The Future of Searching for Scholarly Literature

Discipline-Specific Research Databases in Web 2.0 and the Semantic Web

or

Leveraging the "Prescience of Artists and the Art of Science"

Cross-Disciplinary Research in Neuroaesthetics

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Getty Research Institute, Los Angeles, California

ICIC – 20th Anniversary Meeting
19-22 October 2008
Nice, France

Leveraging the “Prescience of Artists and the Art of Science”

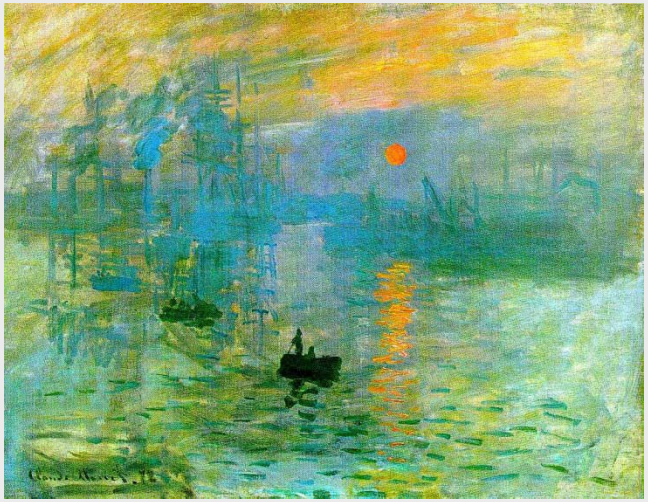
Cross-Disciplinary Research in Neuroaesthetics

Renaissance

2D ⟶ 3D

Impressionism

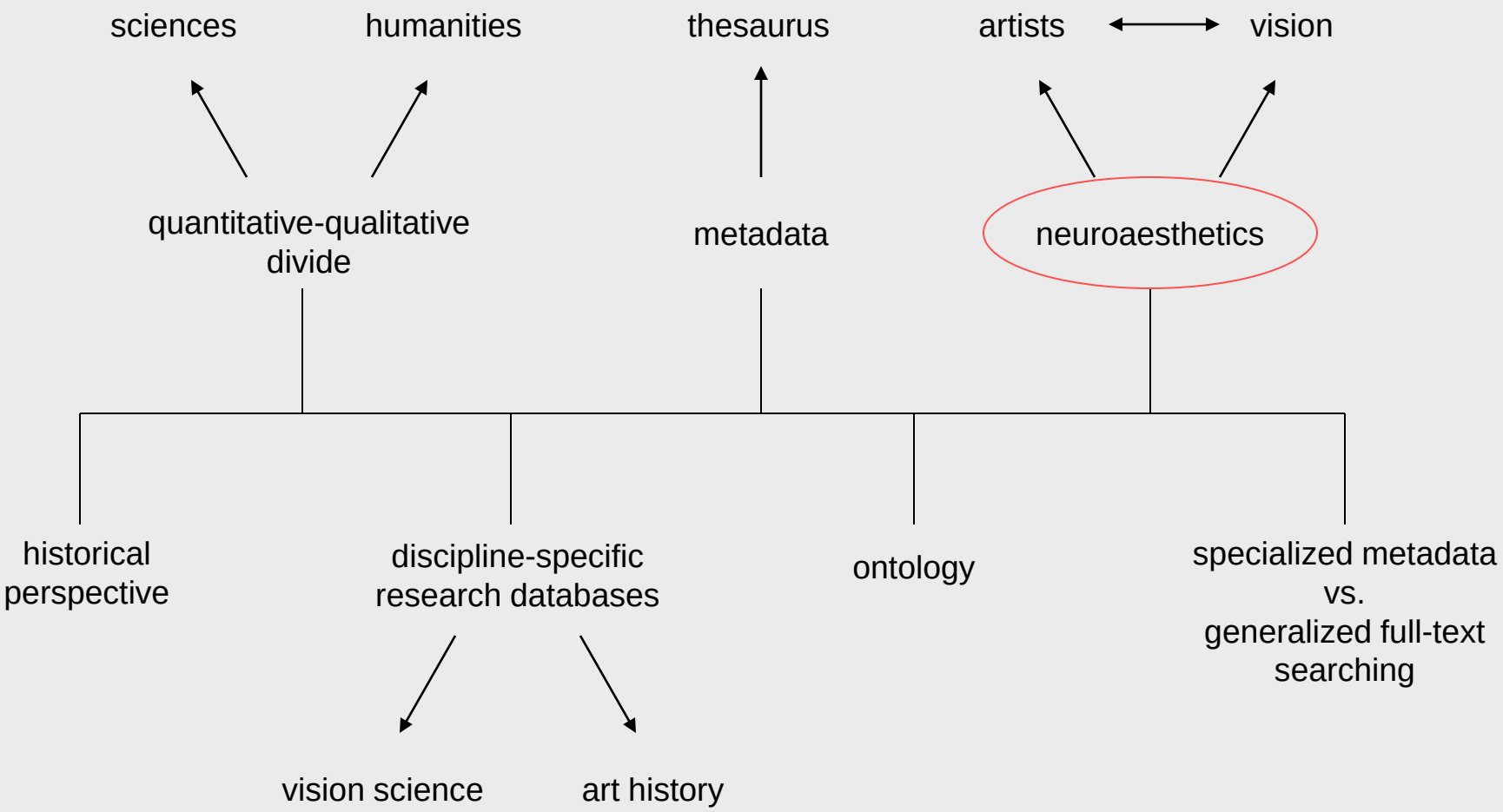
visual information as incident on the retina



