Negotiating Dyadic Interactions

through the Lens of Augmented Reality Glasses

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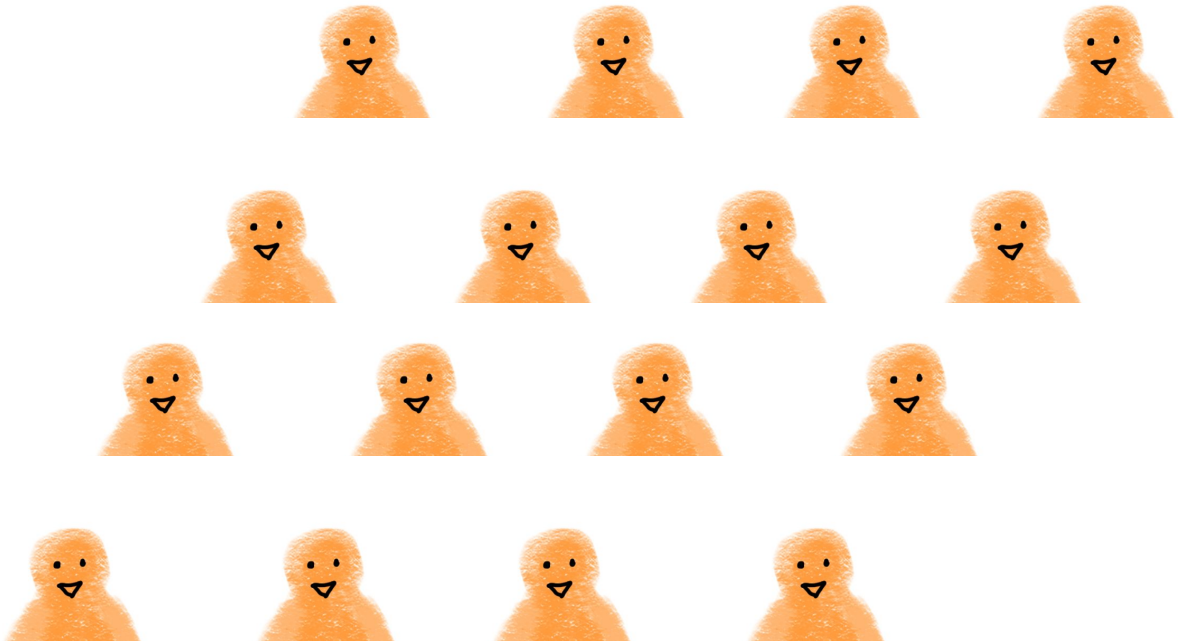
1 Brown HCI 2 ROBOTS IN GROUPS LAB

Cornell Bowers C·IS
College of Computing
and Information Science

NSF



Dyadic Interaction with Secondary Actor and User

Secondary Actor

User

Secondary Actor

active participants who have agency to co-create mixed reality interaction with the user

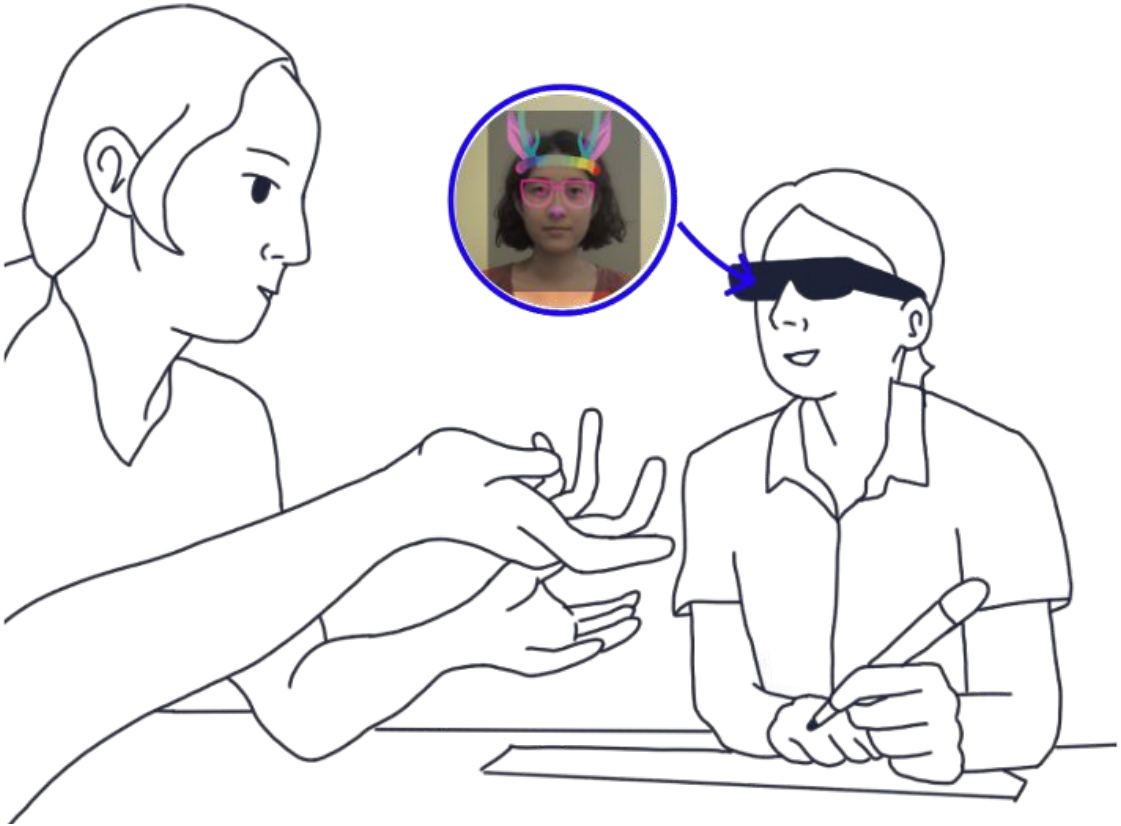
RQ1: What design factors contribute to the unbalanced power dynamic between the user and the secondary actor?

RQ2: Do pre-existing power dynamics between users and secondary actors change or remain unbalanced?

