue can be dealt with in a larger or long term study by filtering respondents by region (a function recently discovered on Mturk). What follows is a preliminary comparison of the film & drawing/on vs. offline tasks, and what the data reveals from each, further addressing the issue of credibility of online research.

Film Task Comparison

Overall, the online and offline surveys were almost fully completed with all respondents seeming to enjoy the task. Watching a film clip and then thinking about it more carefully appears to have been a welcome break from regular day to day activities, whatever they may be. Overall the survey answers did not differ to a large degree, with similar responses for *how the film was watched*: TV and the Internet being the most popular, *categorization*: most replied animation or comedy, *message*: most said relationships and gender roles, symbolism: most said female and *worldview*: most said capitalist. The main differences were in the overall impression of the film, the online group was mainly positive (69%) whereas the offline group was mostly negative (62%). The reasons for this, although purely speculative, might first be the cultural milieu of the respondents; the negative responses coming from a setting (Montreal) where gender issues are much more prominent and possibly more bellicose to some respondents and the online (majority) possibly immersed in societies that are still, for the most part, male dominated, so the apparent objectified representation of female as a subordinate may have gone unnoticed or simply not been as odious. A second reason for this may have been that online

respondents experienced some disconnect between the film and its dialogue. Since for many online respondents English is a second language some of the finer details of the character's dialogue may not have had as much of an impact. This also has implications for the survey itself, being a trial run of different questions, which could use further refinement in this light.

Yet another explanation might be, as Henry Giroux suggests (in Mickey Mouse Monopoly, 2001), "Disney makes a spectacle of innocence, it hides behind it, separating corporate power from corporate culture which creates a fantasy that never needs to be questioned" (1/5- 4:55). People grow up watching these films without ever realizing the leading and supporting characters portray various cultural and gendered stereotypes. Looking more closely at the online responses those who did cast the film as indifferent or offensive were all from western countries. This could indicate that western media consumers may take a more critical approach to film viewing, although more responses and perhaps a more refined survey is necessary to explore this idea further.

Although this film task was just testing the methodological waters, so to speak, it seems there is an appetite for viewing and reviewing films. Based on the quick response rate, it is believed that with continued planning and research this model could evolve to create a much more vigorous study. One last observation was that some online respondents who had seen the clip before had watched it at home or the Internet, which although not significant for this part of the study it does begin to articulate the sort of access other regions have to popular visual culture from the west right in their own homes, which is discussed more in relation to the drawing task.

Drawing task Comparison

At a glance there was not much difference between the on and offline data for the drawing task; two noticeable distinctions are in the cleanliness of *on vs. offline* drawings and the completeness of the surveys. All the scans (done by the author) of the offline group are consistent in quality while a couple of the online examples have a cloudy or fuzzy look because of either improper scanning or photo capturing techniques. This however does not render the drawings unreadable and could be considered more of an aesthetic discrepancy. Meanwhile the online group tended to comment more (many expressing thanks or interest) and a lower percentage refused to disclose their household income, 13%, compared with the offline group at 40%. This last detail suggests that the added anonymity associated with participating online lends itself to the disclosure of more personal information, or less inhibition (Griffiths, 2010). It is also worthy of mention that despite the amount of extra work required for the online drawing task, 15 finished surveys were retrieved from Mturk. This could also speak to the nature of the task being more enjoyable or interesting to respondents.

Unlike the original pilot, in this project more demographic details were gathered such as SES, occupation and the possible sources the images may have come from, to create a clearer picture of the language and geographic setting of the respondents and possible origin of the images for future study. All this data proved very helpful in analyzing and deducing why the survey received the kinds of imagery it did and what may have been some of the factors to influence this. The words chosen this time were selected with the hope that they may evoke culturally or geographically specific representations that would either parallel local representations or ones that would display images in contrast to expectations of the region.

The word that elicited the most interesting responses was *marriage*. All but one Tamil participant (and 1 other who equated marriage with bondage) represented marriage in a westernized context using either a man/woman in the midst of a ceremony in suit and dress or more simply with wedding bands or engagement rings all icons of western traditions.

As we look at figure 1 we can see the two representations that were most common and the third which was the only drawing representing a traditional 'Indian' marriage ceremony (Prinja, 2009). It is also worthy of note that one respondent from Germany added a comment with regards to her drawing of marriage stating, "*I just was at a wedding last month, that is why I drew a wedding ceremony for the marriage. Even though the wedding wasn't even at a church... but I guess it's just so iconic.*" Despite being from a western country it is still interesting to see the power of such icons such as the church when it comes to representing the word marriage. In addition some of the drawings for the word *meal* also suggest a more westernized perspective (see figure 2). Again focusing on the Indian portion of respondents many of the meals drawn indicate western place settings (plate/knives/forks) along with western foods like sandwiches and pizza when in India cutlery is traditionally not used and various curry and rice dishes are predominantly found.

