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# Authorship in Art/Science Collaboration is Tricky

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**Abstract**

As an interdisciplinary team that creates interactive art installations, we discuss the concepts of authorship in context of the creation of two interactive art installations. In our experience, the continually evolving question of authorship raises questions about joint authorship, or how the people who have created the piece declare authorship; as well as shared authorship, or how the viewers who interact with the piece can affect change and therefore be thought of as having authorship.

**Author Keywords**

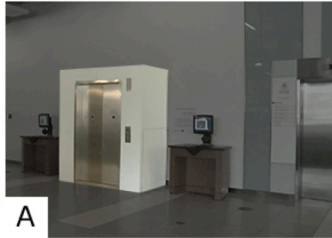
Digital media art; interdisciplinary collaboration; HCI; design;

**ACM Classification Keywords**

H.1.2 User/Machine Systems

**Introduction**

Art/Science collaborations are increasing every day. Yet despite their growth and acknowledgement, there is still little documentation of the practice. As the frequency of these collaborations increases, one might think that the discussions around how these collaborations work would resolve. In contrast, it is our experience that the issues in these collaborations continue to be in intense debate. As a group we have



**Figure 1: *A Delicate Agreement*.** (a) art piece itself, while (b,c,d) show interaction from looking in the peephole to getting a reaction from the piece.

actively taken part in these collaborations over the last two years and we have in various groups and sub-groups contributed two interactive installations, and six papers. In our experience authorship remains an ongoing discussion.

In this paper we begin by describing the two installations and follow these descriptions with a brief discussion of several of the collaboration issues that either we experienced or that have been suggested to us by the community.

### Our Interactive Art Pieces

In this section, we describe our two interactive art pieces: *A Delicate Agreement* and *Conditional Balance*.

*A Delicate Agreement* [9] is a gaze-triggered interactive installation that explores the concept of a liminal space. Liminal spaces are those spaces that we exist in between our principle places of activity. Common liminal spaces such as stairways and hallways require movement through them in order for people to exist comfortably within them. In the case of an elevator, the space itself is moving and the people within must wait for it to complete its task. As seen in Figure 1a, this installation presents as a set of elevator doors with a peephole in each door that entices viewers to peek inside (Figure 1b) and observe an animation of the passengers (Figure 1c). Each elevator passenger, or character, has a programmed personality that enables them to act and react to the other characters' behaviour and the viewers' gaze (Figure 1d). The result is the emergence of a rich interactive narrative made up of encounters in the liminal time and space of an elevator ride.

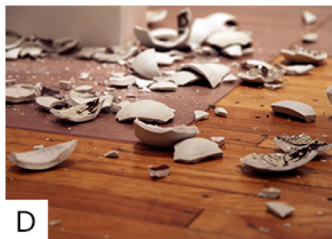
*Conditional Balance* [8] is an interactive art installation that reflects upon the nature of collaboration and joint and shared authorship of an interdisciplinary project. In particular it reflects upon the risky nature of these collaborations. This piece makes possible misunderstandings and tensions that can arise explicit, by reacting to both the presence and the position of viewers in a gallery space. Two balanced porcelain spheres represent the ideal outcome of the collaboration between two artists (Figure 2a and b). On the floor are shards of broken porcelain from spheres that have fallen from their stands, representing failure and reminding viewers of the risks they take by approaching the work (Figure 2d). Microsoft Kinects embedded in the stands supporting the spheres detect the body position of the viewers present. If two viewers enter each other's intimate space in front of one of the spheres, a small peg will poke up underneath that sphere, causing it to fall (Figure 2c). The other sphere wobbles with on its stand as viewers draw nearer to it.

### Authorship Can Be Tricky

Based on our experiences in developing these two interactive art pieces, we have found that there are two different aspects of authorship to consider: joint authorship (amongst ourselves), and shared authorship (with the participant).