Method

Pre-Study Survey (15 min)

Interaction Task (15 min)



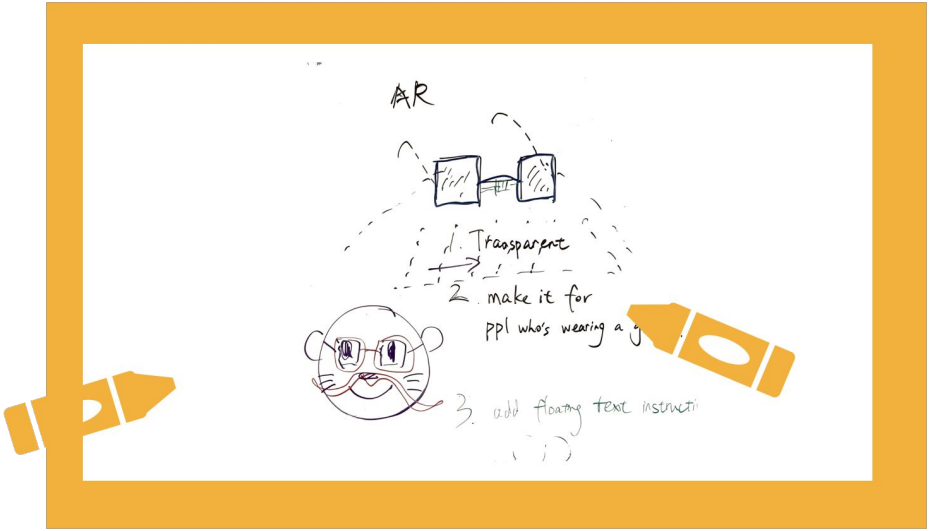
Method

Pre-Study Survey (15 min)

Interaction Task (15 min)

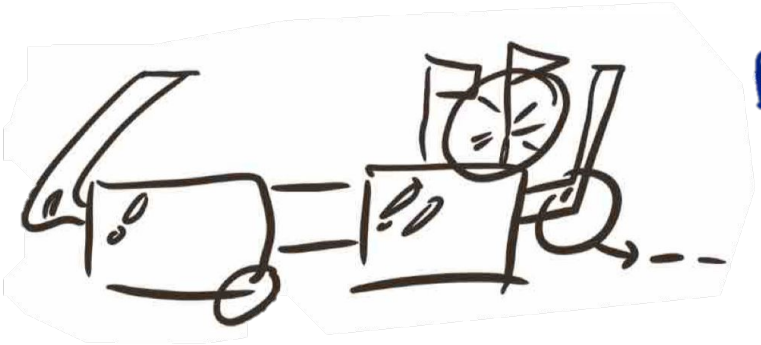
Participatory Design (15 min)

Interview (15 min)

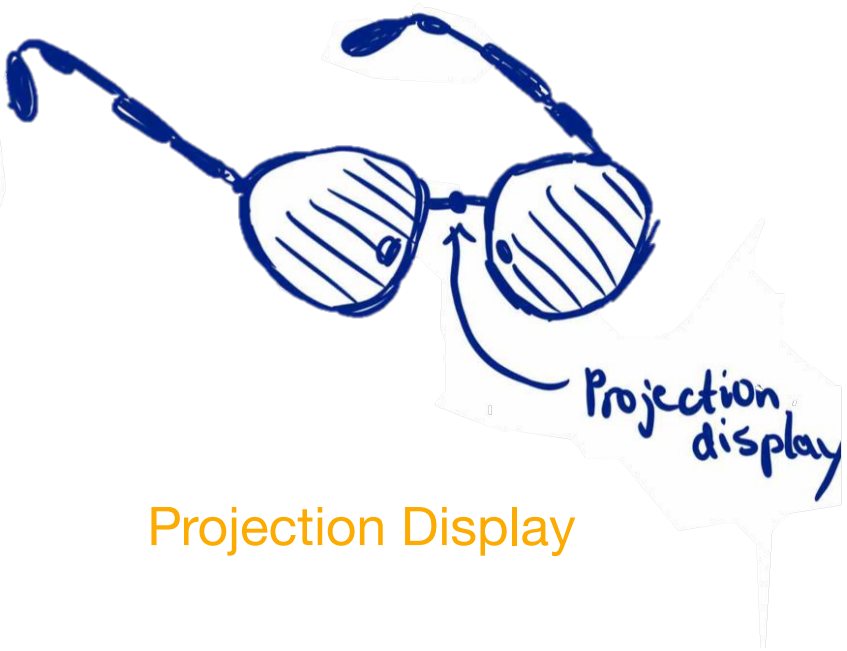


What design factors contribute to the *unbalanced* power dynamic between the user and the secondary actor?

Implicit Biases in Participants' Designs



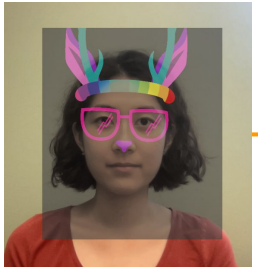
Indicator Light



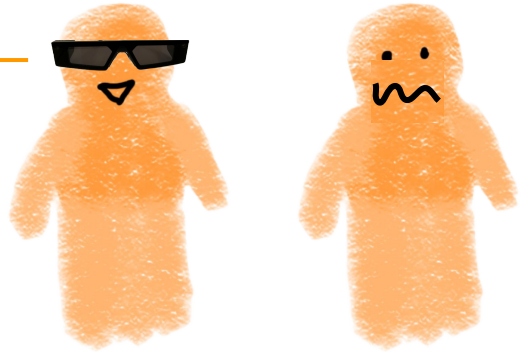
Projection Display

3 Design Factors

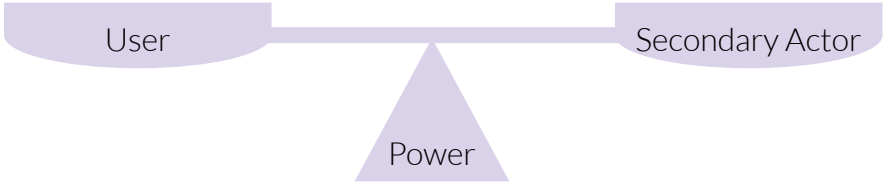
1. Lack of Transparency of the User's View



User's View



User Secondary Actor



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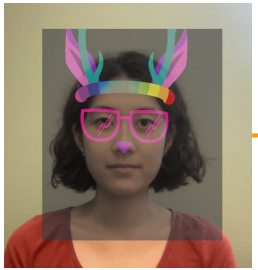
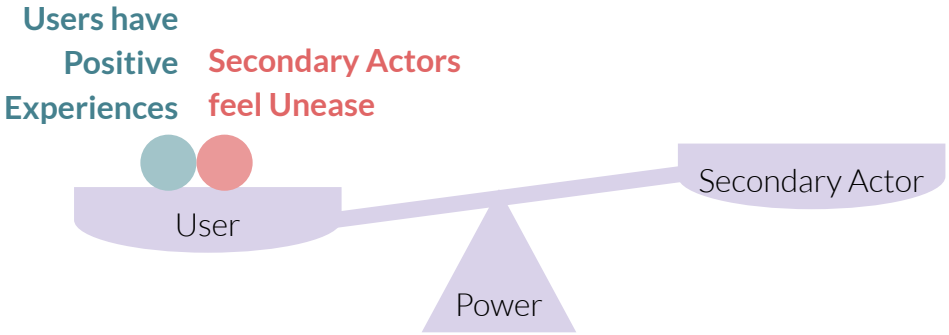