Lastly, although there was some indication of similarities using the word *funny* there does not seem to be the same types of cultural indicators as in the other two words, this may be because of the choice of the word, which it was thought might elicit some images from popular media, movies or TV celebrities or icons. There was the exception of the clown represented across a few geographic regions however more research is needed to determine the extent to which these images may differ from local understandings of the prevalence and concept of the clown. Taking a more critical standpoint one may ask if the respondents provided the study with westernized drawings, tailoring them to suit where they assumed the researcher was from; however nothing in the responses to the question about the drawing's source indicated this to be the case. Almost all respondents wrote that the imagery came from memory, cultural stereotypes or their imagination.

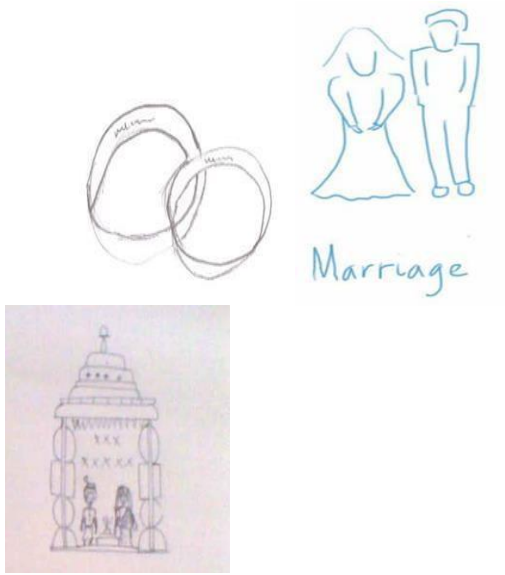

Figure 1. Marriage as represented by an Indian, Vietnamese and Tamil participant

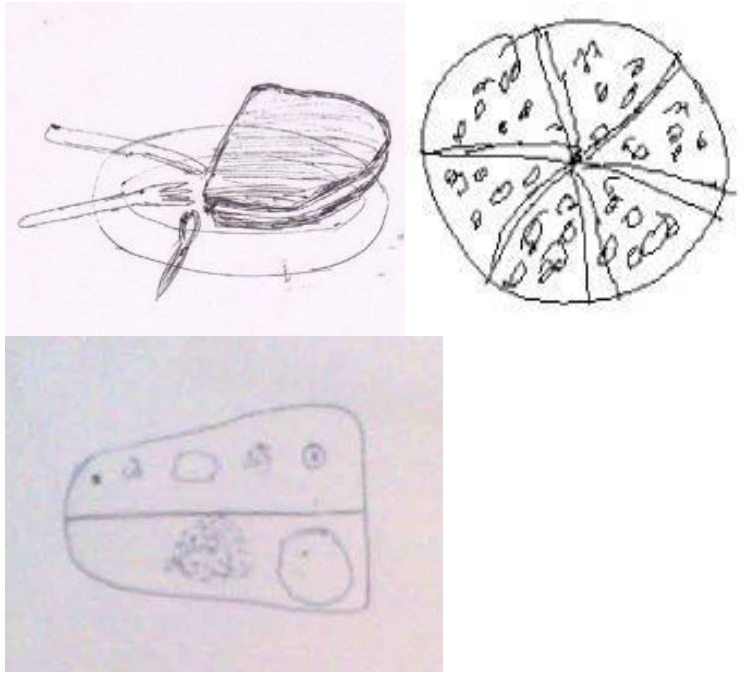

Figure 2: All three images come from Indian respondents with only the third representing an Indian style meal

Discussion

Methodological Aspects

To shed light on the extent to which these pilots differed and the advantageous or disadvantages of each, we must first consider the technical aspects of designing and conducting an online or offline study. At the onset of this pilot three criteria were put forth from the literature (Dunn, 2002) which indicated the more advantageous nature of conducting online research. Here those points are revisited with regard to the results of this study:

- Geographical: Although the number of respondents from each region was not evenly distributed, data was still gathered from almost a dozen distinct geographic locations (several more within India) as well as having respondents who spoke 13 different languages (in addition to English) living in a variety of cultural settings.

- Economic: This was definitely the case in the context of this project. The three online survey tasks cost a total of about $4.25 slightly less than the cost of return public transit fare purchased for travel to and from the offline study location. Add to that the cost of refreshments and printed materials and it becomes evident that online studies are far more practical economically. It should also be mentioned that if the researcher were to attempt the online study in person it would likely range in the thousands of dollars in airfare alone.

