

Master John: Peripheral safety and feedback system for practitioners of BDSM

Position paper for CHI 2006 workshop

[Sexual Interactions: Why we should talk about Sex in HCI](#)

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ABSTRACT

Master John is a design for a graduate school project for practitioners of BDSM, a set of sexual practices involving giving psychological or physical control to another person. The design for the system involves a sensor cuff for one participant and a feedback cuff for another participant. The system provides two useful functions:

1. A variable-strength, peripheral, haptic signal, which communicates levels of excitement.
2. A scene-interrupting signal, which warns of potential physical danger.

This project is submitted to the workshop as an example of the intersection of interaction design and sexual practice.

Though this was a short project, pursuing the design goals and building prototypes revealed many domain-particular and universal design questions: How can computer technology fit into BDSM philosophy? Through what channels should output signals be delivered? How best to present health data to discourage even riskier “edge play”?

Keywords: BDSM, biofeedback, sex, affective computing, peripheral computing, wearable computing, augmented reality

INTRODUCTION

I undertook the Master John project while at graduate studies at Interaction Design Institute Ivrea (IDII). In the workshop with Hitachi Design Center Milan, students were challenged to design an interactive mobile communications device for an individual they knew personally. I chose an individual I knew whom I had recently learned was involved in high-risk BDSM.

Understanding Context: About BDSM
BDSM is an acronym that stands for: **B**ondage, the giving of physical control; **D**omination, the giving of psychological control; **S**adism, the giving of intense physical sensation; and **M**asochism, the receiving of intense physical sensation.

The aesthetic roots of BDSM [1]
Being a largely marginalized set of sexual practices, BDSM is a difficult thing to trace historically. The commonly accepted theory within the community is that BDSM emerged from World War II soldiers, who sexualized the intense emotions of their wartime experiences and associated them with the severe utilitarian aesthetics and the psychological domination required of the military. Upon returning back home to the States, soldiers found a similar aesthetic in the motorcycle community, specifically the Harley-Davidson community. BDSM's aesthetics thereby emerged as a hybrid of mid-century motorcycle and military look-and-feel.

Modern practice

BDSM is practiced differently by every person who participates. There are, however, certain recognized commonalities on which I based my designs.

The *dom*, or dominant, assumes control and responsibility of the *scene* (see below). A master is someone who exclusively assumes this Dominant role. The title of the project comes from this term.

The *sub*, or submissive, grants the dom control and responsibility.

In the *negotiation*, which occurs before and outside of the scene, the sub and the dom discuss what they expect from the scene and their personal boundaries. The safeword (see below) is often defined in the negotiation.

The *scene* is when the BDSM takes place, where the *negotiation* plays out. This is what most people think of when they hear the term BDSM.

The *safeword* is the safety catch for the scene. If either participant feels that the scene is getting out of hand or too much for him/her to handle, by speaking the safeword, he/she signals to the other that they wish the scene and its fantasy to stop immediately. It signals that they want to take back control and responsibility for themselves. Notably, any verbal communication other than the safeword can be considered part of the scene.

Design of the system

The kink is BDSM, not medical, so all technology should agree with leather aesthetics and be incorporated into existing gear to minimize the *social weight* of the device [2], which is quite high even given the limited size of the form. Further, positive signals passed to the users must be peripheral. Negative or warning signals should, of course, be intrusive.

The system comes in two parts: an upper arm cuff for the sub with biosensors; and a forearm cuff to receive and process the signals for the master, with actuators to deliver the output.

The sub cuff

The upper cuff for the sub—standard attire for BDSM—is augmented with biometric sensors and powered with rechargeable batteries. This places the sensors on a broad, mostly unmoving point of contact that enables accurate reading. [3]

The sensors, embedded in the harness and based on BodyMedia's SenseWear armband technology, monitor the following data.

- Galvanic skin response, which correlates to emotional intensity
- Heart rate
- Blood oxygen levels
- Temperature

The data is wirelessly broadcast from the harness and picked up by the cuff.

The dom cuff

The forearm cuff worn by the dom picks up the broadcast signals, with a hidden antenna coiled around the arm. The electronics are powered by rechargeable batteries.

The cuff receives the biometric information and software watches for trends in the data. It serves two types of feedback to the master: A peripheral signal for monitoring the sub—called "*feedback*"—and a interrupting signal for warnings—called *safeword*.

