For our design ethnography, we have chosen bars as our setting, with the specific activity to study being the bartending process. Bars are some of the oldest institutions in the world and integral to many communities, including Madison, making them excellent candidates to perform a design ethnography. In addition, Bryan, one of our group members, practices amateur bartending, experiencing first-hand the difficulties and processes of bartending. Thus, we recognized the opportunity to gain a better understanding of all stakeholders in the bartending process and find relevant breakdowns or inefficiencies that we could design a novel solution for.

To begin our ethnography, we recognized the need for simply observing our chosen environments like "flies on the wall". To begin, we visited two upscale bars in Madison, the Statehouse in the Edgewater Hotel and Heritage Tavern. Both bars offer a craft cocktail list, a luxury atmosphere, and skilled professional bartenders with drinks averaging approximately $10.00. The customers we noticed at these establishments appeared to range from young professionals to retirees, a varied mix, but generally all of some higher income level. Missing was undergraduate aged students (i.e. 18-23), however some of the younger clientele could possibly be in a graduate program. Both establishments offered bar and table seating without any areas meant for standing. The atmosphere was quiet enough to hold a normal conversation easily with neighbors. The bartenders themselves often held conversations with the customers about local events, areas around the city and other topics of interest. The staff at both establishments were seasoned and well trained to handle an upscale crowd and also deal with a sudden surge of customers.

The upscale bars we visited gave us an idea of one end of the bar-going experience, but to fully observe Madison's bar scene and understand our setting, we had to visit the other end of the spectrum. Thus, a few nights later we also visited The Nitty Gritty and Kollege Klub, both college bars serving undergraduate college students. Like the more upscale bars, both had a large variety of drinks to serve, but because the clientele's incomes and expectations are different, customers most often order their cheaper drinks ranging from $1 to $7. One perfect example of these specific customers' expectations and desires is the Nitty Gritty's famed "Power Hour", where Miller Lite beer is sold for $1.25 and mixed drinks for $1.75 from 11PM to

midnight. For college students this is a steal and incredibly popular, which is Nitty Gritty's intention because to make any profit off of these incredibly cheap drinks, college bars will pack in customers until they reach their maximum capacity. Even with plenty of booths and tables at these bars, because of the bars pricing strategy and clientele expectations, standing around the bar is the norm. Customers will even form lines outside these bars waiting for others to exit the bar to get a chance at these low priced drinks, something more upscale bars won't likely see in their entire existence. Ultimately for the bartenders, due to the large amount of people in each bar it makes bartenders strain to handle customer orders, even if the bar has a full staff of over 5 bartenders plus bar backs.

During all four of our ethnographies we wanted to make sure we had a complete understanding of every detail of our activity in its setting so we made it a main goal to stay at each bar for around 1 to 2 hours taking notes on every detail we noticed. To embrace the fly on the wall style of observations we went into each bar trying to keep a very low profile and look like we were a normal customer, drawing the least amount of suspicion. To accomplish this we decided to take notes on our phone or tablet opposed to bringing in a notebook and pencil. Since our activity involved a lot of monitoring the bartender and bar backs we took a seat at the bar whenever possible, however this was more difficult at college bars as it was often too busy to get a seat at the bar. We were able to interview two bartenders as well as a bar back, all of which were at the two upscale bars we visited. Trying to interview bartenders at The Nitty Gritty and Kollege Klub was hard to accomplish because they were so busy. Bartenders could barely keep up with drink orders, let alone spare a few minutes for an interview. However, a few brief conversations gave us the idea that these bartenders would desperately appreciate something, anything to improve their current hectic workflow.