- Time and Place: Earlier the process for conducting both the on and offline studies was described and while in the development stage the online study proved more time consuming and problematic due to the lack of knowledge of HTML, the actual data collection process was far more time consuming in person than online. Once the online task was ready for respondents, the researcher only need wait and receive daily email updates on its status. While in person it is necessary to travel to and from a physical location as well as sit and wait for respondents to trickle in over the course of 6 hours (in this case), or alternatively to arrange a number of specific meeting times with individuals meaning that they would have to have been recruited at an earlier point and correspondence made to arrange amicable times to meet, further adding to an allotted timeframe.

- Incentive: It should also be noted that 'reward' played a role in both studies. A reward of 5-10 cents was given to all online respondents, while in person people were offered an incentive of drinks and snacks to create interest in participating. Although the former reward has been criticized by Ross et al (2010) who indicated that about 18% of workers relied on Mturk for income, but to reiterate, Buhrmester, Kwang and Gosling (2011) found workers willing to complete tasks for almost nothing (one cent) suggesting monetary gains are not their only concern. It is also worth noting that both groups made an active choice whether to participate or not and that the online group had significantly more anonymity as their identities were completely unknown to the researcher.

Technical and organizational hiccups notwithstanding, these projects show much promise, not only in further endorsing online research but also by developing new visual methodologies to utilize these opportunities. The findings also indicate salient examples of how image-based research can be used to further assess the possible impacts and influences that visual culture may be having on a global scale.

Preliminary Findings

Chiodo (2009) remarks that people use visualization to aid in the understanding and remembering of information, also noting that even though some people are able to produce vivid imagery in their minds their ability to render it in the form of a drawing may be lacking. The words used in this study are used to prompt participant's visualization process. What happens next may be what Chrosniak (2009) refers to as 'visual cultural literacy', people search images that "communicate messages from or within [their] particular culture, current or past" (p.133). Although these images and their origin are grounded in the respondents own culture many from non-western cultures used western icons to represent their concept of the words given, particularly when drawing the word *marriage*. What do these images say about their visual cultural literacy? Chrosniak (2009) also comments that schema (mental diagrams) can represent a range of imagery in our minds and we call upon this schema even for individual words in order to understand them. This schema is influenced and evolves in reaction to other's definitions (Chrosniak, 2009) and in the case of this study these schemas could be altered by exposure to popular visual culture in any number of ways in people's local environments through TV, news and advertisements, not to mention the internet.

Bringing this back to the respondents, those who reside in developing countries yet chose westernized imagery to represent their schema may indicate relationships to their education and social economic status. According to Ives and Gardner (1984), the height of cultural influence occurs between 7 and 12 years of age and that youth begin to, "discover specific ways in which their specific culture modulates the basic domains of human experience: language, drawing, music sports, social norms and the like" (p.23). Wilson and Wilson (1984) also studied the drawings of 9 and 12 year olds and noted that, "the process by which children learn about the culturally unique world in which they must live is a process of reinvention wherein the symbolic artifacts provided by the culture are received and recycled in the children's own play, drama and drawings" (p.32).

If we accept these statements as reasonably accurate then it is not inconceivable that youth of this age can be greatly influenced by the images

they see or are exposed to from popular visual culture. Those respondents mentioned above seem to have come from a more privileged middle class background, many of them college graduates, and all are likely to have had grown up with access to TVs, possibly internet, and the popular visual culture exported worldwide by countries like the US or UK. Many US and UK channels (CNN, BBC, Discovery etc.) have been broadcast in countries like India since the 1990s with the additions of HBO, Disney, Teletoon and the History channel about a decade ago (Bajaj, 2007). To contextualize this positionality in the author's own personal experience, having lived abroad in Korea, these channels were consumed regularly over several years and broadcast in English (occasionally with Korean subtitles) and seldom contained advertising for local brands, often promoting other western brands and channels.

At this stage these observations are merely speculative as pinpointing precisely where and how people may have been influenced by popular visual culture is difficult even if one asks the right questions. An individual, even one educated in the study of imagery, may not be able to recognize that they have even been influenced by imagery let alone when and where. Instead this influence may be ingrained over many years through subtle, overt and repeated exposures to commercials, movies, news or other media and proves hard to trace to a single image let alone a single medium. In the case of this study TV seems only one of the likely culprits to have supplied the respondents with images that they may have drawn from, either consciously or unconsciously. This assumption provides an excellent place to develop and launch future investigations into visual literacy and visual culture globally.

