

A person is shown from the side, wearing a VR headset and holding a game controller. They are sitting at a desk with a laptop. The laptop screen displays a virtual environment with red and white striped barriers and a sign that says "EVER". The background is dark with some orange light streaks.

“Being there and then making sense together”

Introducing Cultural Presence in Virtual Archaeology

Laia Pujol-Tost
Pompeu Fabra University

In one {LEAP}



{LEAP} {LEarning of Archaeology through Presence}



Call: FP7-PEOPLE-2013-IEF
Grant Agreement n.: PIEF-GA-2012-625537
Scientific Panel: Social Sciences and Humanities
Duration: 2014-2016

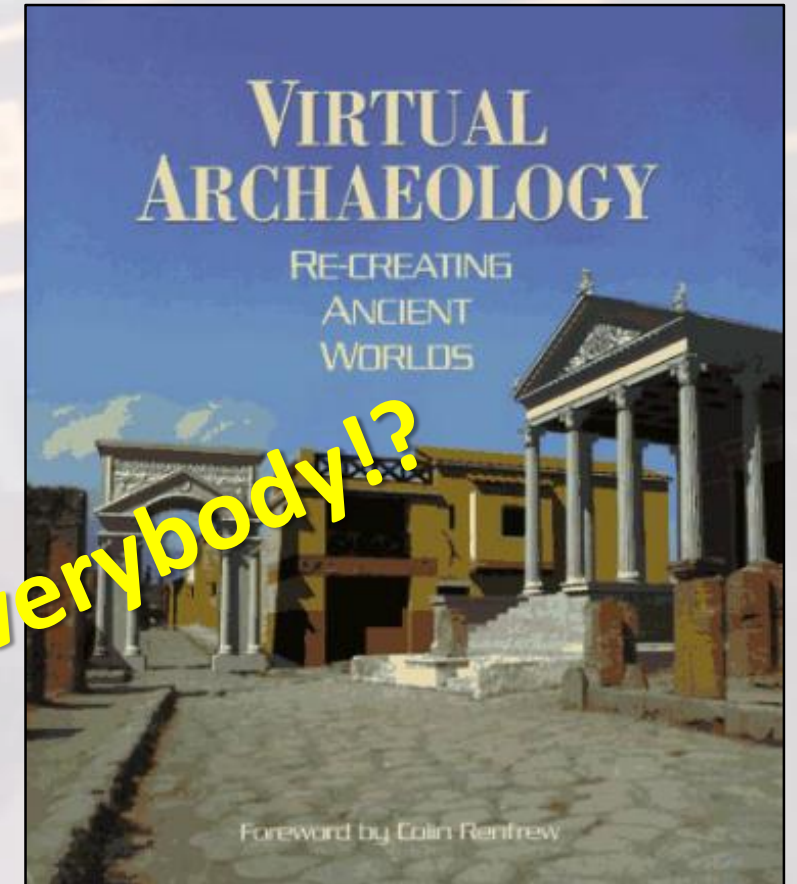


By {LEAP}s and bounds (I)

1. Aimed at showing the past but...
2. ...empty!
3. Lack of evaluation



Villa of the Mysteries, Pompeii.
Stanton-Abbot Associates



Forte & Siliotti, 1997

By {LEAP}s and bounds (II)

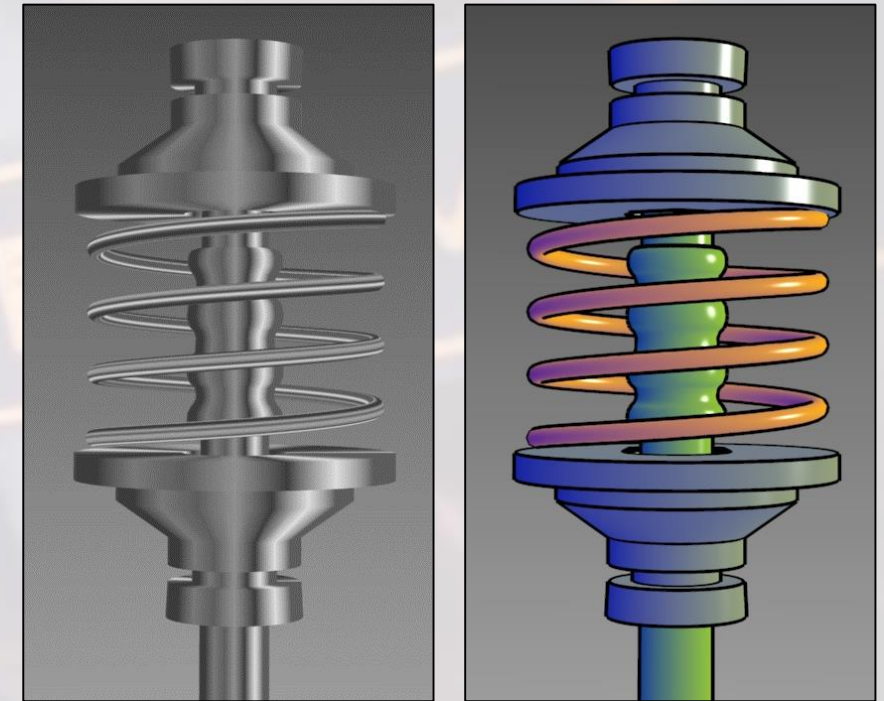
- Lack of explicit theoretical archaeological framework + of pedagogical goal (instructivist).