User's View

User

Secondary Actor



3 Design Factors

1. Lack of Transparency of the User's View

2. Violation of Agency over Self-Presentation

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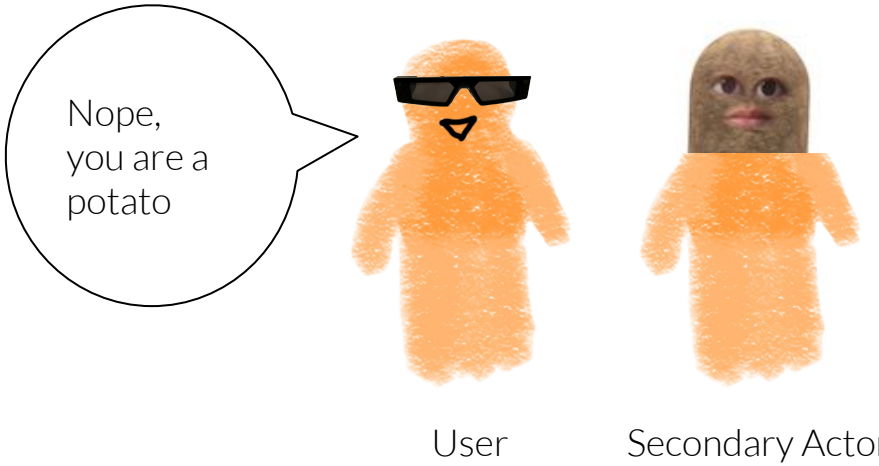

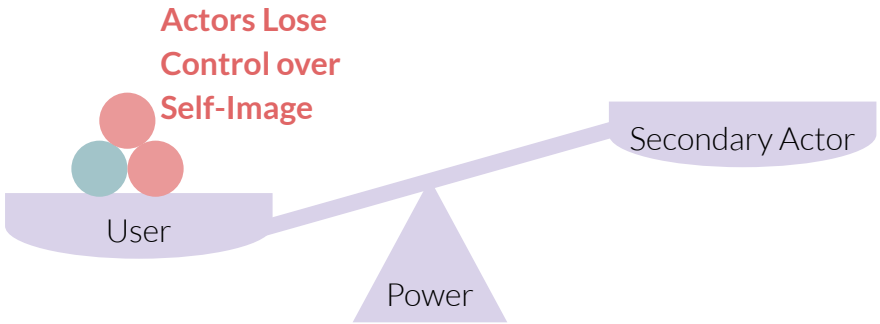

3 Design Factors

1. Lack of Transparency of the User's View

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3. Discreet Recording

3 Design Factors

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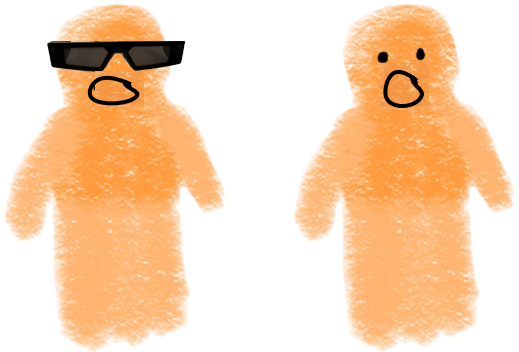
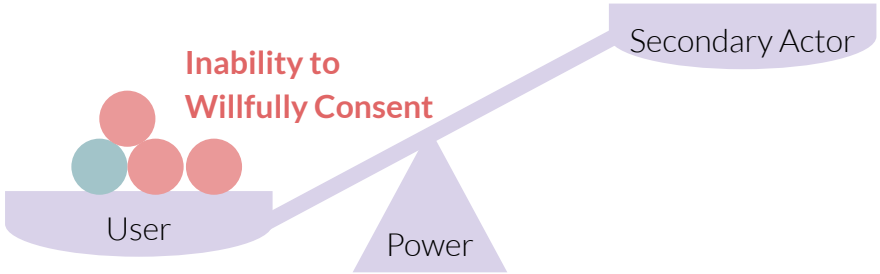
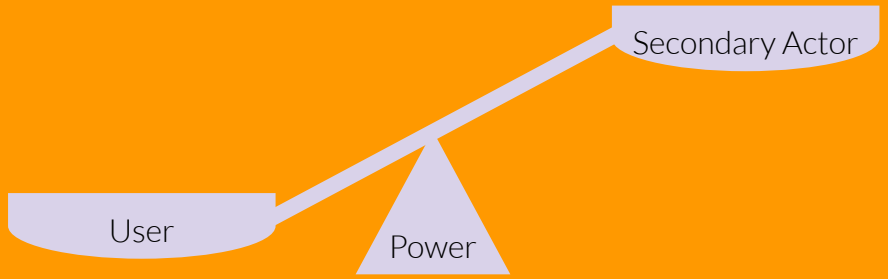


User Secondary Actor



Do pre-existing power dynamics between users and secondary actors change or remain unbalanced?

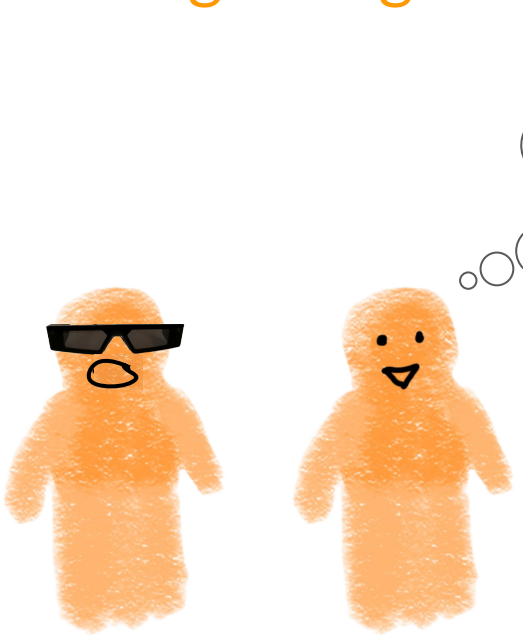


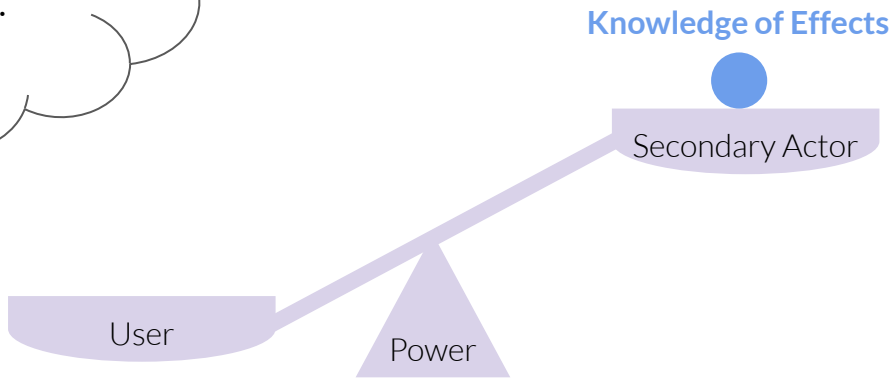
No, they remain the same.

