

Title

## **Shifting Boundaries: the Ontological Implications of Simulating Marine Mammals**

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Abstract

This paper addresses the implications of creating an extremely realistic 3D simulation of a wild beluga whale pod for a major aquarium that is situated next to a group of real beluga whales in an integrated marine mammal exhibit. The Virtual Beluga Interactive was conceived to better immerse and engage the visitors in complicated educational concepts about the life of wild belugas compared to what is typical possible via wall signage or a video display, thereby allowing them to ask deeper questions and hopefully have deeper insights into the life of beluga whales. The simulation is specifically informed by research data from the live belugas, (e.g. voice recordings tied to mother/calf behavior) obtained from interviews with the marine mammal scientists and education staff. The collaborative user interface allows visitors to engage in "what-if" scenarios of wild beluga emergent behavior via a 3D interactive that uses artificial intelligence, physically based animation, and real-time graphics. Many shared ethical, cultural and ontological issues have emerged that have lead to deep questions surrounding virtuality and nature. For instance, we have made a strong effort to ensure the interactive enhances and works with but never replaces the benefit of live belugas, but in doing so; ironically, the virtual belugas represent 'wild' nature while the real belugas can only represent captive nature. This paper describes and questions these related ontological issues raised by this sophisticated effort of pairing the virtual and the real in the name of furthering the lay persons understanding and appreciating of nature.