NO universal, objective VA

	Culture History	Processualism	Critical Theory
Content	Architecture	Environment/Landscape	Lived spaces (objects and people)
Focus	Monuments	Economy	Symbolism, daily life
Aim	Visualization	Analysis	Comprehension
Goal	Description of record	Explanation of record	Interpretation of record
User	Sight / awe	Intellect	Multi-sensoriality, empathy
Interaction	Navigation	Navigation / manipulation	Manipulation / alteration
Format	Closed model	Metadata	Game

(NPR, Gooch & Gooch 1999)



- Implicit belief: objective, enhances learning ← immersive, photorealistic, “interactive” // evaluations show otherwise – e.g. Pujol & Economou 2009).

{LEAP}ing at opportunities

General aim:

To research, implement and evaluate a new conceptual and technological **framework**, *Cultural Presence*, aimed at enhancing the **understanding** of past societies by experts and audiences through the **experiencing** of immersive, populated, interactive reconstructions of sites.



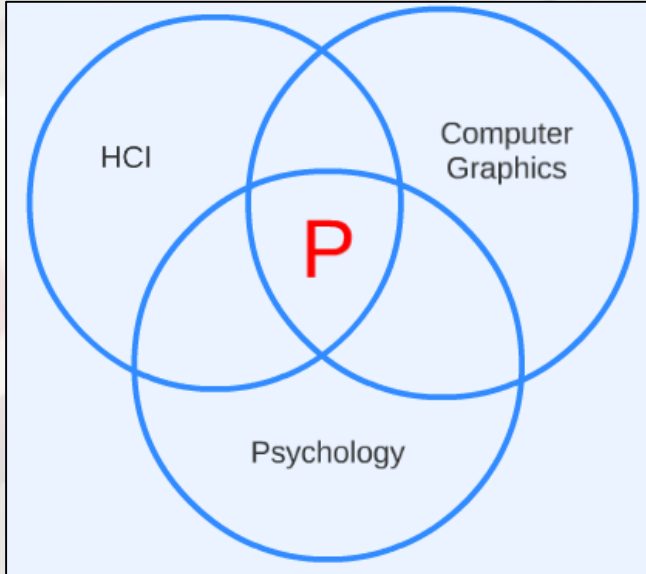
B

YOU TAKE
THE BLUE PILL
THE STORY ENDS
YOU WAKE UP IN YOUR BED
AND BELIEVE WHATEVER
YOU WANT TO BELIEVE.

YOU TAKE
THE RED PILL
YOU STAY IN WONDERLAND
AND I SHOW YOU
HOW DEEP THE
THE RABBIT-HOLE GOES.

g

A {LEAP} into (Cultural) Presence (I)



- Established theoretical & methodological framework(s) for design and evaluation.
- Investigated suitability for learning (e.g. constructivism, embodied interaction).
- Investigated underlying factors.

Call: PRESENCE 2018, 18th conference of the International Society for Presence Research (ISPR)