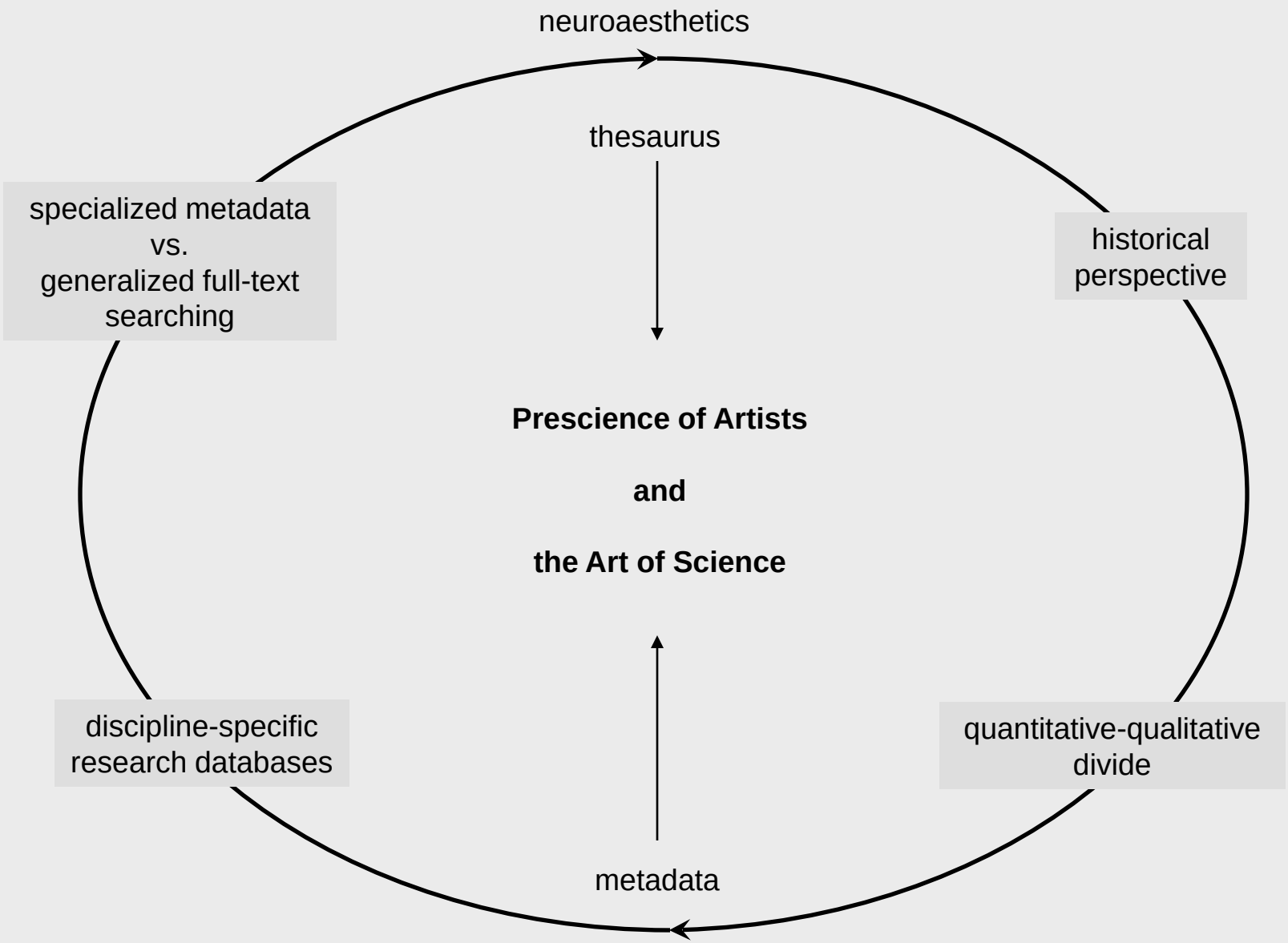
Modernism

discrete processing of color, form, and motion

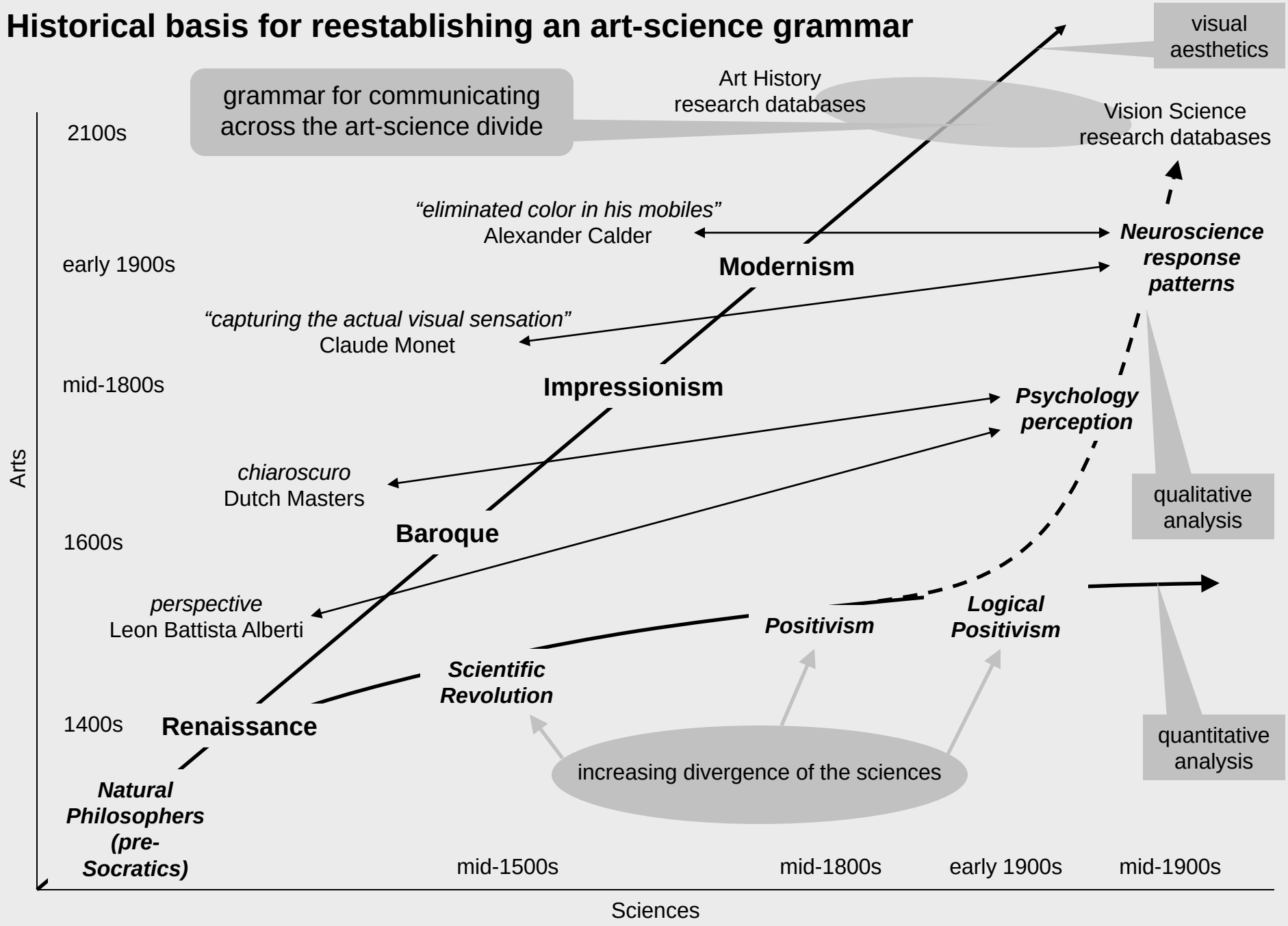
Outline – Modern Development of Neuroaesthetics



Outline – Preexistence of “Neuroaesthetics”

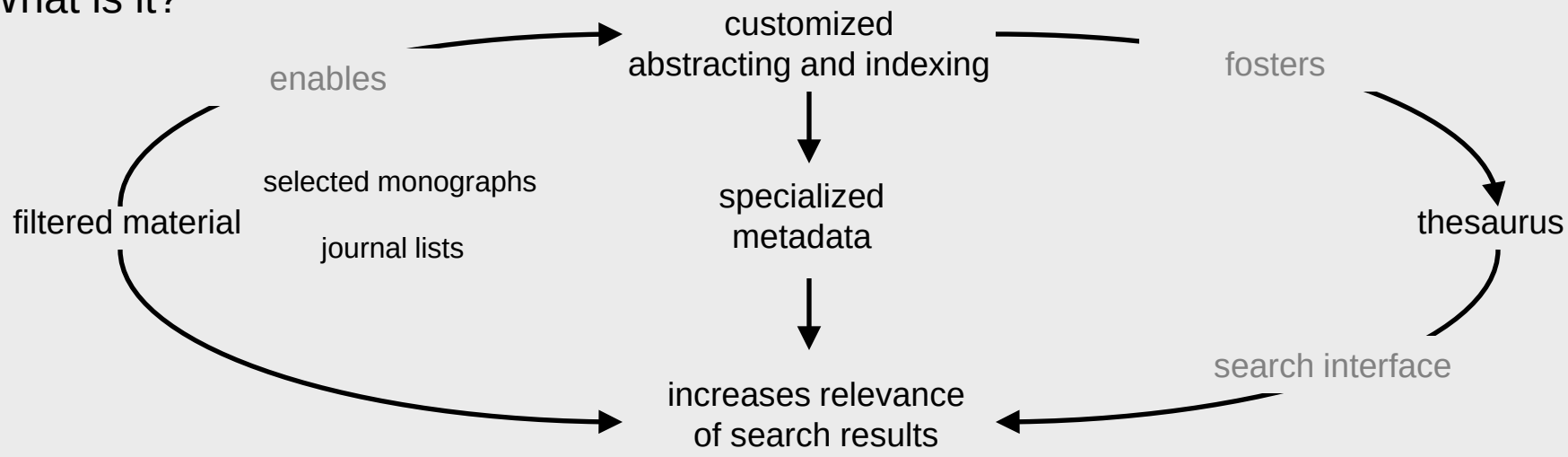


Historical basis for reestablishing an art-science grammar



Art History Discipline-Specific Knowledge Base

What is it?