Active Ignoring

participants are aware of the effects of the AR modality and consciously suppress their own reaction or behavior to the effects

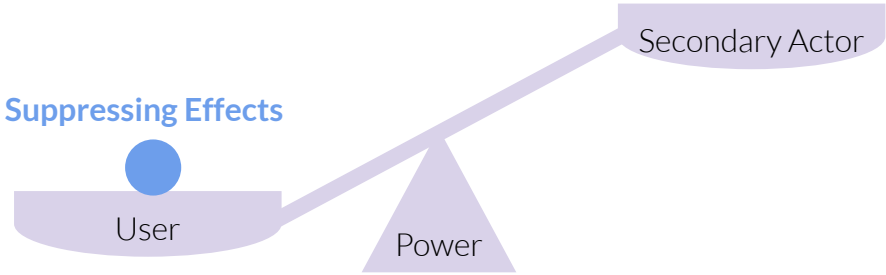
Active Ignoring





Active Ignoring

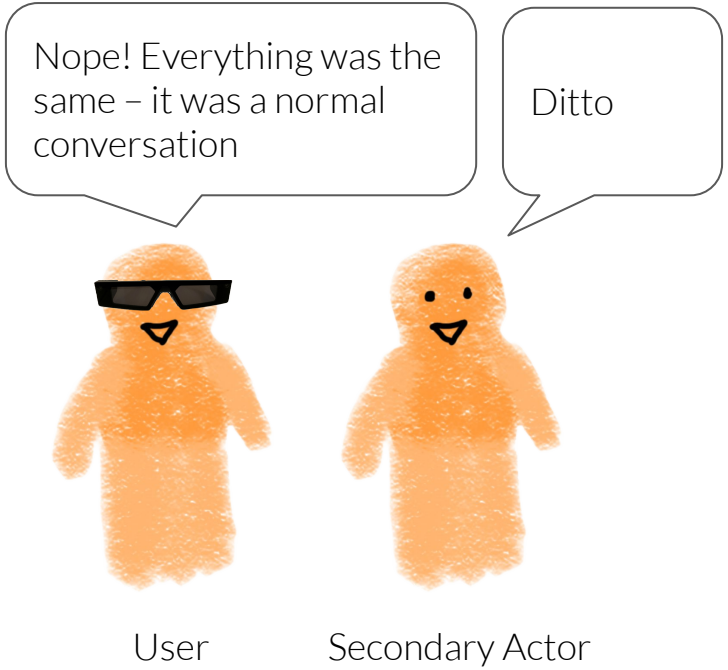
User Secondary Actor

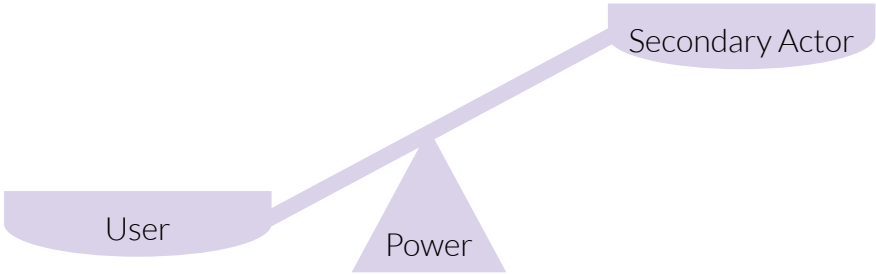


Passive Ignoring

participants may or may not be aware of the effects of the AR modality and unconsciously suppress their own reaction or behavior to the effects

