Predicting the Evolution of Mythological Symbols
Honours College Project Outline

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1 Introduction

Symbols are a representation of the ideas, beliefs, and values carried forth and communicated within and between cultures. As such, studying how and why symbols change over time is an exploration of how the culture itself changes. Visual representations such as sculpture and art provide a documentation of various symbols, and how they were influenced over time, usually by such subjective human factors such as a change in ideology, artistic taste, and the influx of new media and technology.

It is reasonable to assume that the success of a certain variation of a symbol is related to how important it is within the context of its own environment – some aspects may last for centuries, others change rapidly. Within the context of nature, Darwinian evolution provides a basis for how traits carried by organisms change over several generations in order to fulfil a role that usually hightens the chances of survival of an organism or its descendants. An evolutionary model is a mathematical description of traits or individuals in a population, which, based on certain assumptions on how these traits change, acts as a predictive model for what kinds of organisms flourish in the future. Assumptions include if and how traits are passed on to the next generation, and how beneficial they are to the organism. Likewise, symbols in art may follow a similar pattern of change, and thus, an evolutionary model applied to it may provide a novel path to explore how culture as a whole progresses.

This project will focus on a particular historical symbol, the *Löwenmensch* – a half-man, half-lion icon – which is a sculpture dating back to around 36,000BC. Examples and variations of this figure are littered throughout documented history, from ancient civilisations such as the Egyptians, Greeks and Indians, to the modern day, popular depictions that can be found in cartoons or TV shows.

The visual artist Daan Paans, with whom we have been in contact with, has collated photographs of dozens of specimens. These photos will act as a primary source of data, from which, after due analysis, traits will be chosen. Data collected will be traits such as size and colour. After extensive preliminary study, evolutionary models will be created on the basis of this data. Finally, predictions will be made using the model on traits of the lion-man, generations into the future. Using the output from the model, an artist may use 3D modelling tools to create a tangible representation of what the evolutionary model predicts.

2 Learning Outcomes

Since this project is very interdisciplinary, it has a number of learning outcomes. Primarily, it will guide an in-depth study into the theory and implementations of various evolutionary models that are used ubiquitously in domains such as biology and evolution. Genetic algorithms are popular in traditional artificial intelligence research as well, and having an understanding of these models in one's arsenal will definitely prove beneficial. It will also be an avenue into novel methods to approach art and culture research, i.e. using evolution, which is not a very popular research field today. Another learning outcome that stems from such a project, essential to research in general, would be how to organise and set such an undertaking – from the scheduling, to the documentation – apart from the research itself.

3 Timeline

The project would be tentatively split over the Period 2A as follows:
15/02/2021 – 28/02/2021: Initial exploration, data gathering and preparation
01/03/2021 – 08/03/2021: Preliminary data analysis and selecting traits.
09/03/2021 – 15/03/2021: Study on relevant evolutionary models.
16/03/2021 – 29/03/2021: Implementation of evolutionary models with data, and attain preliminary results.
30/03/2021 – 12/04/2021: Prediction of changes in traits, 3D modelling.