Why create it?

Survey Results

2006
demand for
specialized metadata

2008
demand for
specialized databases

Actively Leverage Technology

maintain an editorial role

Web 2.0

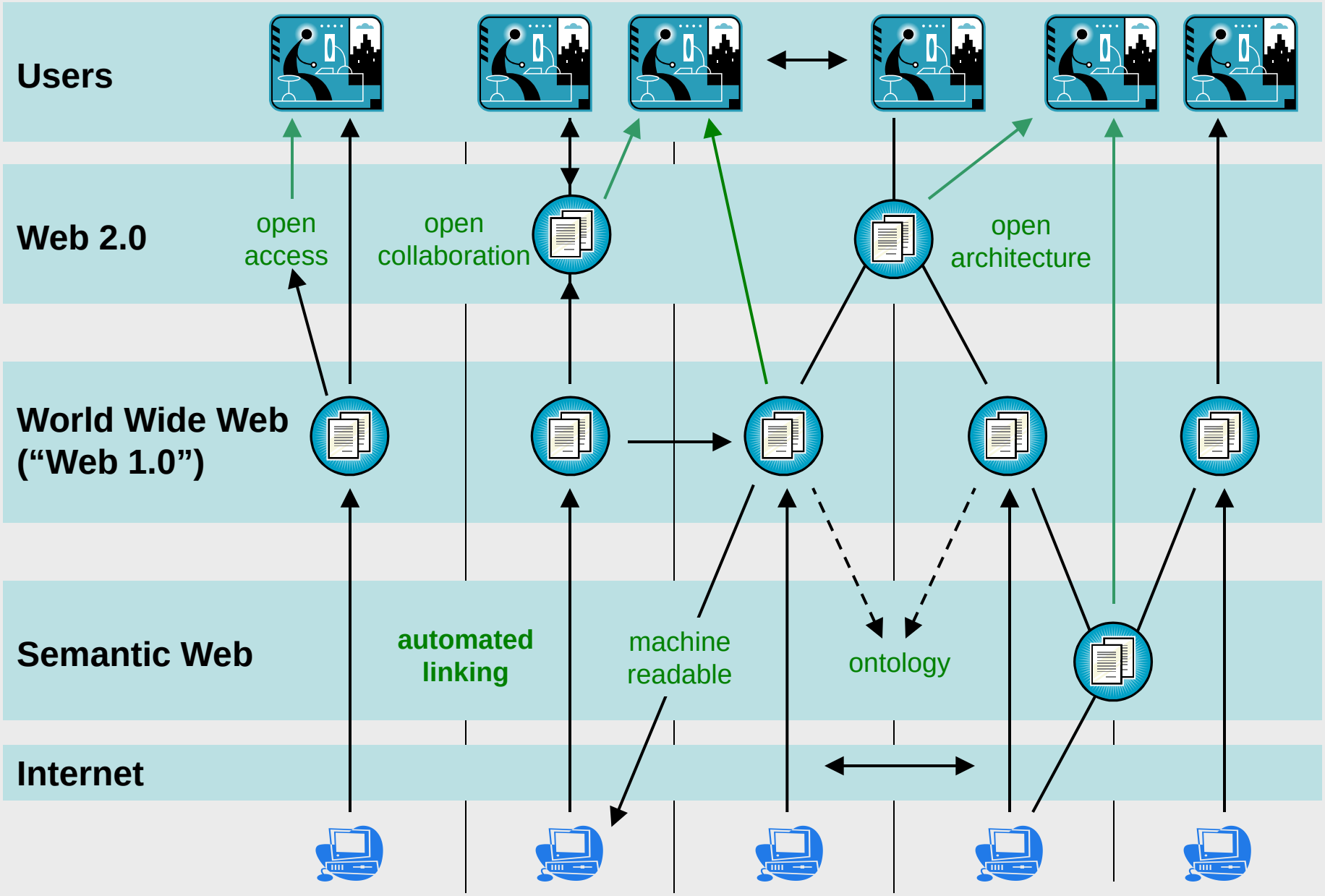
Draw on user interaction to create content.

facilitate interdisciplinarity

Semantic Web

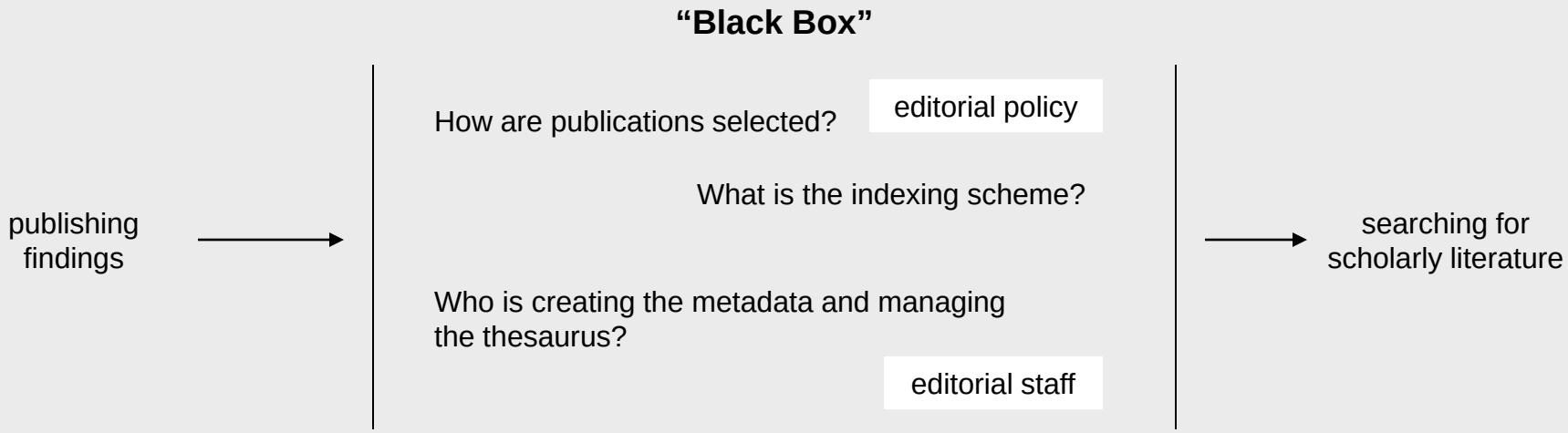
Forge connections across research databases in the sciences.