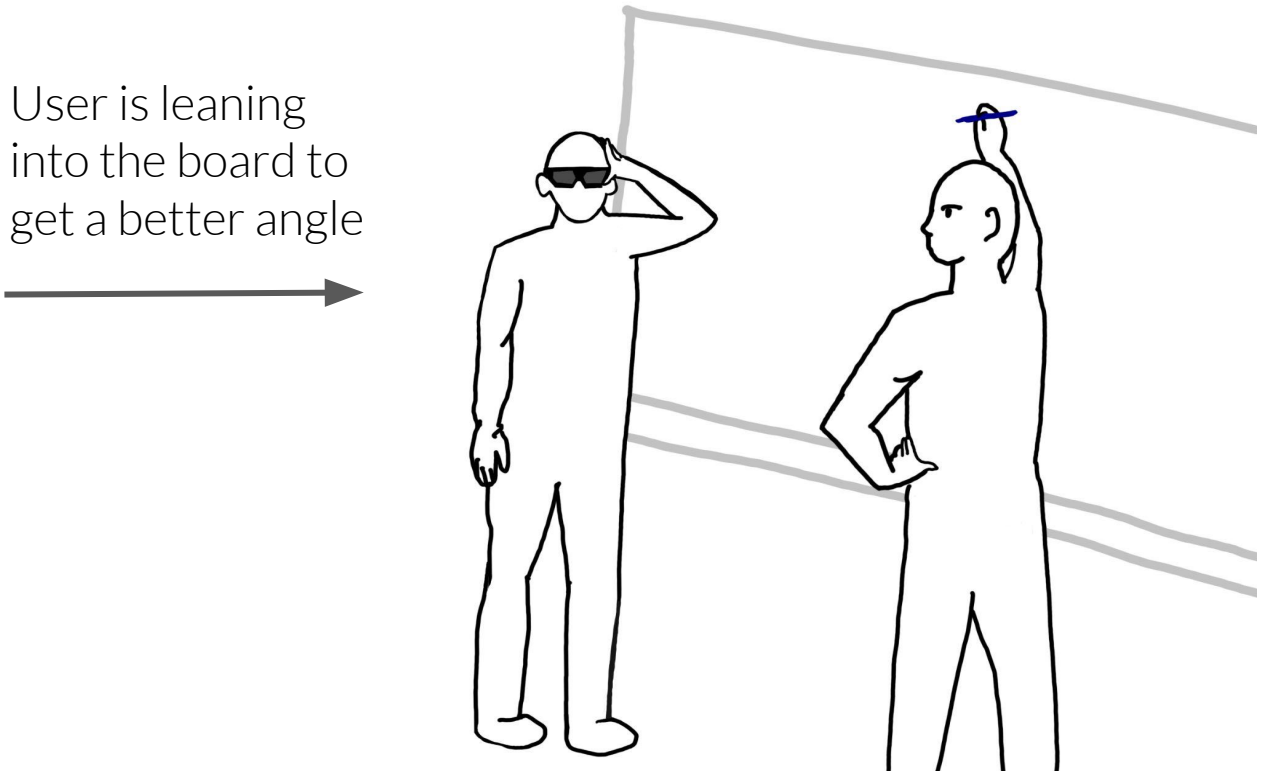
Passive Ignoring





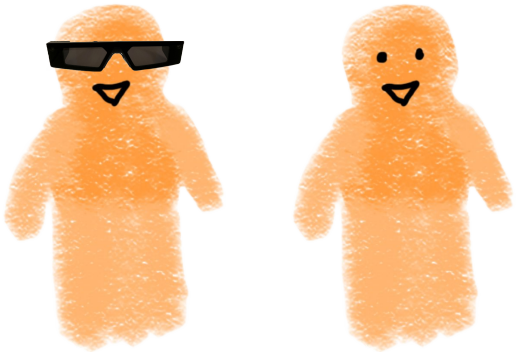
What Really Happened

User is leaning into the board to get a better angle

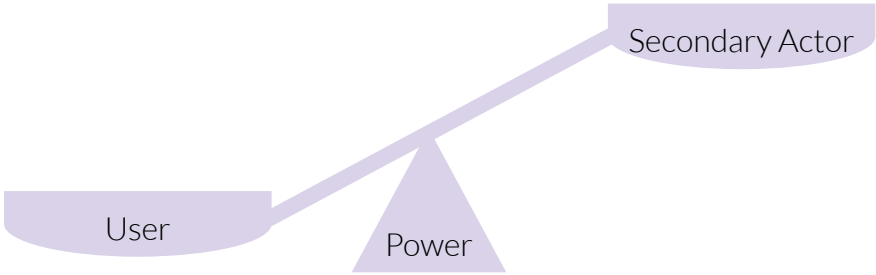


Passive Ignoring

No changes in power because both parties are unaware of changes



User Secondary Actor



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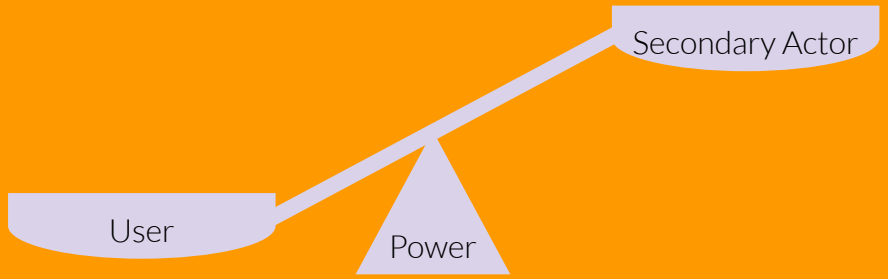


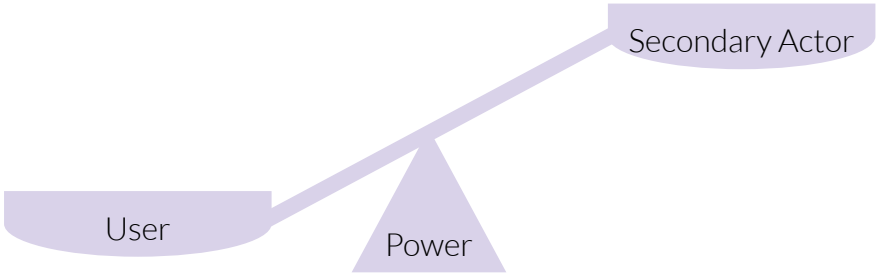
Actually… Yes, they change!

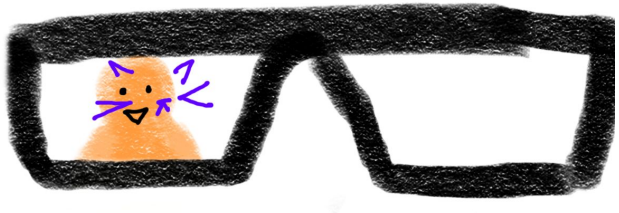
Readjusting

a subtle, collective behavioral change where both the user and the secondary actor negotiate through shifting bodies for the betterment of the collective AR experience

Readjusting

Secondary Actor

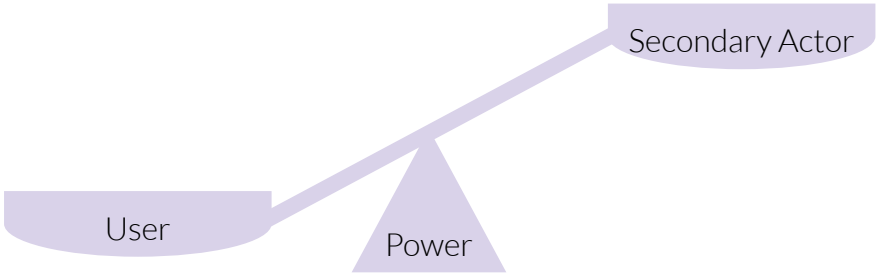


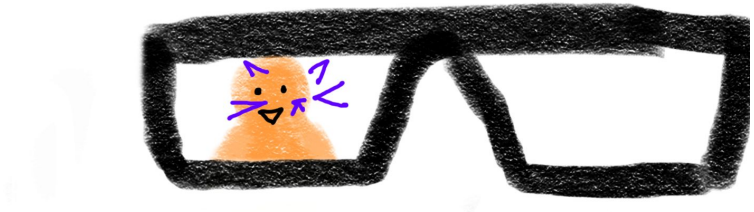


User's View

Readjusting

Secondary Actor





User's View

Readjusting

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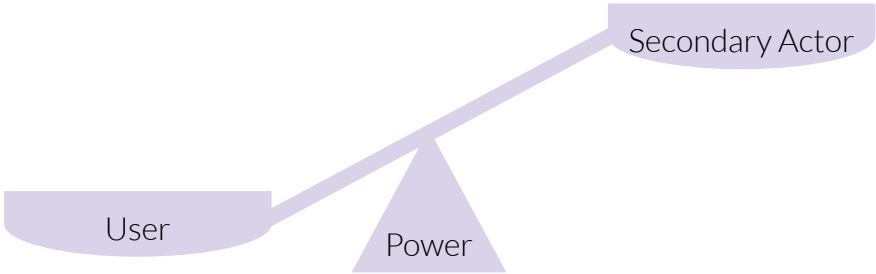
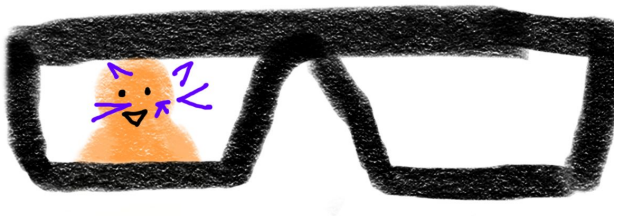


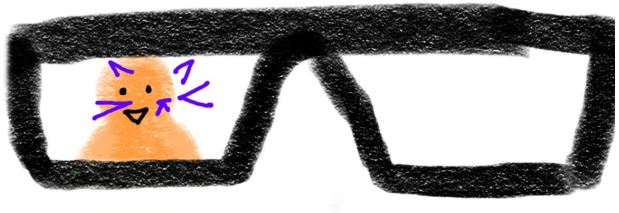


User's View

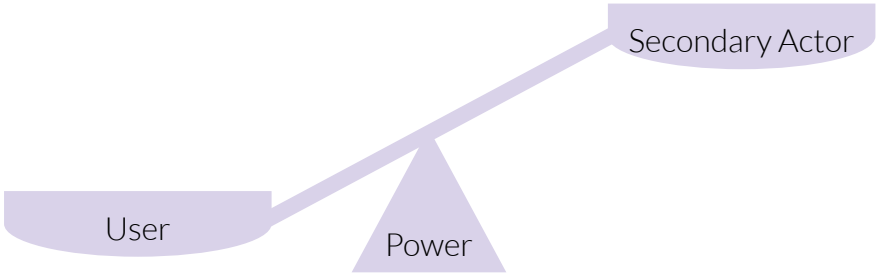
User physically **readjusts** to fix the misalignment