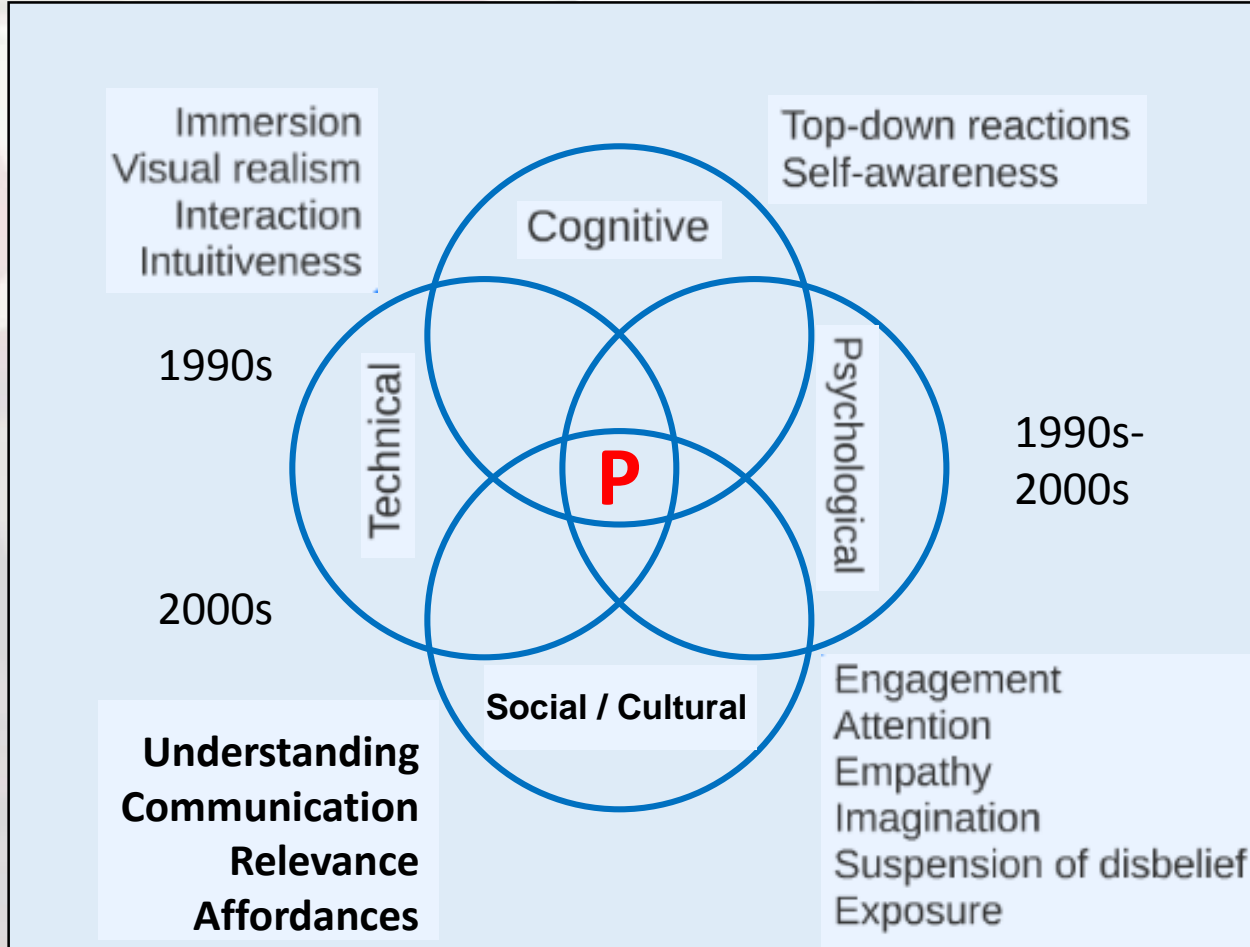
CALL FOR PAPERS

PRESENCE 2018
18th conference of the **International Society for Presence Research (ISPR)**
Prague, Czech Republic
May 21-22, 2018 (optional demonstrations and guided sightseeing events May 20)
<https://ispr.info/call-presence-2018>

The image shows the header and membership section of the International Society for Presence Research (ISPR) website. The header includes the ISPR logo and navigation links: 'About ISPR', 'About presence', 'Conferences', 'Membership', and 'ISPR Presence News'. The membership section is titled 'Membership' and describes the benefits of joining the society, including discounts on conference fees, voting rights, and access to the ISPR Journal. It also lists membership levels.

The image shows the MIT Press Journals website header and the PRESENCE journal section. The header includes the MIT Press Journals logo and navigation links: 'Home', 'My Online Account', 'For Librarians', 'Help', and 'Search'. The PRESENCE journal section features the journal cover, a list of editors (Janet Wiesenberger and Roy Ruddle), and a description of the journal's focus on teleoperators and virtual environments. It also includes a 'Call for Papers' link and a 'JOURNAL IMPACT FACTOR' badge.

A {LEAP} into (Cultural) Presence (II)



