

USER EXPERIENCE IN MOBILE VIRTUAL REALITY: AN ON-SITE EXPERIENCE

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DIGITAL LANDSCAPE ARCHITECTURE CONFERENCE | MAY 2019 | BAUHAUS, DESSAU

DIALOGUE IN LANDSCAPE ARCHITECTURE

- TO INCLUDE THOSE WHO AFFECT AND ARE AFFECTED BY LANDSCAPE CHANGES
- GATHER FEEDBACK AND TO DEVELOP THE PROJECT ACCORDINGLY



COMMUNICATION

EFFECTIVE COMMUNICATION
BETWEEN LANDSCAPE ARCHITECTS
AND LAY PEOPLE

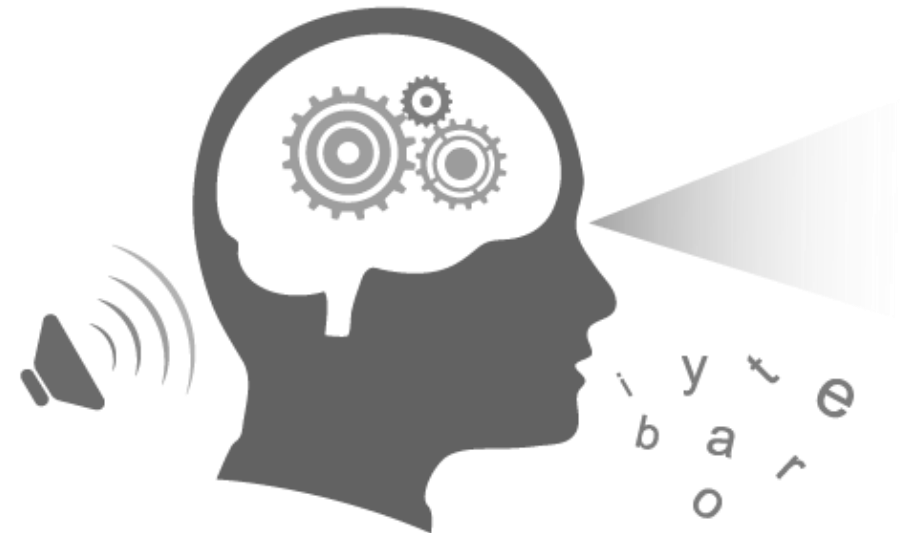
HOW TO ESTABLISH A COMMON
GROUND?



THE CHALLENGE OF INVOLVING LAY PEOPLE IN NEW WAYS OF THINKING

“COGNITION – INCLUDING THINKING, KNOWING AND
LEARNING – CAN BE CONSIDERED AS A RELATION
INVOLVING AN AGENT IN A SITUATION, RATHER THAN AS AN
ACTIVITY IN AN INDIVIDUAL’S MIND”

[GREENO, 1989]



EXPERIENCE

“(…) A CHUNK OF TIME THAT ONE WENT THROUGH (…) SIGHTS AND SOUNDS,
FEELINGS AND THOUGHTS, MOTIVES AND ACTIONS (…) STORED IN MEMORY,
LABELLED, RELIEVED AND COMMUNICATED TO OTHERS.