Web 2.0 and the Semantic Web

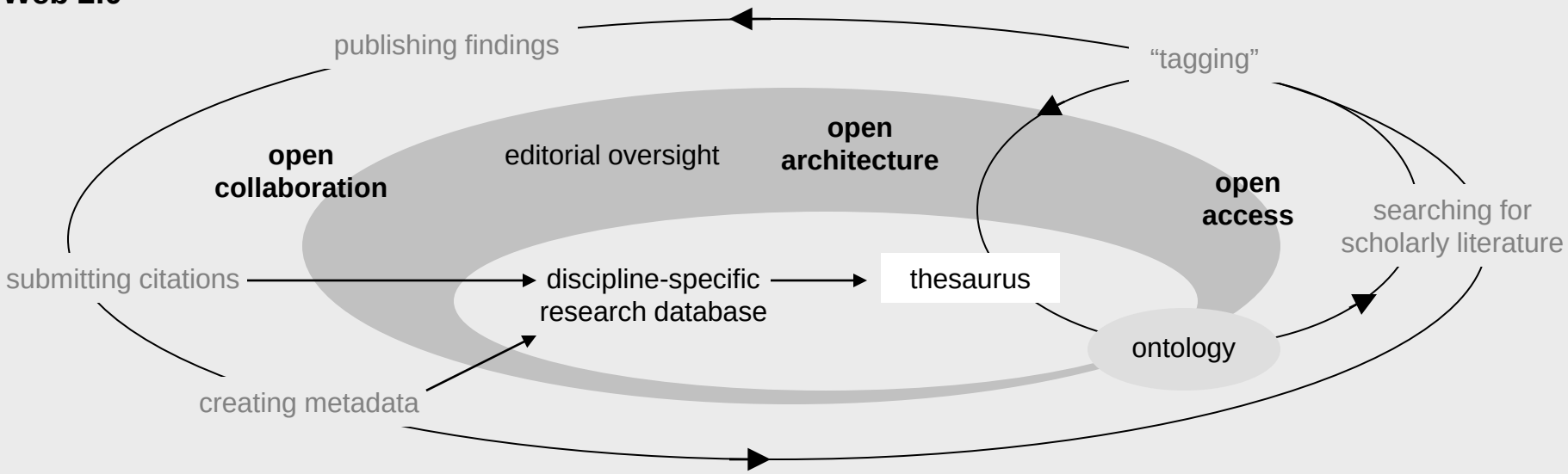


Participation of Scholars in the Evolving Infrastructure

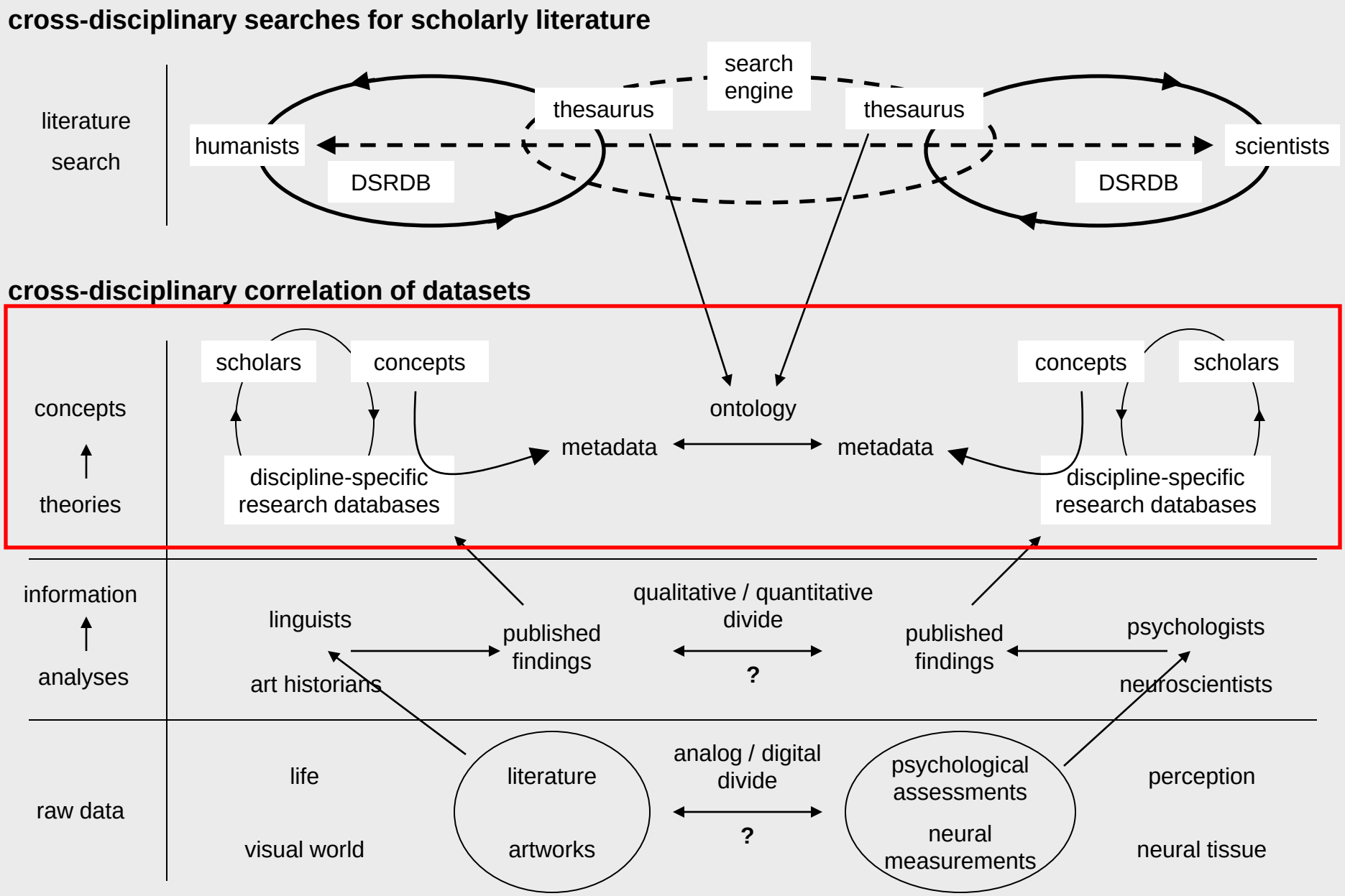
"Web 1.0" and prior



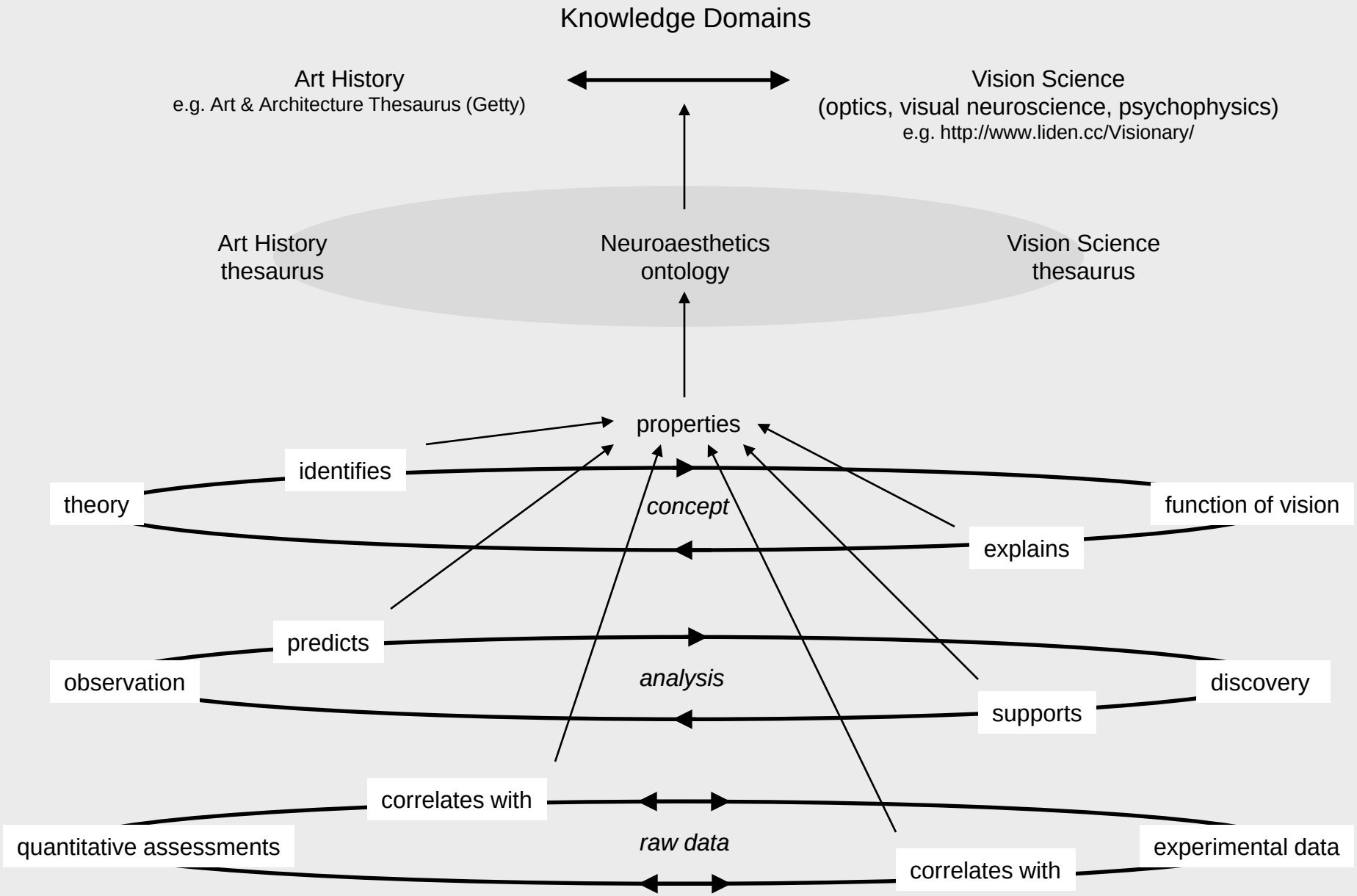
Web 2.0



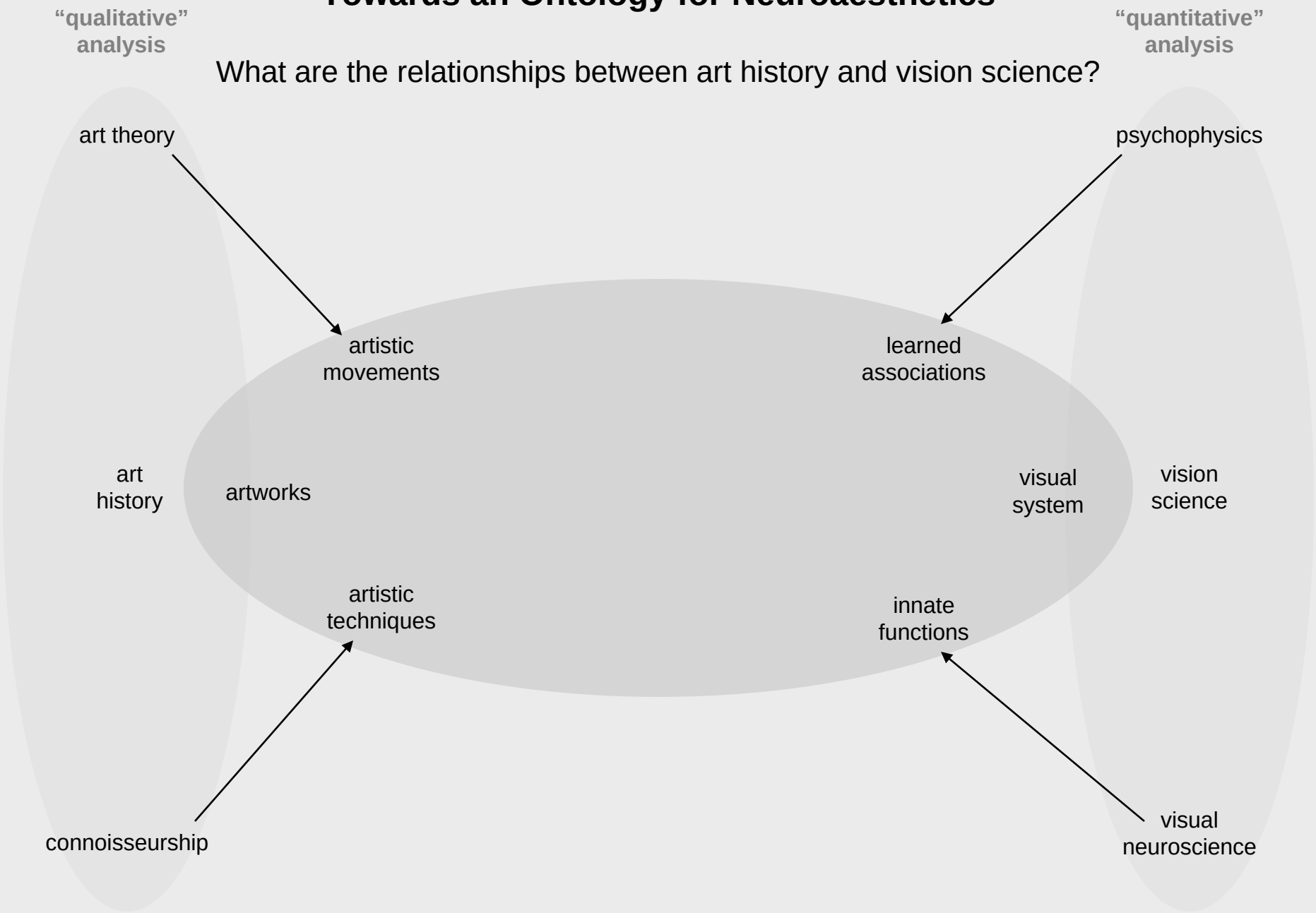
Applications in the Semantic Web to Enable Interdisciplinarity



Developing a Cross-Disciplinary Ontology



Towards an Ontology for Neuroaesthetics



Artists showed prescience in understanding the visual system.

"qualitative" analysis

"quantitative" analysis

art theory

perspective

identified

depth perception

explained