While this study hesitates to make broader statements about these results indicting a clear connection with and influence of western popular visual culture in non-western countries it is surmised that the data collected suggests that it could be one major factor among others and that more study should be undertaken to examine this correlation further.

Ethical Considerations

Although at the time this pilot study was conducted there was little information on either crowdsourcing or Mturk with regards to academic research more recently several academics have viewed Mturk specifically with some scrutiny as to its fairness of compensation and the requester submission/approval process. Somewhat to the contrary several other studies, referenced earlier, on Mturk users have shown that despite monetary rewards being a motivating factor for respondents it is not the sole motivation for using the platform.

Notwithstanding these important considerations that have arisen on the use of crowdsourcing do not appear to have tremendous bearing on the context of this study. Critics such as Aytes (2011) as well as Fort, Adda and Cohen (2011) argue that the conditions on Mturk are unfair due to the impossibility of unionization, no guarantee of reward for HITs that are properly completed and no system in place to address requester misconduct, overall heavily favouring the requester. Ross et al (2010) simply arguing that the 'potential' exists for some portions of this population to be exposed to unscrupulous research, meanwhile that study used the very same platform to conduct their own research, rewarding respondents similarly (ten cents) as this pilot did. However the two aforementioned critics conducted no studies to further their claims, merely relying on other's research and largely referring to translation tasks, they failed to ask Turkers if unionization is even something they desire, not that a union spanning 150 countries could be realistically conceived by today's standards. These claims are further depreciated when compared with general Internet based tasks such as public/company surveys, which millions of people complete every day, worldwide for the benefit of both business and non-profit organizations, receiving no compensation at all.

Regarding their second and third criticisms, however, reveals some merit as Amazon still does not seem to have any sort of arbitration in place on Mturk, most likely because of the sheer volume of HITs completed each week, numbering in the tens of thousands, and having to assign its staff to arbitrate on complaints over as little as ten cents. A rating system for both requesters and workers could alleviate this, but that is not within the scope or concerns of this study.

This study overcomes the latter issues by giving careful consideration to what is submitted by respondents, in the original pilot study McMaster (2012) only rejected those submissions which clearly did not read the task's guidelines (i.e. uploading a copy of the study's informed consent form in place of the drawing that was requested, or a totally unrelated photo) and even some of the submissions which should have been rejected were approved and compensated because they were included in the report as examples of what was not useful

data. This study also passed a university ethics review process and provided those who chose the task with informed consent which detailed the purposes of their participation, something the majority of commerce based tasks do not.

Conclusion and Implications for Future Research

This project has provided a great deal of valuable information with which to structure further investigations into visual representations worldwide. One of the more important questions it raises is where these drawings, many of which have clear cultural signification, come from? If they are influenced by popular (western) visual culture what medium has been the most pervasive? How has local visual cultural evolved or changed? The addition of more in-depth questions and follow-up probes into which media respondents had access to growing up and what, if any, western ideals were readily adapted by them, their family and friends would provide more concrete evidence as to the power of visual culture to affect, what should be culturally ingrained locally, representations of certain universal concepts, such as marriage.

Another interesting, and somewhat unexpected, discovery in this project was learning why online respondents used Mturk. While the majority simply answered it was fully or in part for monetary gain, 38% replied that it was also a pursuit for knowledge and enjoyment. This suggests that sites like Mturk are not only places suitable for conducting research but they are also sites with possibilities for self-directed and informal learning and further rebuffs some of Mturk's critics. Yet unlike most informal learning that takes place, unknown to those who engage in it (Merriam et al., 2007), these respondents have recognized the site's potential for knowledge based activities and perhaps select tasks according not only to personal interest but also for the tasks to meet some sort of learning or gratifying criteria. This type of activity could also be dubbed as experiential learning (Kolb, 1984) making use of both collective and personal experiences to add to or refine knowledge. This insight could provide an added dimension to future studies in asking; how does participating in studies like this one or crowdsourcing sites like Mturk provide opportunities for informal learning?

Technical and other challenges aside, this pilot project was successful in achieving some salient, albeit preliminary, results as well as further appraising the necessity of a larger scale study. The more time spent reviewing and assessing the data the more small discoveries are made and new connections to other work forged. Although limited in time and scope and providing only an ostensible analysis, what has been realized is that crowdsourcing technologies such as Mturk coupled with research conducted online have certainly played an integral part, if not a central role, in this study and in the development of a larger global study. Both avenues should be given due consideration as emerging methods for educational research design and further informing the use of visual methodologies.