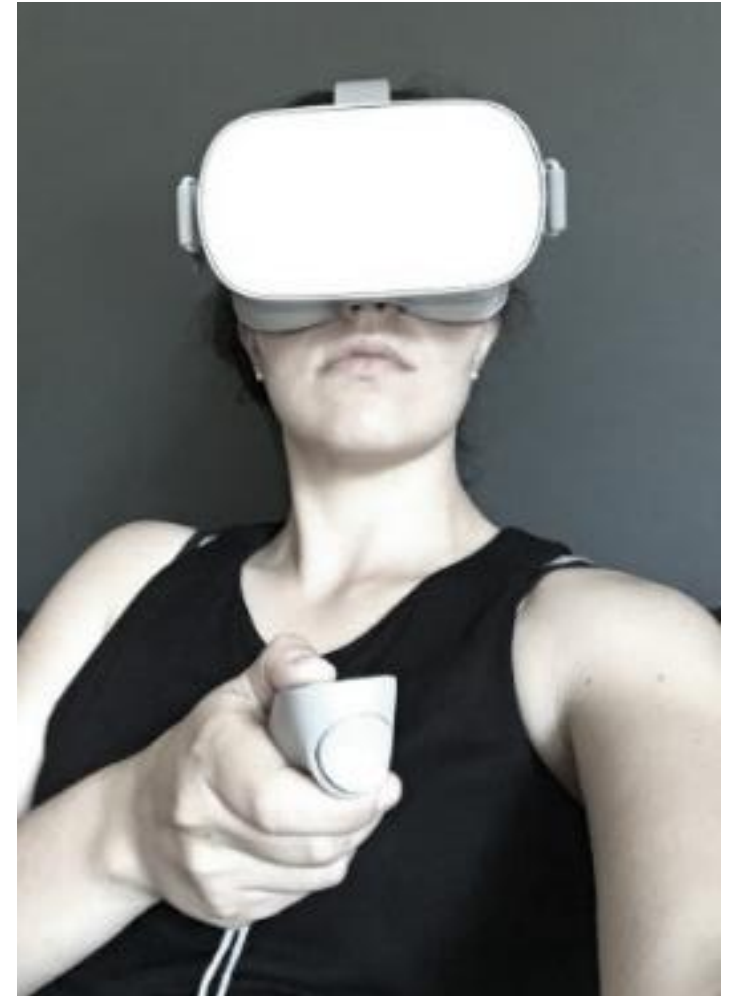
AN EXPERIENCE IS A STORY, EMERGING FROM THE DIALOGUE OF A PERSON WITH
HER/HIS WORLD THROUGH DIALOGUE.”

[HASSENZAHN, 2010]