psychophysics

artistic movements

identify

learned associations

explain

art history

artworks

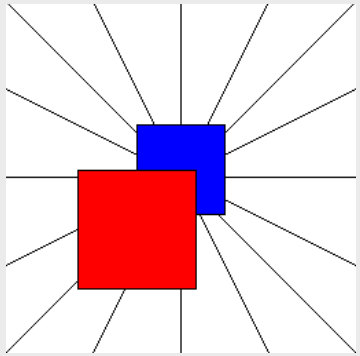
visual system

vision science

linear size and perspectives
previous familiarity
interposition

connoisseurship

Piero della Francesca
Flagellation of Christ
late 1450s



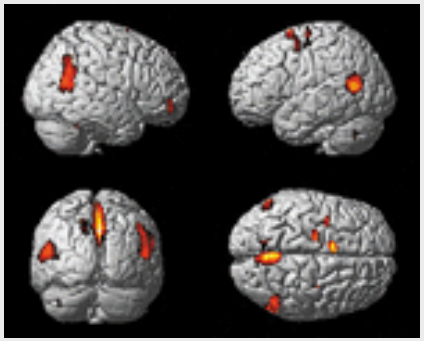
visual neuroscience

psychophysics
mid 1800s

"qualitative" analysis

Marcel Duchamp
Nude Descending a Staircase, No. 2
c. 1910

Newsome, Movshon, Britten
motion selective neurons in monkeys
1990s



fMRI shows selective response to motion in the Middle Temporal area (V5)