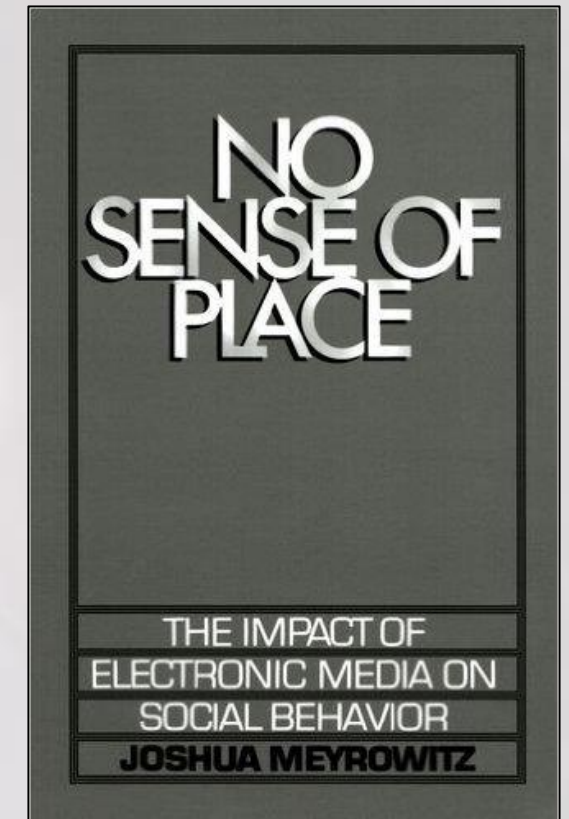
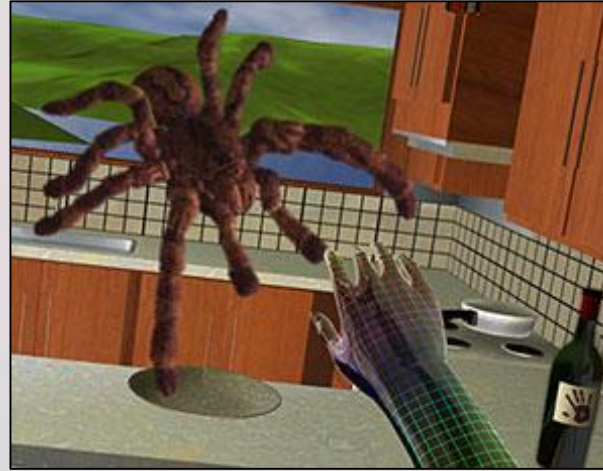
**“The feeling of being there”
(Heeter, 1992)**

**“The feeling of being there together”
(Swinth and Blascovich 2002)**

**“The feeling of being there making
sense together”
(Riva et al. 2002)**

A {LEAP} into (Cultural) Presence (III)

- Why measure Presence?
 - Task performance, training, learning.
 - Communication.
 - Therapy.
- Convergence with CH:
 - 2002: Importance of context (Turner & Turner).
 - 2003: Expand analytical scope (Klimmt & Vorderer).
 - 2005: Understanding other cultures (Jones).
 - 2006, 2013: Sense of place (Turner & Turner)
 - 2010: Social realism in games (Ribbens and Maillet).
 - 2015: Changing bodies changes minds (Maister et al.).



A {LEAP} into (Cultural) Presence (IV)



(Greeff and Lalioti 2001)

(Devine 2007, 2013)



{LEAP}ing at opportunities

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a new conceptual and technological **framework**, *Cultural Presence*,
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through the **experiencing** of immersive, populated, interactive reconstructions of sites.

2014-2016: {LEAP}ing around

Development

1. Research

- Import and expand the concept of CP
- Research on classical concept of P.
- Theory of (Material) Culture.
- What defines archaeological cultures (2 consultations with {LEAP} User Group).
- How to depict it (defining "Çatalhöyükness").

Cultural Presence

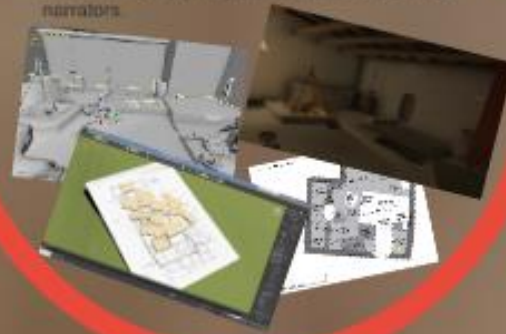
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- 2013: Changing bodies changes minds (L. Maiter et al.).



2. Implementation

Build a VR mediated experience of Çatalhöyük (B49):

- 5 POIs
- 5 versions: empty, objects, people, scenes, text/narrators



3. Evaluation

Operational definition of CP: Term for evaluating the subjective experience of feeling one is aware of, appreciative of, learning more about or feeling thematically immersed in past believe systems (Pujol & Champion 2007)

P is a means and a measure



- Focus on outcomes of current models.
- More CP = More learning.
- Compare learning, engagement, understanding across different versions and correlate with P.

4. Dissemination

2014 was a {LEAP} year!

CP=“The feeling of being there and **then**” (Champion 2005)

CP=“The subjective experience of feeling one is aware of, learning more about, or thematically immersed in past/other believe systems” (Pujol & Champion 2007 / 2012)

→ **Exploration + Social exchange + Interpretation (Constructivism)**

CP=“The **feeling** of being there and **then** making **sense together**”
(Pujol 2018)

CP is a means, not an end!