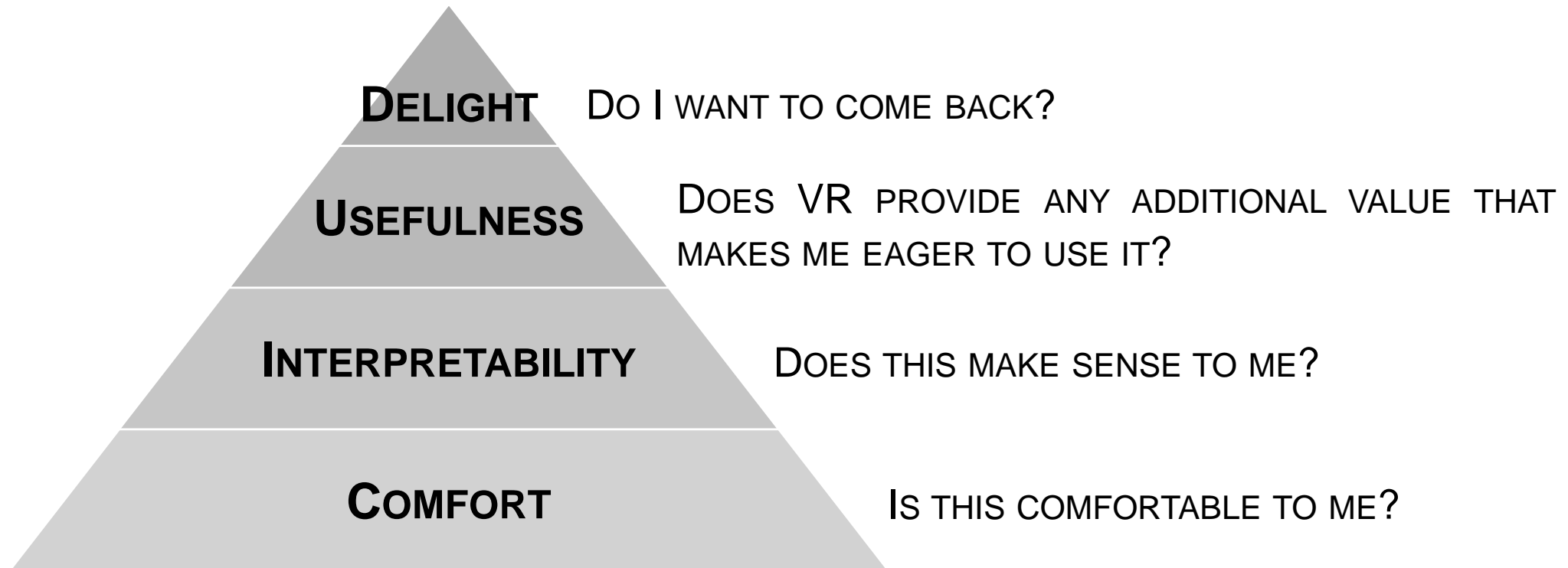
USER EXPERIENCE

CREATING EXPERIENCES THROUGH INTERACTIVE
AND PHYSICAL OBJECTS THAT PEOPLE CAN
INTERACT WITH

WHAT IS USER EXPERIENCE IN VR?



HIERARCHY OF NEEDS IN VIRTUAL REALITY



[ADAPTED FROM CRONIN, 2015]

QUALITY INDICATORS

COMFORT

IS IT COMFORTABLE TO ME?

- MISMATCHING MOVEMENTS
- DEPTH PERCEPTION
- FIELD OF VIEW
- LEVEL OF DETAIL

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INTERPRETABILITY

DOES IT MAKE SENSE TO ME?

- LEVEL OF DETAIL
- PERSPECTIVE OVER THE SCENE
- INTERFACE
- MANIPULATION AND NAVIGATION

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USEFULNESS AND DELIGHT

DOES IT PROVIDE ANY ADDITIONAL
VALUE THAT MAKES ME EAGER TO USE
IT?
DO I WANT TO COME BACK?

- PRESENCE
- IMMERSION

TAKING MOBILE VR TO THE SITE

- AIM

TO ADDRESS EXPERIENTIAL AND TECHNICAL ISSUES THAT MAY COMPROMISE UX IN MOBILE VR

- PARTICIPANTS

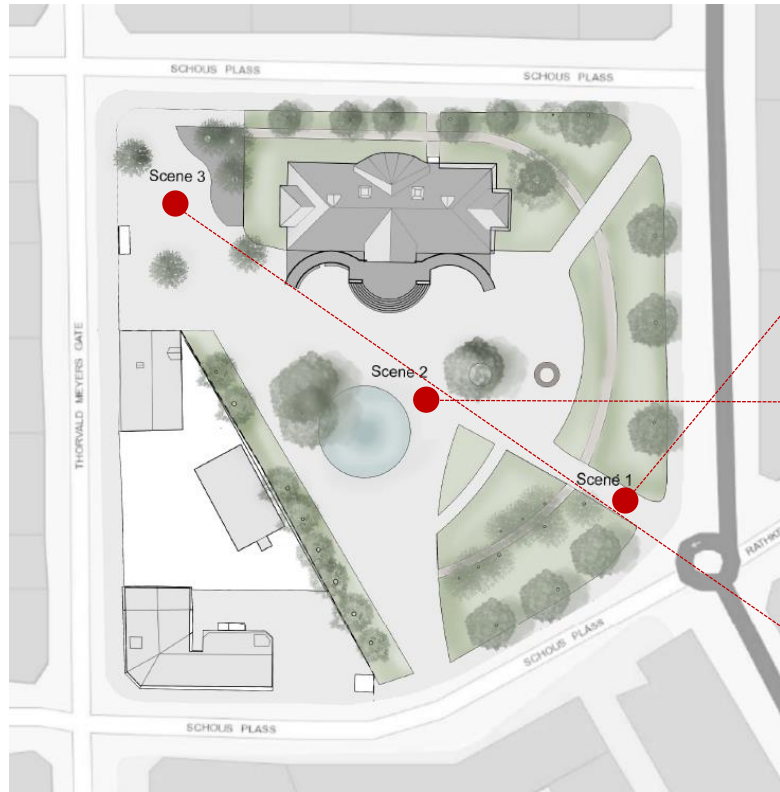
LAY PEOPLE WITH/WITHOUT PREVIOUS EXPERIENCE WITH VR

- METHOD

OBSERVATION OF PARTICIPANTS' REACTION, BEHAVIOUR AND OTHER UX ISSUES IN VR



VISUAL CONTENT



[3D MODEL AND VR PANORAMAS PRODUCED BY LANDSCAPE ARCHITECTURE STUDENTS FOR LAD302 AT NMBU]

