Cassandra Rousseau

Student ID: 40177594

[cass201001@gmail.com](mailto:cass201001@gmail.com)

**Critical Reflection —**

**Textile Game Controllers: Exploring Affordances of E-Textile Techniques as Applied to Alternative Game Controllers**

CART 360: Tangible Media and Physical Computing

Elio Bidinost

December 3, 2021

*Textile Game Controllers: Exploring Affordances of E-Textile Techniques as Applied to Alternative Game Controllers* is a paper that describes remote workshops that covered e-textile techniques by making alternative game controllers, leading to a conceptual game jam. The purpose was to prioritize creative exploration within marginalized makers, allowing diversity, equity and inclusion within the game making field. The research main goal was to explore and elucidate the overlap between e-textiles and experimental game making. The workshops served as a research method on embodied experience. Giving spaces to marginalized communities to express themselves is a good way to change these inequalities. However, there are still a lot of issues within the video game field. The game community and industry give few spaces to people of colors, games are poorly accessible to people with disabilities, and women are not recognized within the community.

The workshops served to give space to women that are not acknowledged in the field. In the industry, only 24% of workers are female. This low percentage is due to be poorly represented in the game industry and the cultural issues within the community. Many women workers and gamers live harassment in the workplace. Female protagonists’ characters in video games represents only 5% and are often objectified or hypersexualized. The gaming experience itself is shifted more towards men (e.g., violence, sex, competition). This environment makes women feel underappreciated and unrecognized. Some measures have been applied within the community. In the education field, some universities such as UCA (i.e., University for the Creative Arts) have applied a 60/40 students’ ratio. Some created diverse and inclusive courses about game design. Many groups exist to gives space to marginalized groups and promote intersectional practices such as Dames Making Games or Women in Games. Their goal is to raise awareness regarding gender discrimination in the gaming field. Maker groups helped arise feminism in critical design in craft practices. Regarding the game jam, one of the objectives within the researches was to provide domain expertise to participants within an equity-seeking community. Do-it-yourself approach of the game jam gives a diverse and equitable space in technology making.

Giving space to people of colour was also a goal during this game jam, due to poor exposure within the field. Only 2% of professional in the game industry in the U.S. are black people. 4% workers worldwide in the game industry are people of colour. Some measure has been taken. The Big Five in Five campaign wants to boost Black employment to 5% in the next five years. Companies like Electronic Arts inserted programs to employ more Black workers. Incorporating Black customization will give good representation to players. Video game industry has been influenced by the white male culture from Silicon Valley. Intersectionality was key during the game jam. Organizers wanted workshops spaces to enable material development and way to share skills and domain knowledge across participants. The intersection of ethnography and practices consist of techniques (i.e., methods), translation (i.e., shift of ideas across multiple platforms) and transmission (i.e., act of communication). It offers a way to consider sustainability in research outcomes. The involvement of multiple cultures shows the importance of inclusion in game making. Intersectionality allows to develop better creations while including most people as possible.

Accessibility was a strong theme in this game jam due to poor consideration regarding disabled people. The game industry have a hard time to understand how to do proper accessible games. Accessibillity does not depend just on the difficulty of the levels in the game. Accessible features should complement the game. These options should not remove anything from the gaming experience, but help those with disabilities to appreciate it even more. Some measure have been taken. Multiple companies now employed accessibility conasultants and developers to make their game playable for disabilitated people. UI and UX gets more and more adapted to disabilitated people, controls can be customized, workspace becomes more inclusive regarding disabilitated people. However, implemented solutions will not issues for every disability. Alternative controllers making in the jam gave the opportunity to remove established conventions in games and design. The material play approach used during the jam is central to physical experiences of making, haptic and multi-sensory feedback core to both learning and developing e-textile and wearable technology projects. Organizers used play, in which this mechanism for transmission involves public in social spaces to extend research to a wider audience. It holds the potential to disturb inevitable power dynamics while inviting active engagement. During the jam, five workshops were offered, focusing on creation of alternative game controllers using textile sensors and microcontrollers. Each workshop explored different topics, materials, methods, and game types. It served as an opportunity for iterative development. Two objectives for these researches were to identify affordances an e-textile can bring with alternative game controllers, develop materials and kits usable in future jams. Time was devoted to teaching, designing, and crafting a game controller. Controllers produced were used to control existing games. The preparation of physical materials became more advanced through each workshop. The first workshop, *Introduction to Textile Game Controllers*, introduced a curated selection of materials and prototyping methods to gauge interest in topics for future workshops. Three sensing methods were introduced: capacitive sensing, digital switches, and analog sensors, all made with conductive textiles. The used methods were connecting e-textiles on Makey Makey (i.e., prototyping board used to create DIY interfaces for games) and using Arduino Micro board to enable textiles switches to control browser-based games on a USB-connected laptop. The second workshop called *Body-Centric Game Controllers* dived into creating game controllers using analog sensors. Sensors are created with conductive fabric and resistive plastic sheeting. Create pressure-sensitive textile buttons designed for specific parts of the body. The third workshop, *Wearable Game Controllers*, focused on a more complex implementation of digital switches, introducing the idea of “social switches”- closed or completed by multiple bodies. A piece of conductive fabric on another person’s body part will close the switch and make electrical connection. Focus placed on multiplayer/collaborative games. The fourth workshop called *Stitch and Stuff: Making Embroidered Games* focused on creation of capacitive sensors using embroidering techniques with conductive thread. Took hardware-only approach to make textile game controller, game does not rely on a screen-based device. The last workshop, *Fun with Felting*, used the same sensing technique (capacitive) with a different crafting technique - felting. Game controllers looked most like consumer game controllers. Organizers noticed that participants were more comfortable with usual models of game controller.