Readjusting

Secondary Actor

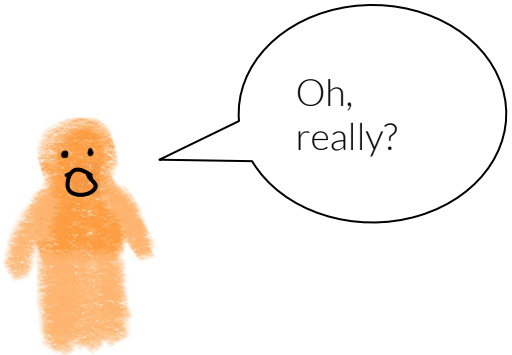


User's View

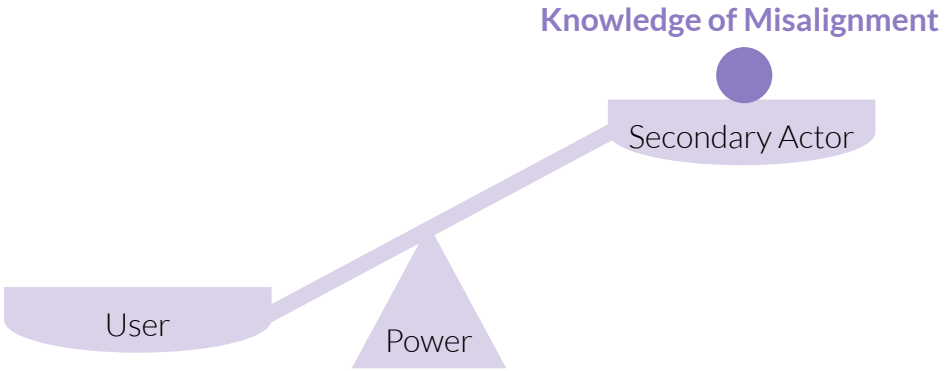


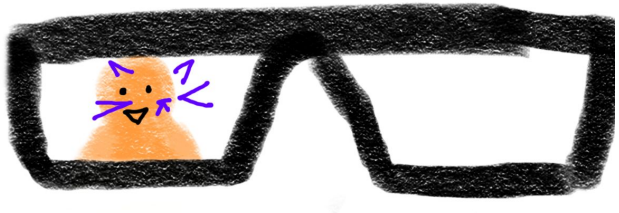
There is a **misalignment** in the filter

Readjusting



Secondary Actor



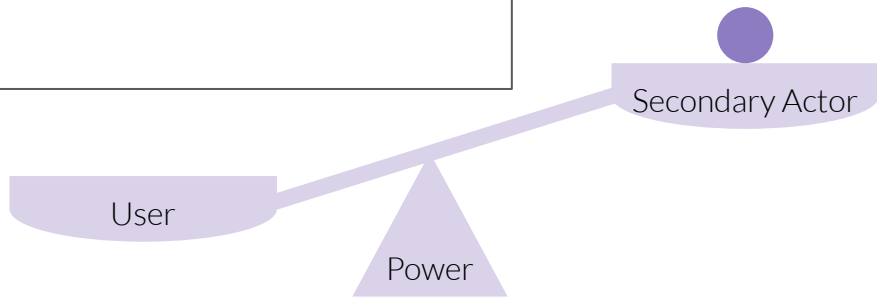


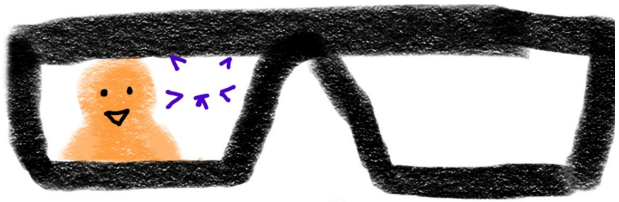
User's View

Readjusting

Secondary actor physically **readjusts**
and leans back and forth to fix the misalignment

Secondary Actor





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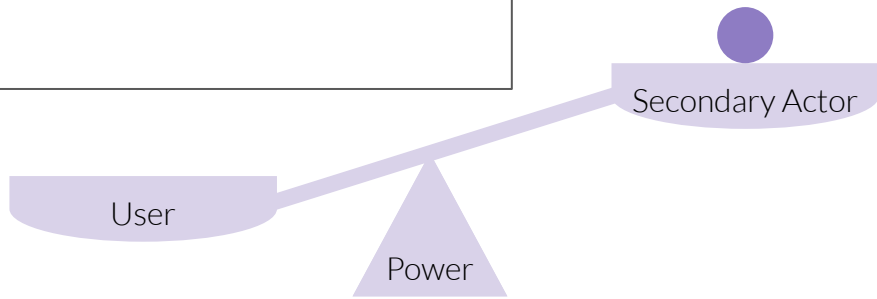
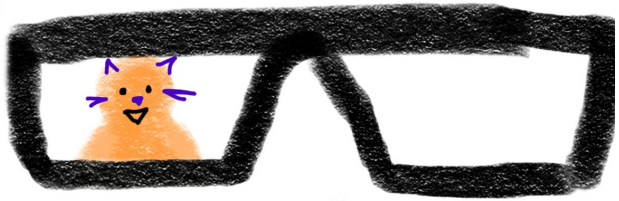
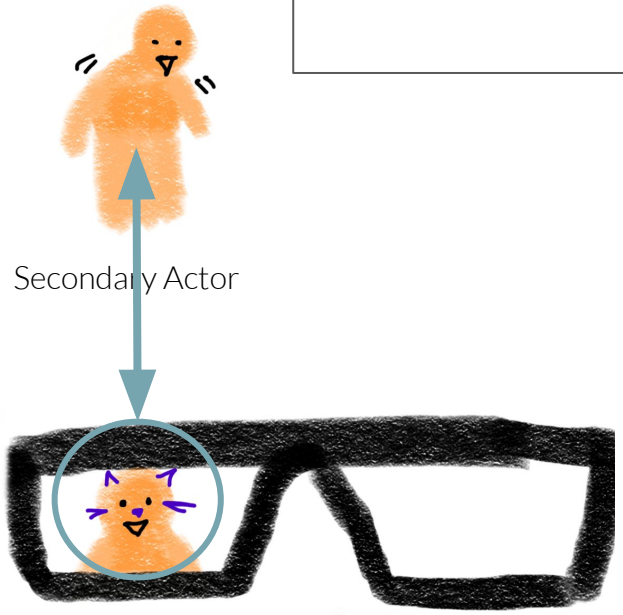