TAKING MOBILE VR TO THE SITE

- PARTICIPANTS RANDOMLY RECRUITED AT THE SITE AND ON-DEMAND
- TWO TEAMS OF 3 RESEARCH ASSISTANTS:
 - 1 INTRODUCED THE STUDY AND CONDUCTED THE QUESTIONNAIRE
 - 2 PROVIDED TECHNICAL SUPPORT WITH THE HARDWARE
 - 3 OBSERVED AND TOOK NOTES ON **PARTICIPANTS' REACTIONS, BEHAVIOURS AND OTHER UX-RELATED ASPECTS**



TAKING MOBILE VR TO THE SITE

- HARDWARE: MOTOROLA MOTO G4 + VIEW MASTER DELUXE VR
- SOFTWARE: VISUAL VOCAL



COMFORT

- MIX OF ENTHUSIASM AND DISCOMFORT CAUSED BY SOME DEGREE OF UNPREDICTABILITY
- STRESS CONDITION VISIBLE THROUGH LIMITED PHYSICAL MOVEMENTS AND INABILITY TO TALK WHILE IN VR
- EXPERIENCED USERS FEEL COMFORTABLE AND EXTENSIVELY EXPLORE THE SURROUNDINGS
- LIMITED DEPTH PERCEPTION, BLURRY IMAGES AND LIMITED FOV LEAD TO VISUAL FATIGUE – SYMPTOMS HIGHLY INCREASED BY LIMITED EXPERIENCE WITH VR
- LACK OF BALANCE AND SOME DEGREE OF STRESS INDUCED BY THE PERCEPTION OF THE REAL WORLD WHILE IN VR



INTERPRETABILITY

- WHAT SHOULD I DO NEXT?
- INABILITY TO NAVIGATE FROM ONE PANORAMA TO ANOTHER — EITHER BECAUSE THEY COULD NOT FIND THE TELEPORTER OR COULD NOT USE THEM PROPERLY
- EXPLORING THE ENVIRONMENT THE SAME WAY AS THEY WOULD DO IN THE PHYSICAL WORLD — E.G. PHYSICALLY WALKING AND LOOKING CLOSER
- ESTABLISHING A LINK BETWEEN VR AND THE PHYSICAL WORLD — E.G. TRYING TO FIND THEIR WAY HOME OR PHYSICALLY WALKING TO SIMILAR POSITION
- DIFFERENCES BETWEEN REAL AND VIRTUAL REDUCES THE LEVEL OF IMMERSION



USEFULNESS

- HIGH LEVEL OF DETAIL DOES NOT NECESSARILY MEAN BETTER EXPERIENCE
- UNCERTAINTY ABOUT THE VALUE OF VR
- MULTIPLE VR PANORAMAS DO NOT GIVE AN INITIAL OVERVIEW AND DECREASES THE ABILITY TO ESTABLISH LINKS BETWEEN THEM

DELIGHT

- EASY COMPARISON BETWEEN REALITY AND VR
- EASY NAVIGATION BETWEEN VR PANORAMAS
- FULLY IMMERSIVE 360 ENVIRONMENT
- CURIOSITY ABOUT ANY EXTRA FUNCTIONALITIES

FINAL CONSIDERATIONS

- MOBILE VR IN A NON-CONTROLLED ENVIRONMENT
- RANDOMLY SELECTED GROUP OF PARTICIPANTS
- MOBILE VR EASES THE COGNITIVE PROCESS
- SEVERAL UX ASPECTS MUST BE ADDRESSED IN FURTHER RESEARCH
- MOBILE VR IS STILL QUITE RECENT AND IT HAS A LONG WAY TO GO WHEN IT COMES TO UX
AND OTHER TECHNICAL LIMITATIONS

QUESTIONS?

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