2014-2016: {LEAP}ing around

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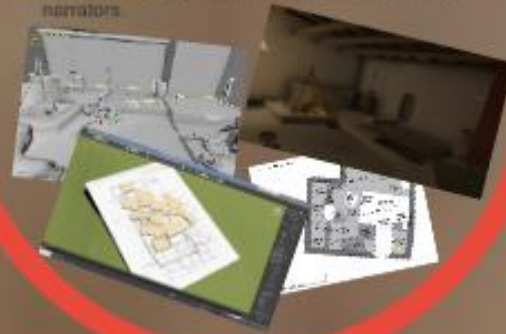
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2015 was a {LEAP} year! (I)

(Pujol 2017a)

Defining “çatalhöyükness”

ÇH3D: Questionnaire for experts

The experience you kindly accepted to participate in is part of the EU-funded research project LEAP (Learning of Archaeology through Presence), conducted at Pompeu Fabra University of Barcelona by Dr. Lluís Pujol-Tost. More information can be found at: www.leap-project.eu. The ultimate goal of this project is to find new ways to design and evaluate archaeological virtual reconstructions. This is why I need the input from different experts.

I would like to ask you to devote 15 minutes of your time to answer a short questionnaire related to (1) the experience you have participated in on site, at the reconstructed house, and with the images; (2) the definition of Çatalhöyük; and (3) the use of Virtual Reality to depict Çatalhöyük.

The data obtained from the video recordings and the questionnaire will be only used for research purposes and will remain completely anonymous. We would like to ask your permission to eventually use anonymized versions of the recordings or to quote your answers in scientific publications and/or oral presentations.

Do you give your permission? YES / NO.

Let's start!

ABOUT YOURSELF

1. What is your name?

2. What is your academic background?

3. What is your role at CH?

DIFFERENCES BETWEEN MEDIA

The site

4. In what way did the site help you in your explanations there?

5. Please rate how much you agree with the following statements:

	Totally disagree	1	2	3	4	5	Totally agree
a) The site helped me tell about architectural features.							
b) The site helped me tell about life in the past.							
c) The site helped me tell about how archaeology works.							

The reconstructed house

6. In what way did the reconstructed house help you in your explanations there?

7. Please rate how much you agree with the following statements:

	Totally disagree	1	2	3	4	5	Totally agree
a) The house helped me tell about architectural features.							
b) The house helped me tell about life in the past.							
c) The house helped me tell about how archaeology works.							

Image 1

8. In what way did Image 1 help you in your explanations?

9. Please rate how much you agree with the following statements:

	Totally disagree	1	2	3	4	5	Totally agree
a) Image 1 helped me tell about architectural features.							
b) Image 1 helped me tell about life in the past.							
c) Image 1 helped me tell about how archaeology works.							

Image 2

10. In what way did Image 2 help you in your explanations?

11. Please rate how much you agree with the following statements:

	Totally disagree	1	2	3	4	5	Totally agree
a) Image 2 helped me tell about architectural features.							
b) Image 2 helped me tell about life in the past.							
c) Image 2 helped me tell about how archaeology works.							

DEFINING "CATALHOYUKNESS"