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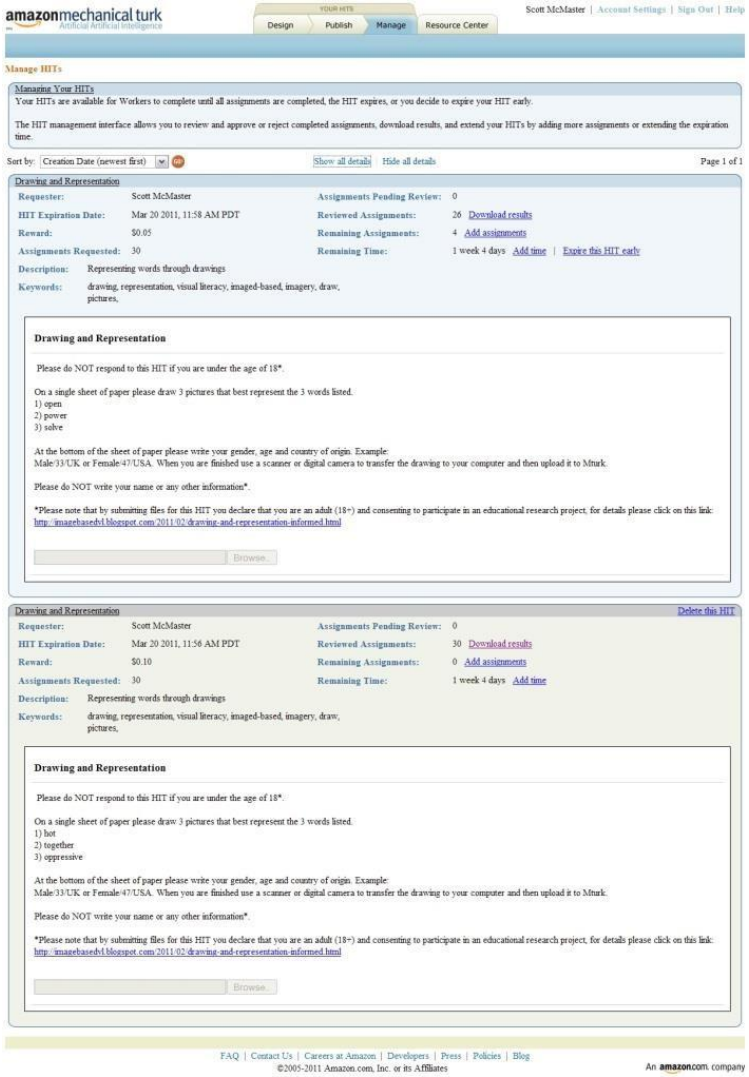
Appendix A

A screen shot of a HIT.



List view of various HITs.

Appendix B

Below are the Film Survey questions, which followed a film clip from Disney's *Hercules* which was embedded from YouTube (http://www.youtube.com/watch?v=XbVzhbOpeeE). Radio buttons were used for fixed 1 response questions and checkboxes were used to allow multiple answers to a single question.

Watch this video clip and complete the survey below.

1. What is your gender?

FEMALE
MALE

2. What is your age?

18-29 years old
30-49 years old
50-64 years old
65 years and over

3. What language do you speak most often at home? What country do you reside? (ex. Portuguese/ England)

4. Are you familiar with this film clip?

YES
NO

5. If you answered 'YES' to question 4, where/how did you see it?

6. What kind of film is it? (drama, comedy, etc)

7. What is the message of the film/clip? What does the dialogue tell you about the message?

relationships
race relations
consumerism
family values
gender roles
Other

8. What does this scene tell you about the characters?

they are good/kind
they are bad/evil
they are indifferent/benevolent
nothing
Other

9. What do you think is the 'worldview' of the makers of this film?

democratic
socialist
christian
capitalist
authoritarian
multicultural
naturalistic
secularist
OTHER:

10. What might be some moral influences in the scene?

religious
political
cultural
corporate
Other

11. Does the film reference any modern cultures or religions?

African
Asian
European
Latin American
Western
Christianity

Buddhism
Hinduism
Islam
Other (list culture or religion)

12. Is the film related to any historical events you know? Please explain.

13. Do you notice any symbols in this scene? (things or characters that represent a different meaning)

religious
political
male
female
racial
Other (list)

14. What is your overall impression of the clip? (ex. like, dislike, offensive, wonderful, funny etc.)

15. Why do you use Mturk?

16. Please add any additional comments about this HIT or information you feel may be relevant. Thank you!

Appendix C
All images from this study's drawing task can be viewed at: http://prezi.com/sphwertudibm/visual-research-pilot-projects/