User's View

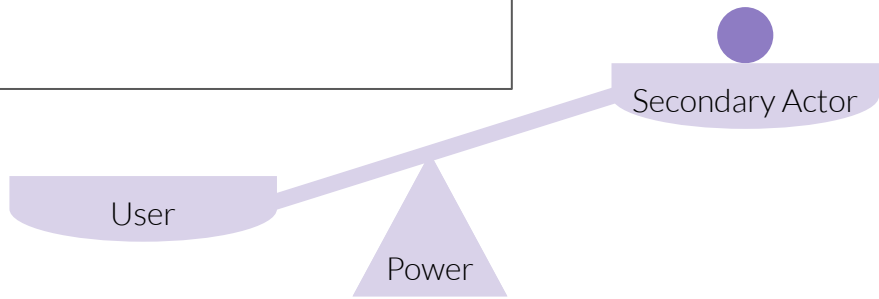
Readjusting

Directly Interacting with the Virtual,
and not necessarily with or through the user



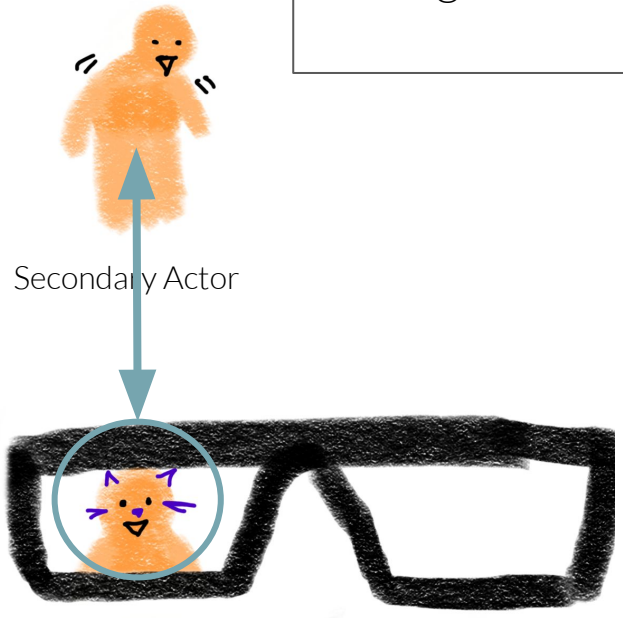
User's View

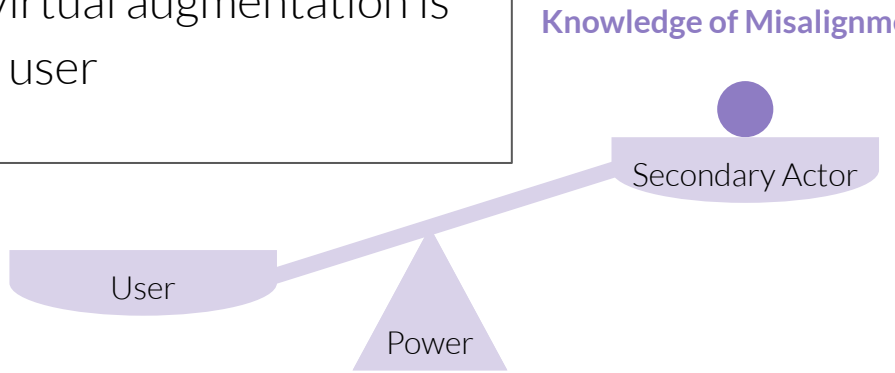
Knowledge of Misalignment



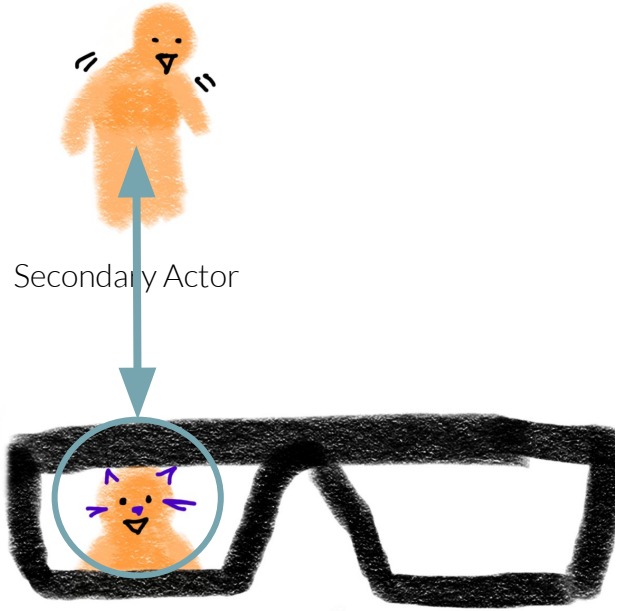
Readjusting

Reclamation of Power, the ability to directly interact and affect the virtual augmentation is no longer limited to the user