"Feedback"

The cuff is outfitted with four small, variable-speed pager vibrators along its length. Their strength of vibration correlates to the galvanic skin response data from the sub cuff. The dom registers this low-fidelity haptic signal in the periphery of his/her attention.

Why is feedback useful?

In the context of a scene a sub may, in service of the fantasy, be speaking counter to his/her actual feelings, e.g. “No! No! Stop!” How is the dom able to tell if the sub is actually enjoying themselves? Galvanic skin response is tied to emotional excitement. In most contexts, corollary data is needed to determine if the excitement is positive, e.g. pleasure, or negative, e.g. fear. In the BDSM context, however, intensity itself *is* the desired effect, and so this signal needs simply to be passed on.

Safeword

The safeword function has two levels: warning and alert.

To warn the dom of dangerous trends, the continuous vibration in the cuff is staggered, i.e. if it is vibrating slowly, the dom will feel a few high-speed jerks. This cues the dom to pay attention to the scene and resolve any issues. The cuff also has three small dials at the base, near the elbow. These low-fidelity dials display heart rate, blood oxygen levels, and temperature in red, yellow, and green ranges. After alerts, the dom can glance at the dials to tell exactly what the system detects as critical to get the scene back under control.

To alert of critical biometric statuses, the speaker on the cuff emits a loud alarm to break the scene for immediate attention.

Issues raised by the project

The design of this system raises some issues specific to the BDSM domain and a few issues for general interaction design.

How can computer technology fit into BDSM domain-specific philosophy?

The mere presence of a safety system might seem to lessen the meaning of a sub’s “gift of control”, i.e. *complete trust*, to the dom. How to encourage adoption of such a system? Little can be done about this objection for purists, as the system is predicated on safety. However, it is

conceivable that the dom never tell the sub that it is there, putting the cuff on the sub as part of the scene. This placebo approach gives the responsibility of safety to the individual who would ordinarily assume it, while honoring the intentions of the sub.

How should output signals be delivered?

The form and channel of the three types of signals are determined by their use. They are designed to be eyes-free and hands-free as this is most appropriate to mobile interfaces.[4] Since the Master John system is passive input and output, there is no call for interaction design for the input.

The feedback signal is only useful for the dom, so it should be private. Personal audio and visual equipment would be invasive or restrictive to the scene, so haptic output is the remaining choice. This should be true for all sex-related, personal-output actuators. Placement and form factor become the main design problems. In the case of BDSM, cuffs are already part of accepted aesthetics, and so are a natural choice.

The safeword *warning* signal is delivered haptically to the dom so that, if the dangerous trend is spotted and addressed, the dom can address it without stressing the sub and compounding the problem. To disambiguate the safeword warning signal from the smooth feedback signal, it is given a contrasting, staggered quality. The warning *remedy* signals are dials. Though these dials are foreign to common BDSM aesthetics, keeping them small and controlling their design to be similar to motorcycle dials, they should not interfere greatly. Additionally, their placement on the inside of the forearm means they are mostly out of sight until the dom needs to reference them, as he or she would a watch. Care was taken not to place the dials exactly where one would read a watch, to avoid real-world associations that might spoil the fantasy of the scene.

The safeword *alert* signal should be omnidirectional and unavoidable so it is

detectable by everyone who could help, and this means sound. Furthermore, being in a separate channel than the feedback signal should prevent adaptation/habituation.[5]

Does more information encourage riskier “edge play”?

This is entirely possible. It is unsound to delete the warning dials, as some indication of the nature of the problem is imperative to a quick remedy. But to discourage using these signals to get closer to the edge, the biometric data is kept in low resolution.

One question the author has been unable satisfactorily answer follows. *Will users of the system come to rely on such a system, such that augmentation becomes a replacement for personal responsibility?* A long-term field study would answer the basic yes or no question (though I fear the answer is yes), though such research could not address the more serious issue of what can be done about it in the design.

Conclusion

Between the utility of the feedback mechanism and the reassurance of the safeword function, Master John is meant to positively augment BDSM practice. As an example of interaction design for sex, it is hoped to provide an elegant example of aesthetic fit and peripheral augmentation that truly enhances the users’ primary activity.

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