12. Please describe the five most defining features of life at Çatalhöyük in the past.

HOW TO DEPICT "CATALHOYUKNESS" WITH VIRTUAL REALITY

13. Have you seen any archaeological virtual reconstructions? Please give examples of those you liked the most.

14. Have you seen any archaeological virtual reconstructions of CH? Please describe.

15. How would you imagine a virtual reconstruction of Çatalhöyük?

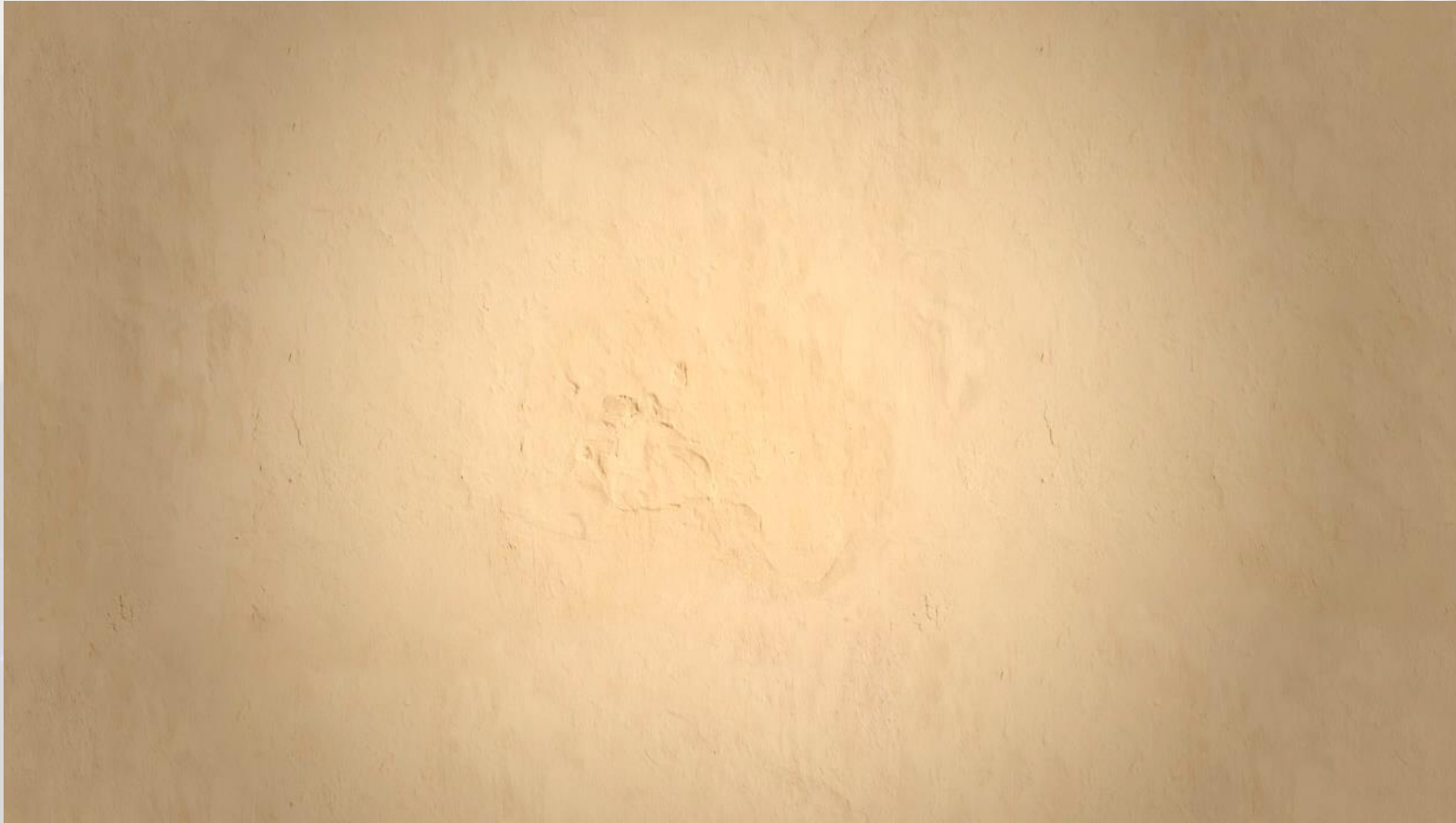
Subjective approach



Objective approach



2015 was a {LEAP} year! (II)



2014-2016: {LEAP}ing around

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Cultural Presence

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P is a means and a measure



- Focus on outcomes of current models.
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4. Dissemination

2016 was a {LEAP} year! (I)

- To explore which **factors** are specifically related with the sense of CP:
 - H: 1) cultural variables fundamental; 2) closely linked to social aspects; and 3) more important than visual realism.
 - help design suitable VLEs by modifying its different factors.
- To see if there is a **correlation between CP and learning**:
 - “H= The higher CP, the higher L” (Mikropoulos & Strouboulis 2004; Bonini 2008, Witmer and Singer 1998).
 - P may be a good predictor of learning potential.

Questionnaire number: Condition (1-6):

Pre-experience questionnaire

Please reply to the following questions by circling one of the following options:

1. How old are you?

10-19	20-29	30-39
-------	-------	-------
2. You are...

Woman	Man	Other
-------	-----	-------
3. How often do you use computers?

Once a month or less	2-3 times a month	Once a week
----------------------	-------------------	-------------
4. How often do you play with computer-games?

Less than once a month	Once a month	Once a week
------------------------	--------------	-------------
5. How many times have you experienced an immersion (e.g., Oculus, CAVE)?

Never	1-2 times	Around 5 times	Around 10 times
-------	-----------	----------------	-----------------
6. How interested in Archaeology are you?

(1) Not at all	2	3
----------------	---	---
7. Please answer briefly: What is the Neolithic Period?
8. How skilled are you with technology?

(1) Not at all	2	3
----------------	---	---

1

Questionnaire number: Condition (1-6):

Observation during CH3D

1. Time in each POI:

POI1	POI2	POI3	POI4	POI5	POI6
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2. Overall time in CH3D:

<input type="text"/>

3. Comments during experience (e.g., disappointment, etc.).
4. Where was help sought?
5. Navigation path:

Questionnaire number: Condition (1-6):

Post-experience questionnaire

1. How would you describe the experience to a friend?

Now, please reply to the following questions by circling one option:

2. While in the virtual world, how much did you feel you were at Çatalhöyük in the Neolithic period?

(1) Not at all	2	3	4	(5) Very much
----------------	---	---	---	---------------
3. When looking back at the experience, how much do you feel you visited a place (rather than computer generated images)?

