



# PhD Research Proposal Form China Scholarship Council (CSC) 2025

## FIELD

Behavioral and social sciences

**Thesis subject title:** Quantifying Emotion and Cognition in History through Text-Mining, Face Processing and Cultural Modelling

**Name of the French doctoral school/Ecole doctorale:** ED540

**Name of the Research team/Equipe de recherche:** Evolution and Social Cognition  
Website:

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**Lab Language/ Langue de travail:** English

### Research Proposal Abstract/Présentation du sujet:

The expression of emotions (e.g., anger, fear), social behaviors (e.g., cooperation, altruism), and personality traits (e.g., openness-to-experience, agreeableness) vary across individuals and, on aggregate, across geographical locations and historical periods. These variable psychological traits determine individual preferences, impacting how individuals interact with their societies (e.g., via voting behaviors and consumption patterns) and thus shaping the dynamics of institutions, social norms, and cultures.

When studying psychological variations in historical populations, it is impossible to use experiments or questionnaires. Still, cultural artifacts - books, paintings, pieces of music - offer rich information about the people who created and consumed them and the society in which they lived. For instance, the relative importance of love stories in novels and movies, plays, web novels, and fanfictions tells us how much individuals value romantic love and their investment in long-term relationships (van Monsjou & Mar, 2019). Imaginary words, and more generally, genres such as fantasy and science fiction, track psychological traits related to exploration and information seeking (Dubourg et al., 2023). Trustworthiness displayed in portraits provides information about the importance of cooperation in the community and can work as a proxy for the level of generalized social trust (Safra et al., 2020). Overall, cultural artifacts can thus be construed as imprints of people's psychological traits.

Cultural artifacts from the past can be construed as cognitive fossils: they represent the cognitive imprints of psychological traits belonging to people who no longer exist and can be leveraged to track more or less distant psychological changes throughout history (Atari & Henrich, 2023; Baumard et al.,

2024). The aim of this project is to draw on findings from cognitive and social psychology to analyze cultural artifacts in a new way, and quantify psychological changes over time.

Over the last 5 years, our team and others have shown that it is indeed possible to do "historic psychology", i.e. to use the concepts and methods of psychology to trace and quantify the evolution of psychological traits. For instance, using a database of literary fictions covering 19 geographical areas and spanning 3,800 years, we demonstrated that the importance of romantic love fluctuated in history, and tend to increase during periods of economic development. (Baumard et al., 2022). With a much smaller temporal depth, openness-to-experience dynamics can be approximated using the popularity of imaginary worlds and genres like fantasy and science-fiction. Using large databases of movies (N = 85,855) and novels (N = 96,711), we demonstrated that the share of fiction involving an imaginary world increased regularly over the past two centuries in both literature and cinema (Dubourg et al., 2021). Finally, in portraiture, cues of perceived trustworthiness (e.g., smiling faces) increased during the last five hundred years both for lay people and for monarchs, suggesting that being perceived as trustworthy became increasingly valued over the modern period (Guillou et al., 2023; Safra et al., 2022). **As promising as these initial results are, they need to be tested further on non-Western cultures, on other aspects of human psychology, and using a wider range of historical material. This is the ambition of this project.**

## References:

- Atari, M., & Henrich, J. (2023). Historical psychology. *Current Directions in Psychological Science*, 32(2), 176–183.
- Baumard, N., Huillery, E., Hyafil, A., & Safra, L. (2022). The cultural evolution of love in literary history. *Nature Human Behaviour*, 6(4), 506–522.
- Baumard, N., Safra, L., Martins, M., & Chevallier, C. (2024). Cognitive fossils: Using cultural artifacts to reconstruct psychological changes throughout history. *Trends in Cognitive Sciences*. [https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(23\)00259-0](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(23)00259-0)
- Dubourg, E., Thouzeau, V., de Dampierre, C., & Baumard, N. (2021). *Exploratory preferences explain the cultural success of imaginary worlds in modern societies*.
- Dubourg, E., Thouzeau, V., de Dampierre, C., Mogoutov, A., & Baumard, N. (2023). Exploratory preferences explain the human fascination for imaginary worlds in fictional stories. *Scientific Reports*, 13(1), 8657.
- Guillou, L., Safra, L., & Baumard, N. (2023). Using portraits to quantify the changes of generalized social trust in European history: A replication study. *Plos One*, 18(9), e0289741.
- Safra, L., Chevallier, C., Grèzes, J., & Baumard, N. (2022). Tracking historical changes in perceived trustworthiness in Western Europe using machine learning analyses of facial cues in paintings. *Nature Communications*, 11(1).
- Safra, L., Grèzes, J., Chevallier, C., & Baumard, N. (2020). Tracking historical changes in trustworthiness using machine learning analyses of facial cues in paintings. *Nature Communication*.
- van Monsjou, E., & Mar, R. A. (2019). Interest and investment in fictional romances. *Psychology of Aesthetics, Creativity, and the Arts*, 13(4), 431.

## Type of PhD :

### 1.Full PhD

- Joint PhD/cotutelle (leading to a double diploma) : YES
- Regular PhD (leading to a single French diploma) : YES

### 2. Visiting PhD (students enrolled at a Chinese institution who come to ENS for mobility period) :

NO

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