During the ethnography there were several differences noticed between the classes of bars. The upscale bars presented a more relaxed and calm atmosphere with medium level music or tv noise. In comparison, the college bars had louder music which forced the ambient noise to increase from people trying to talk loud enough for people to hear one another. The staff at college bars were also working at a much faster pace and appeared stressed. One major difference between the bars had to do with serving glasses, which is important to the biggest

breakdown we found in our observations. College bars used plastic cups during their busy hours as a means to save time and cost, while the upscale bars both exclusively used glass. Thus, unlike college bars that could just throw away their cups, upscale bars had to clean and meticulously polish their glassware for reuse. This process became blatantly obvious during our observations. We watched the bar-backs spend several minutes on one glass to get it perfectly polished. This was a slow, painstaking process that didn't seem to be particularly optimized. Just one little thing like polishing glasses, made up a significant portion of barbacks' time and slowed down service if a specific glass was needed but wasn't fully polished yet. We knew that this one breakdown was worth spending our time on because fleshing out a novel solution to the problem could save an immense amount of time for the bar and improve customer satisfaction in cleanliness and service.

What we immediately thought of was a small robotic device that could take over the responsibility of glass cleaning and polishing. The main design features we want our robot to do is assist the bartender and bar back in a way that their jobs aren't hindered even during large surges of customers on busy nights. A robot that can complete mundane tasks that need to be done behind the bar can make for a predictably fast and high quality output. Our first design idea came from noticing bar backs spending a significant amount of time polishing each glass, constantly checking and rechecking making sure the glass is perfect. When a large amount of people come into the bar and the bar back has other jobs they are trying to complete, it wouldn't be surprising for polished glasses to run out in which case the bartender would have to take over polishing glasses making it longer for the customer to get their drink. Having a robot do this job would make it much faster so the bartender can focus on his or her job of making the drinks. We thought why stop there for tasks the robot can complete. To expedite other tasks necessary to make a drink the robot behind the bar could also cut fruits and manage other ingredients needed for drinks. This would allow the bartender to focus more on the customer and allow them to have a conversation with them without worrying about small things such as running out of ingredients.

In considering all of our observations we concluded that designing a robot to take over glass polishing operations would have many benefits including making the bar more efficient,

potentially less employees, and also increase safety. During our ethnography we noticed a bar back break a glass in half while polishing nearly cutting his arm and he later told us that several weeks before he did actually receive an injury from polishing glass. Other functionality that the robot could take over is cutting and preparing ingredients for the drinks. This would also free up the bar staff to do more complicated tasks and also increase consistency with the products. We also are considering introducing the functionality to allow the robot to make drinks itself. It's important to note that in the higher end bars this probably wouldn't work as bartender interaction is expected but in a high throughput college bar this could be very useful. We also discussed the visual looks of our robot and came up with two different ideas. Both could have the same functionality but one would be designed to be displayed to customers which could generate increased entertainment for customers. For higher end bars the environment typically doesn't promote robotic style entertainment so we considered a more conservative boxy look that will blend in with the existing environment to not draw attention.

Reflecting on the experience of conducting a design ethnography, it is seemingly the final combination of contextual inquiries and cultural probes. What we expected was a simple observation period and a few interviews to get the general gist of our setting and activity. However, it turned out to be a combination of all of the methods we have practiced earlier in the semester, but applied to the situation where we don't have a product to test or build, but an entire setting and activity to discover. Like contextual inquiries, we observed our "users", in this case all of the personas in our setting, but we simply observed them as a whole without a specific goal in mind. This was accomplished by fly-on-the-wall observations that proved immensely useful to getting acquainted with our setting and activity, which was mildly surprising considering it was just sitting and observing. However, these observations formed the foundation of our understanding and made our ensuing interviews more focused on the potential breakdowns we were observing. The interviews, while useful for expanding on our fly-on-the-wall observations, were harder to conduct. We ran into problems getting time with our informants and really getting concrete information out of them. This is likely because unlike in contextual inquiries or probes where there is a specific end goal, this whole process is more open ended, which makes specific information more elusive. Still, we were able to express

some of our ideas and ask questions that gave us a clearer idea of the setting and activity and how we might improve the process in various ways. Ultimately, design ethnographies, like contextual inquiries and cultural probes, provide real value for exploring a new setting and activity without any preconceived ideas on how to improve processes.