#### Joint Authorship

Joint Authorship refers to how we as collaborators declare authorship of a piece that we have created together. Although the philosophy of authorship in literature has been in continuous flux, especially since the second part of the 20th century [3], the practices of assigning authorship in both art and HCI are mostly stable and we note that these different communities



**Figure 2. Conditional Balance.** (a and b) show the piece itself while (c and d) show how participants can cause a porcelain ball to break.

have different authorship practices. For example, among our peers in the science and research community, authorship is commonly decided by who has contributed to the science and/or research result and is commonly ordered by the amount of work contributed with the most work being done by the lead author. Even this relatively simple formula can vary from group to group: some groups value initial ideas as the most significant and give leader authorship for that, and others award lead authorship based on the role each member plays in the realization of the idea. Similarly, some groups tend to value the provision of funds for the project in terms of authorship and others do not. In contrast, we mention two of the common practices we have seen in the art world. Some artists feel that because the creative thrust was initially theirs that they retain authorship and simply mention other people who were paid to work on the piece and contribute to its realization in acknowledgments. Other artists fully disclose their collaborations and list work as joint or group work. We belong to the second group.

Throughout our work, we find that our practice is shaped by the collaborative nature of our team. While we each initially identified with a particular discipline of expertise, as the process unfolded, we experienced a constant shift of roles between art, design, computer science and engineering. We find that taking on different roles allows us to have a better understanding of the task at hand, and recognize that creative moments occur throughout our process and are contributed to at different times by all members of the team. This broadens our individual perspectives and aligns expectations for our work.

### *Shared Authorship*

In contrast to joint authorship, shared authorship refers to the relationship between the artist(s) and the viewers who are involved with co-creating their experience of the piece. Traditional authorship has, for centuries, stayed firmly with the author/artist and/or the artistic team of collaborators. Recently this has been challenged. In interdisciplinary interactive art, and for that matter all interactive media, a new dichotomy is arising: now, through the interaction, the viewer can have an impact on the piece, as they experience and sometimes as all subsequent viewers experience it. This active role turns the viewer into a participant, and can range from minimal effect to substantial impact on the state of the piece, potentially re-shaping the piece and possibly altering how others experience it.

These emerging interactive artistic realities resonate with Erving Goffman's ideas as discussed in *The Presentation of Self in Everyday Life* that all interaction between people revolves in a cycle of performing or expressing behaviour to others, who in turn form an impression of this expressed behaviour based on their own personal history and use this as a basis to decide how to perform or express behaviour in response [5]. Although Goffman refers to relationships between people, this can also apply to the interaction between a viewer and an interactive art piece. For example, consider a viewer interacting with a piece, becoming an active participant, engaging with the piece's behaviour, performing in response, affecting the behaviour of piece, being affected herself, and affecting the ongoing state of the piece.

In our pieces, the participant is part of creating the underlying narrative. As mentioned earlier, *A Delicate*

*Agreement* uses the participant's gaze to affect the reactions of the characters in the elevator, while in *Conditional Balance*, the participant becomes responsible for the porcelain balls breaking or wobbling. Other art installations by Gonsalves [6], Levin [7] and ART+COM [1] also exhibit these characteristics: bringing the participant into the piece through means of interacting with computer-coded entities, and by doing so unfolding a narrative driven and affected by both created software and the actions of the participant. Similar ideas to these have also been suggested from a human computer interaction perspective as discussed by Dix et al. [4] and from an interactive narrative perspective as presented by Bang [2].

### Discussion and Conclusion

As interdisciplinary work continues to establish itself more firmly, specific practices may start to emerge. Perhaps these practices will manage to come to terms in unexpected ways with both joint (with collaborators) and shared (with viewers) authorship.

Authorship in art/science collaborations is tricky because the ideas around joint authorship still need to be resolved on a piece by piece basis. Joint authorship is also tricky because the expectations from one community collide with the expectations from other communities – mutual respect takes work and ongoing discussion. The needs of individuals often come from their communities of practice, and, increasingly, interdisciplinary teams are bringing together people from many different communities.

Shared authorship is an evolving area of interest and may be even trickier because it is an inherently different type of authorship. Instead of deciding whose

names should appear on the work, it refers to the co-creation of the experience between the participant and the piece. Shared authorship is a concept that we consider when designing and creating an interactive art piece: we look into potential effects that a participant can have on the ongoing state of the piece while interacting with it.

Currently what may be most important is the maintenance of open discussion and exploration of how varying concepts such as joint and shared authorship can more deeply inform the design of interaction.

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