(1) Not at all	2	3	4	(5) Very much
----------------	---	---	---	---------------
4. When looking back at the experience, how much do you feel you visited another culture (rather than a computer generated depiction)?

(1) Not at all	2	3	4	(5) Very much
----------------	---	---	---	---------------
5. While in the virtual world, how much did you feel you were in a scientific computer simulation?

(1) Not at all	2	3	4	(5) Very much
----------------	---	---	---	---------------
6. While in the virtual world, how much did you feel you were in a computer game (i.e. for entertainment)?

(1) Not at all	2	3	4	(5) Very much
----------------	---	---	---	---------------
7. How much did your experience in the virtual world seem similar to real world experiences?

(1) Not at all	2	3	4	(5) Very much
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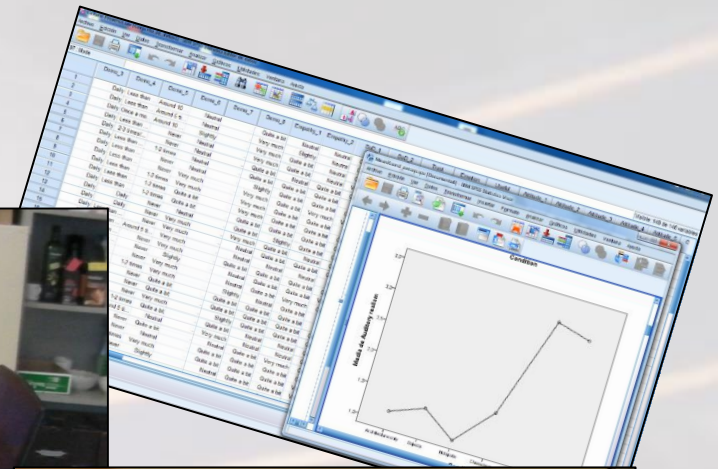
4

2016 was a {LEAP} year! (II)

- Between-subjects experimental design.
- “Mobile” location.
- 85 participants:
 - 47% male and 53% female.
 - 12-80 years old.
 - Diverse backgrounds.
 - Different levels of experience with technology and Cultural Heritage).
- Explored ÇH3D while being recorded, and filled in two questionnaires.



Students



Experts



General audiences

The {LEAP} forward (I)

(Empirical results & guidelines)

- **EFAs** → the concept of CP is sound and composed by three main factors:
 1. Plausibility of the VE + Distinctive cultural elements.
 2. Social presence: autonomous, realistic human characters.
 3. Communicational aspects of technology: natural navigation and exploration.

*(Perceptual aspects are mobile)

- **Correlation** analyses & X^2 → positive but not linear relation between learning and CP (Learning = compromise between richness in content, affordances for exploration, and narrative explanations).

- **ANOVAS** → virtual reconstructions are NOT a universal tool. User factors:

1. Suspension of disbelief.
2. Expertise in related fields.
3. Experience with computer games.
4. Experience with IVR.

Pattern matrix ^a				
Subscale	Variable	Factor		
		1	2	3
Virtual Env.	VE was culturally plausible	,747	-,190	,001
Cultural Presence	Visited a specific culture	,665	,032	-,040
Cultural Presence	Perceived specific cultural traits	,593	-,071	,023
Virtual Env.	VE scientifically authentic	,558	-,080	-,132
Cultural Presence	Visited an inhabited place	,519	,227	-,017
Virtual Env.	VE behaved autonomously	,470	,109	-,074
Attention	Feeling absorbed	,422	,181	-,380
Virtual Env.	Continuity of events	,341	,130	-,182
Susp. of disbelief	Willing to be transported to the past	,328	,012	,097
Susp. of disbelief	Willing to be in the inhabitants' shoes	,103	,031	,047
Social Presence	Characters behaved in a realistic way	,009	,889	-,078
Social Presence	Characters looked realistic	,096	,842	,050
Social Presence	Presence of people	-,140	,830	-,104
Social Presence	Autonomous characters	,175	,775	,063
Auditory aspects	Surrounded by auditory aspects	-,093	,488	-,035
Auditory aspects	Auditory realism	,047	,460	,149
Interaction	Feeling disoriented	,108	,105	,760
Interaction	Control device interferes with navigation	,023	,237	,712
Attention	Distraction by control device	,075	-,043	,711
Visual aspects	Experience disrupted by display device?	-,035	-,134	,402
Visual aspects	Surrounded by visual aspects	,357	-,098	-,397
Visual aspects	Visual realism	,371	,127	-,386
Visual aspects	Distraction by display device	,022	-,025	,369
Interaction	Naturality of navigation	,285	,226	-,366
Interaction	Exploration of elements	,204	,101	-,300
Cultural Presence	Feeling of seeing everyday life	,257	,269	-,286
Extraction method: Principal Axis Factoring. Rotation method: Oblimin with Kaiser normalization.				