"quantitative" analysis

art theory

psychophysics

art history

artworks

visual system

vision science

artistic techniques

predict

support

innate functions

connoisseurship

kinetic art

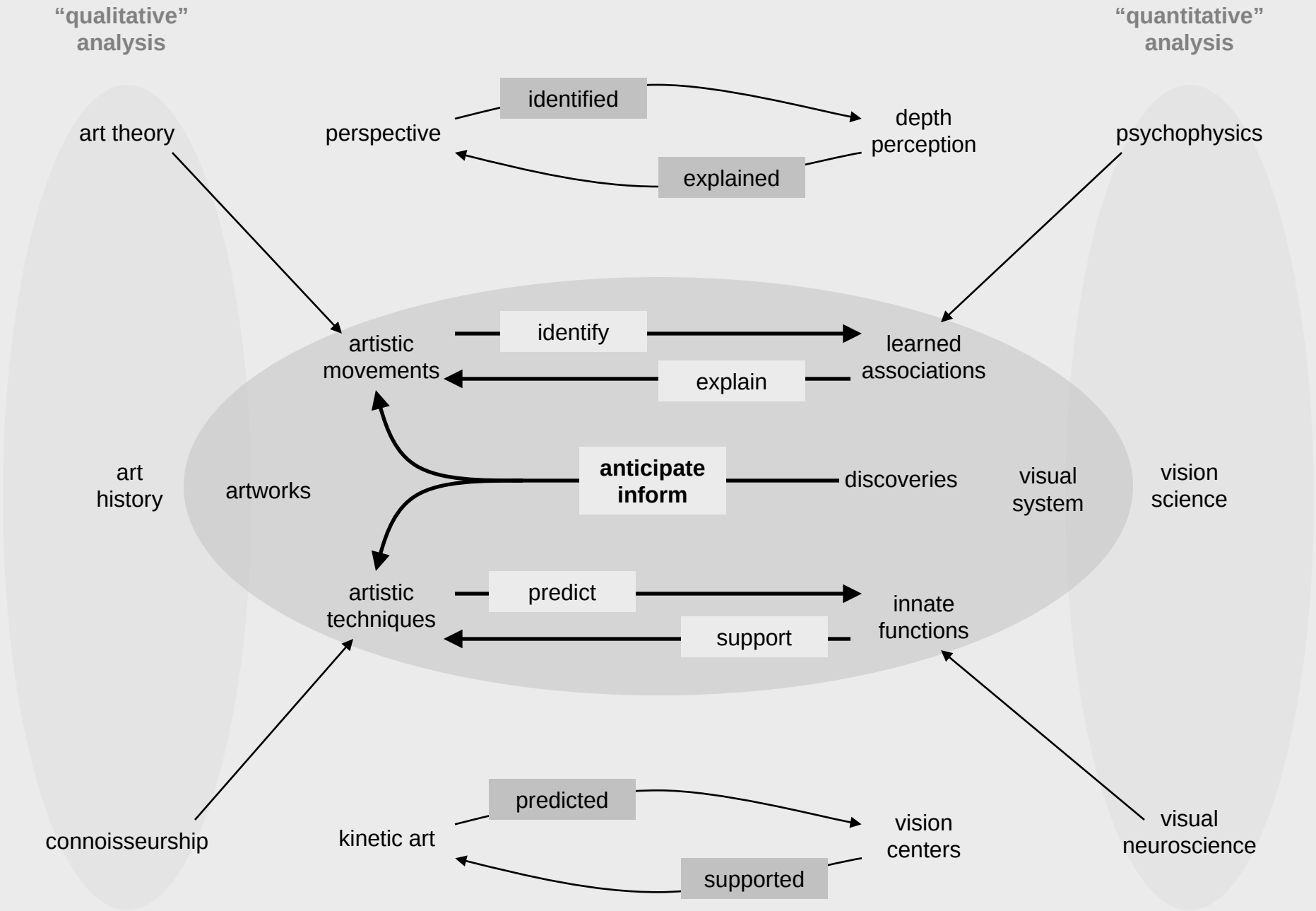
predicted

supported

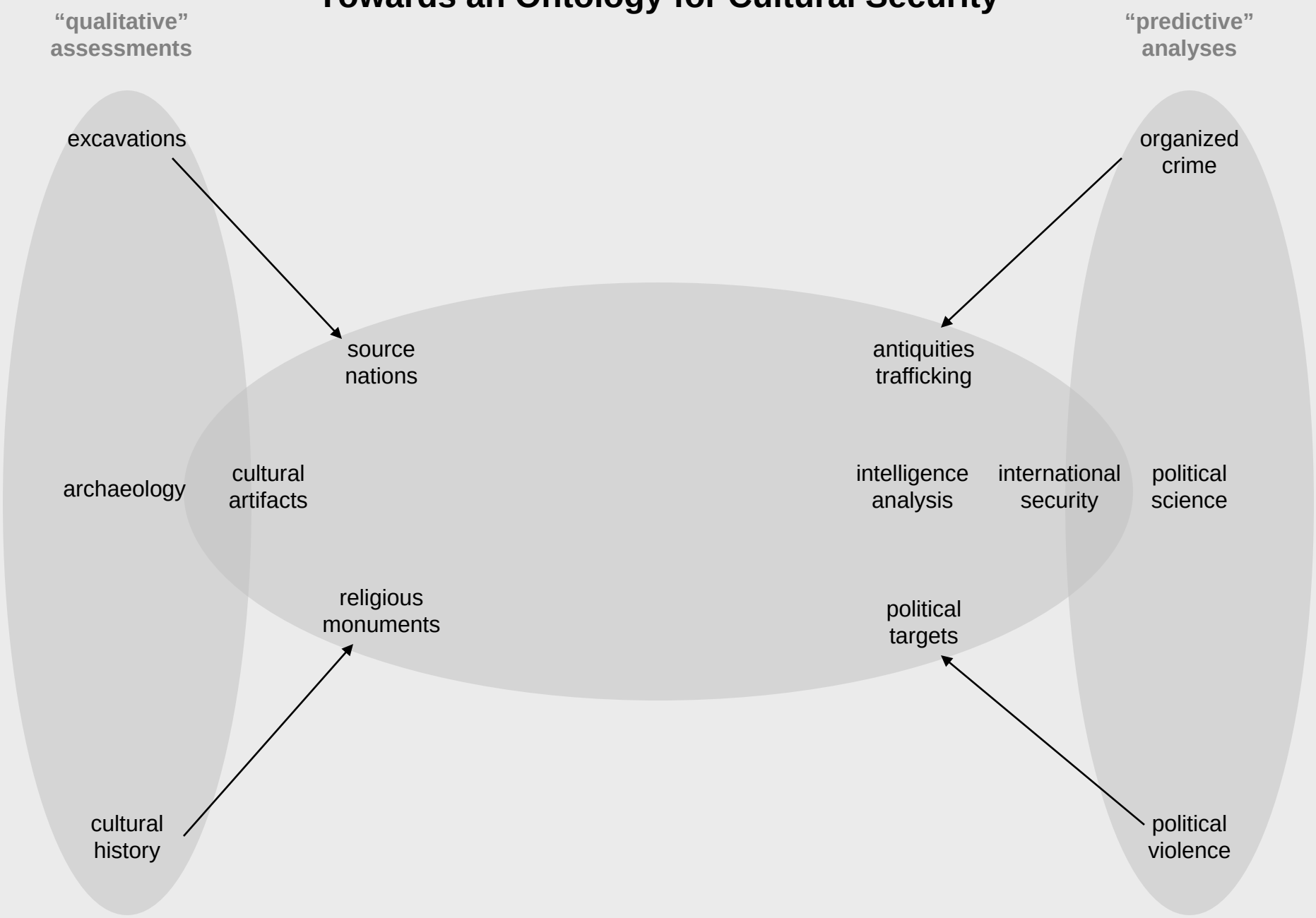
vision centers