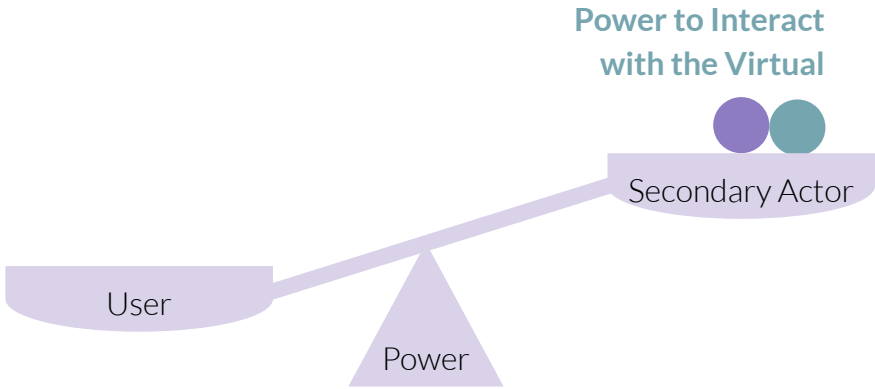




Readjusting



User's View



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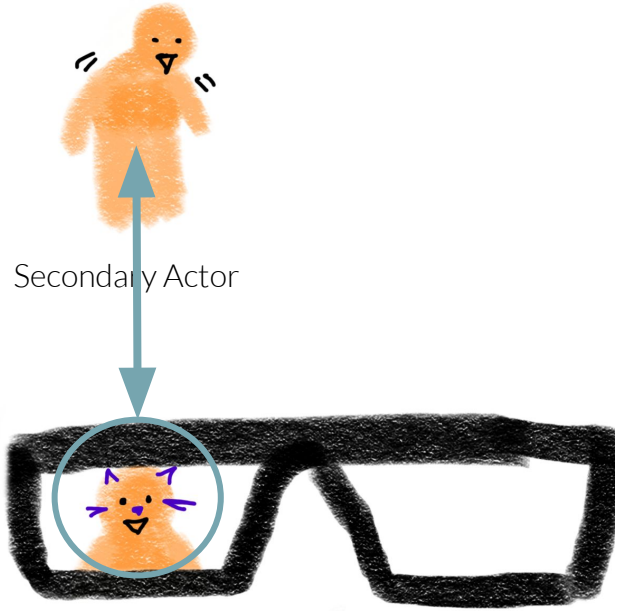
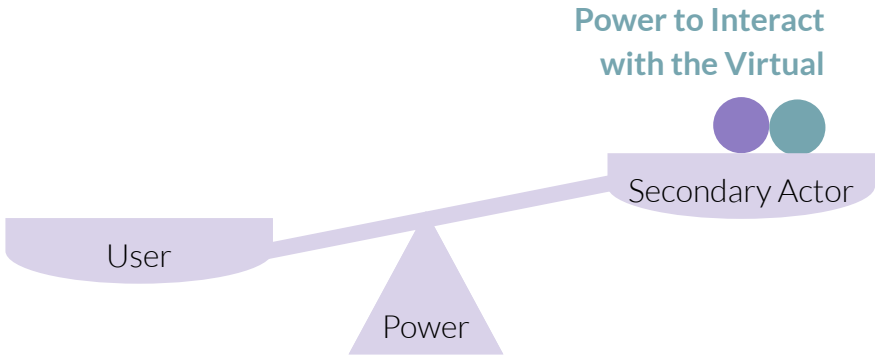
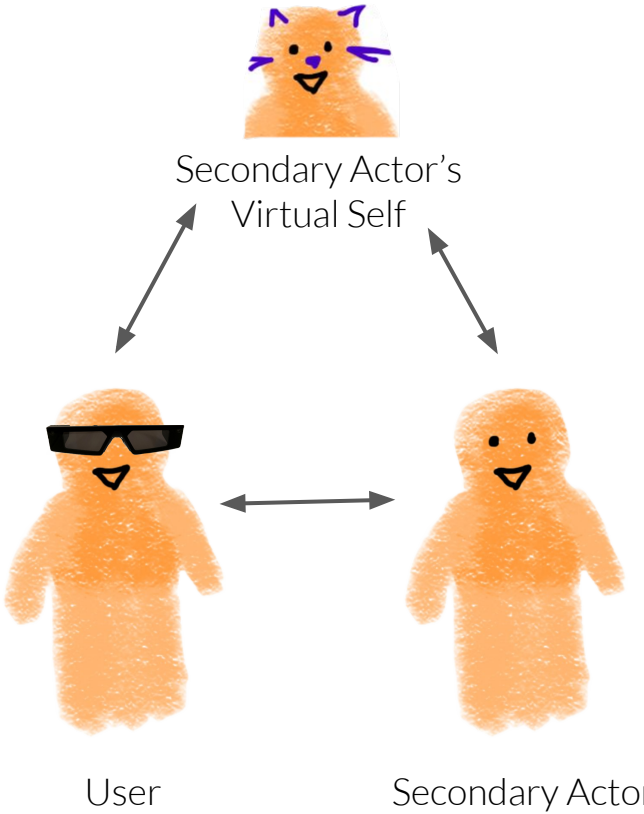




Takeaways

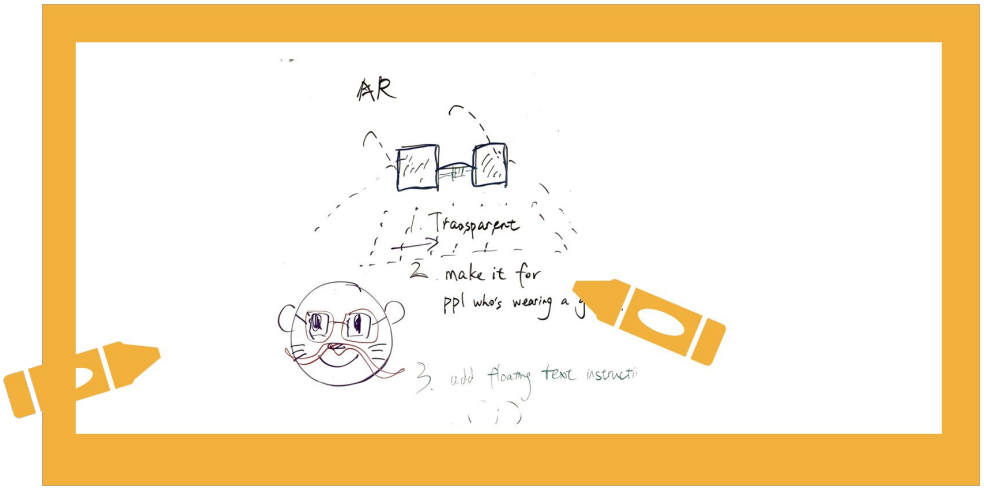
Adapting to Each Other



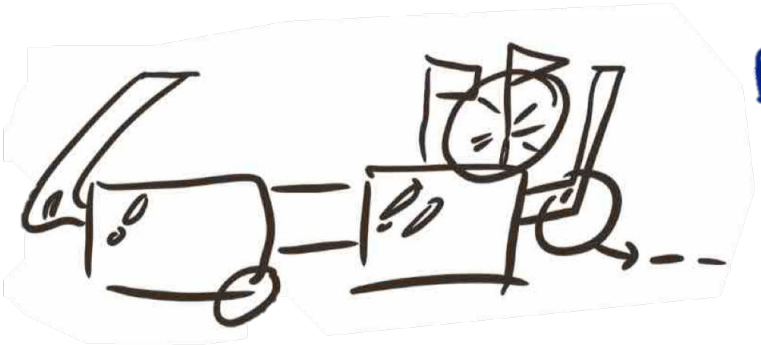
Both user and secondary actors are **co-creators of a mixed reality space,** both can interact with the virtual and are simultaneously **adapting to a new medium**

Designing for and with All Stakeholders

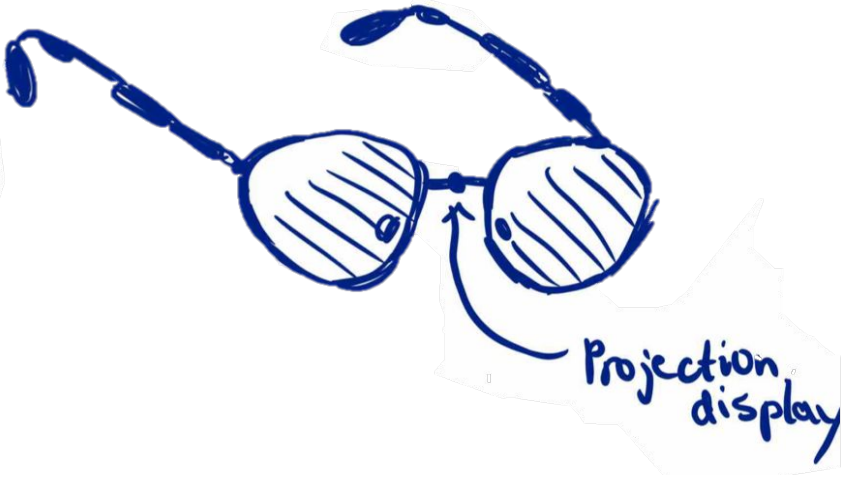
Direct observation of both user and secondary actors in participatory design tasks and role-playing induce nuanced critiques and biases



Simple Features for Positive Coexistence



Indicator Light



Projection Display

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