

An argumentation model of forensic evidence in fine art attribution

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Abstract In this paper, a case study is conducted to test the capability of the Carneades Argumentation System to model the argumentation in a case where forensic evidence was collected in an investigation triggered by a conflict among art experts on the attribution of a painting to Leonardo da Vinci. A claim that a portrait of a young woman in a Renaissance dress could be attributed to da Vinci was initially dismissed by art experts. Forensic investigations were carried out, and evidence was collected by art history experts and scientific experts. The expert opinions were initially in conflict, but new evidence shifted the burden of proof onto the side of the skeptics. This paper presents an analysis of the structure of the interlocking argumentation in the case using argument mapping tools to track the accumulation of evidence pro and con.

Keywords The Carneades Argumentation System · Argument from expert opinion · Fraudulent art · Evidential reasoning · Inquiry dialogue · Burden of proof · Leonardo da Vinci

1 Introduction

The Carneades Argumentation System¹ (Gordon 2005, 2010; Gordon and Walton 2006) is primarily designed to analyze, evaluate, and construct legal argumentation. But it is also meant to be open domain software (meaning it can

be applied to any domain of argumentation), and so the question arises whether (or how well) it can also be applied to examples of argumentation that are not specifically legal in nature. In this paper, a case study is conducted to test the capability of Carneades to model the argumentation in a case where forensic evidence based on expert opinion evidence was deployed in an investigation triggered by a conflict among art experts on the attribution of the painting to Leonardo da Vinci. In this case, an unsigned portrait of a young woman in a Renaissance dress sold for only \$22,000 in 2007, but later investigations by experts turned up evidence it may have painted by da Vinci. Forensic investigations were subsequently carried out, and evidence was collected by art history and forensic experts. The portrait was sold to an art collector for \$20,000 in 1998, and valued at \$160 million in 2012, but if proved to the art world to be painted by da Vinci, it could be worth more than \$600 million. The expert opinions were initially in conflict, but as the forensic evidence came in, new scientific evidence shifted the burden of proof onto the side of the skeptics. This paper presents an analysis of the structure of the interlocking argumentation in the case using argument maps to track the accumulation of evidence pro and con.

Section 2 presents a brief outline of the case that enables the reader to get a grasp of the overall sequence of argumentation in it by presenting the case as a story. It is important for the reader to grasp the temporal sequence of how the dispute about the attribution of the painting arose and how the various pieces of evidence were introduced in a sequential manner. It can be seen that the story about the attribution of the painting takes the form of a series of conflicts of opinions among experts on art history and forensic evidence. Section 3 offers a summary account of

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¹ <http://carneades.github.com/>