visual neuroscience

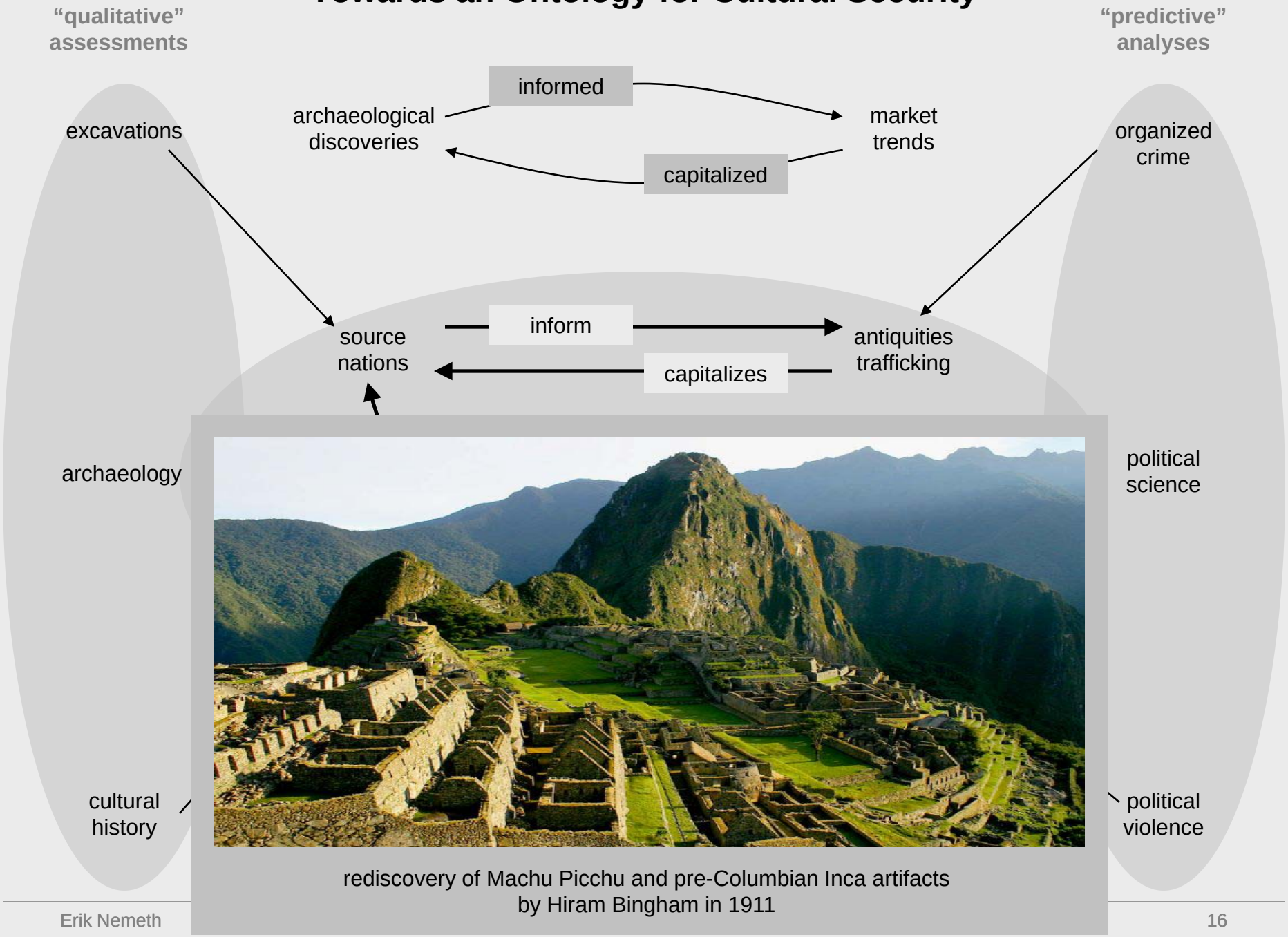
Eventually, vision science will influence artists.



Towards an Ontology for Cultural Security



Towards an Ontology for Cultural Security

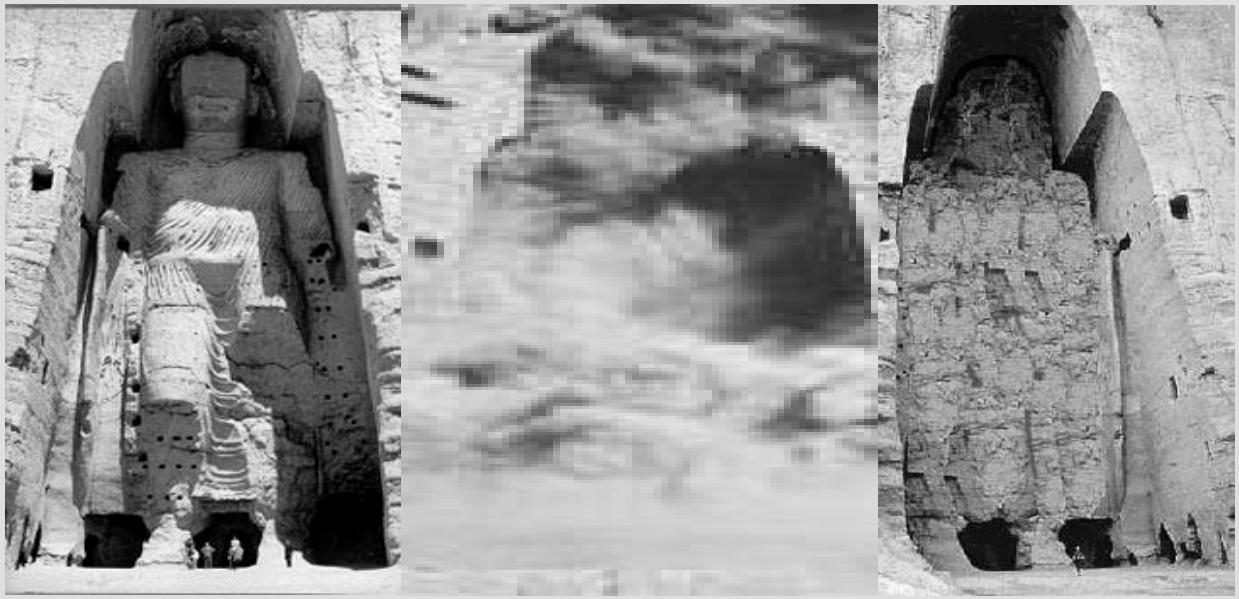


rediscovery of Machu Picchu and pre-Columbian Inca artifacts by Hiram Bingham in 1911