The {LEAP} forward (II)

Questionnaire number:		Condition (1-6):	
-----------------------	--	------------------	--

Post-experience questionnaire

1. How would you describe the experience to a friend?

Now, please reply to the following questions by circling one option:

2. While in the virtual world, how much did you feel you were at Çatalhöyük in the Neolithic period?				
(1) Not at all	2	3	4	(5) Very much

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4

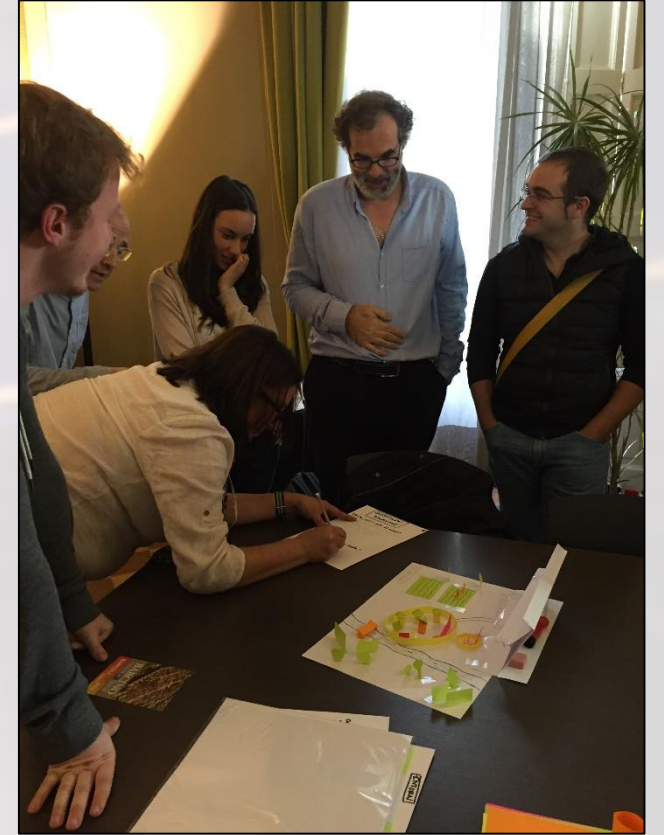
Cultural Presence Questionnaire (CPQ), built and pilot-tested (4) after an exhaustive review of Presence assessment tools (e.g. Slater, Useoh, Steed, 1994; Witmer & Singer 1998)

Subscales related to:

- General feeling of Cultural Presence
- Perception
- Self-perception
- World's behavior
- Interaction
- Attention
- Willingness to experience Presence
- Emotions
- Characters
- Culture
- Detailed questions about learning.

The {LEAP} forward (III)

- “3D·CoD”: **Design Method** for VR-Mediated Experiences in Virtual Archaeology (based on Participatory Design strategies).



{LEAP}ing out...

We paid a visit to this amazing exhibition with my father on 2nd of July, 2014. I am only 5 years old and to be honest yet the findings are a bit out of my interest. Still I liked this place very much; I felt as if I was in a dream when I tried the virtual tour.

Hello Duygu and company!
This is absolutely breathtaking. Cannot wait to come again of friends to give them a taste of archaeology is like. This immersive experience blew me away even though this ~~the~~ gallery contains things I am all too familiar with. Wonderful!!
- Nami Shin



ANAMED
KOÇ UNIVERSITY
RESEARCH CENTER FOR
ANATOLIAN CIVILIZATIONS

The Curious Case of Çatalhöyük

21.06.2017-18.02.2018

Bir Kızı Hikâyesi

Links
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ARCHEOVIRTUAL
DIGITAL HERITAGE AND ARCHEOVIRTUAL
Immergence in the Past

DigitalHeritage
organised every other year, which connects the main international community about digital heritage (Digital Heritage), in an exhibition and event of digital heritage.

ArcheoVirtual, the exhibition and event of digital heritage is part of Digital Heritage, the organisation of its annual event.

XIX BORSA MEDITERRANEA DEL TURISMO ARCHEOLOGICO
27 - 30 ottobre 2016 - Paestum Salerno

#ARCHEOVIRTUAL2016 #BMTA2016

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A person is shown from the side, wearing a VR headset and holding a game controller. They are sitting at a desk with a laptop. The laptop screen displays a virtual environment with red and white striped barriers and a yellow wall. The background is dark with some orange light streaks.

“Being there and then making sense together”

Introducing Cultural Presence in Virtual Archaeology

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