Towards an Ontology for Cultural Security

"qualitative" assessments

"predictive" analyses



destruction of the giant Buddhas of the Bamiyan Valley (2001)

excavations

organized crime

archaeology

political science

religious monuments

influence

political targets

exploit

cultural history

influenced

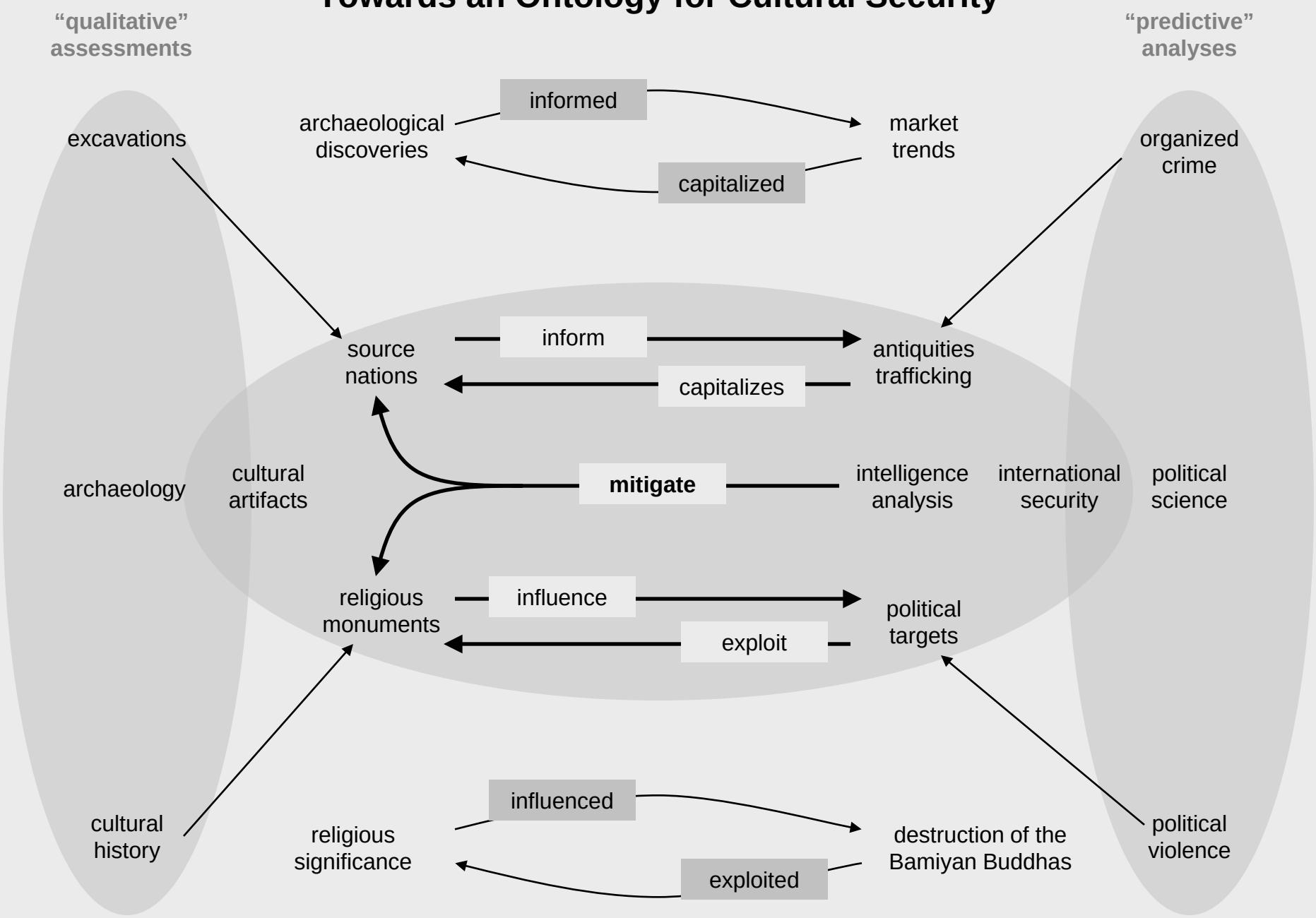
religious significance

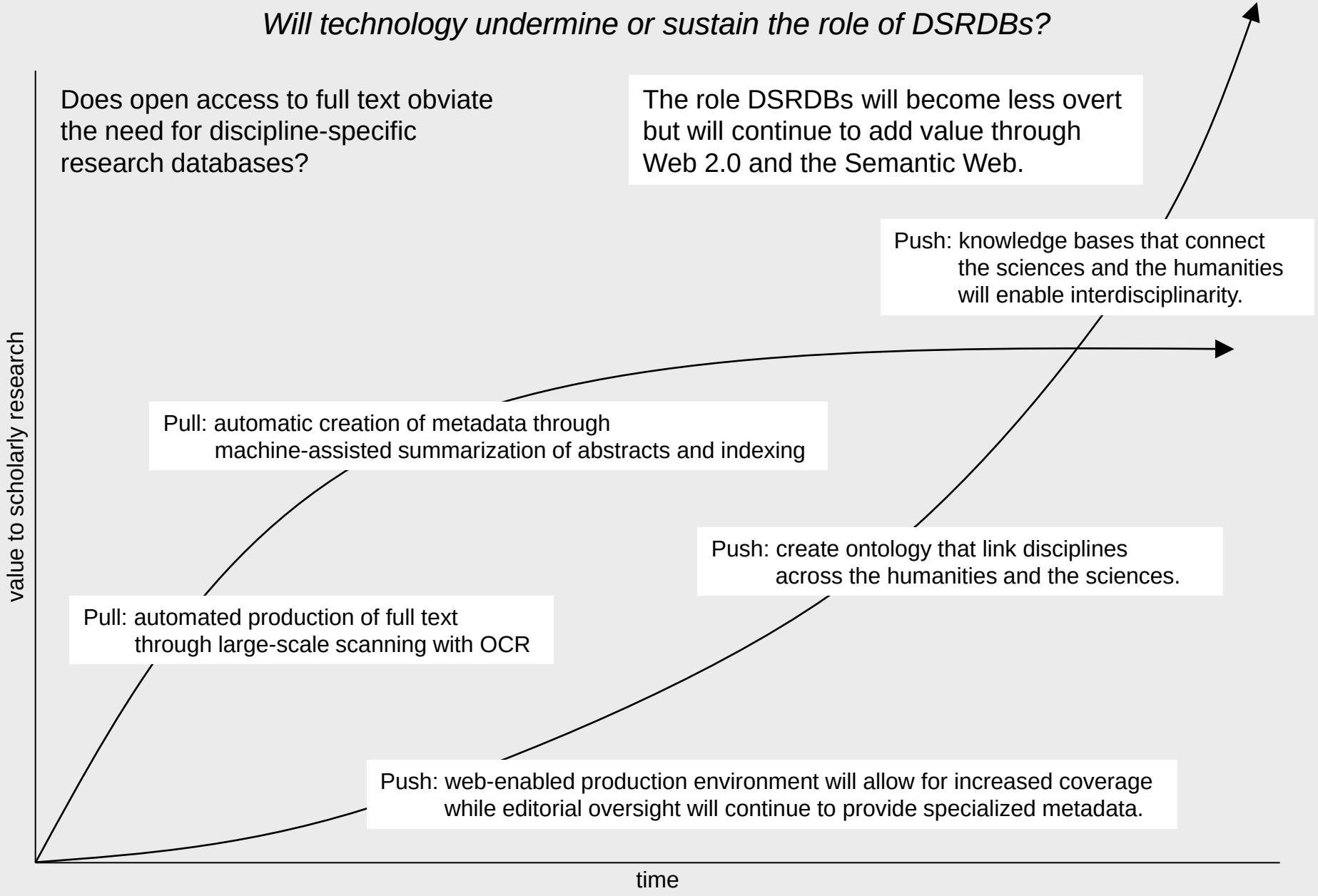
destruction of the Bamiyan Buddhas

political violence

exploited

Towards an Ontology for Cultural Security



Conclusion – Push vs. Pull

Will technology undermine or sustain the role of DSRDBs?