

# Peer Responses.

## 1. To Alberto Castro

Re: Initial Post

by Anastasia Rizzo - Tuesday, 5 September 2023, 3:43 PM

Hello Alberto,

I greatly appreciate the thoughtful perspective you've presented in your recent post on Knowledge Representation (KR). Your insights closely align with my own views on this subject.

a) I wholeheartedly concur with your view that KR has much deeper roots than its association solely with the development of computing technology. The connection you draw between AI artefacts like neural networks and genetic algorithms with disciplines like biology is a striking reminder of the interdisciplinary nature of KR. Moreover, the references you provided, particularly (Sowa, 2000) and (Russell & Norvig, 2016), reinforce the idea that KR has a rich history and draws from various fields that predate the modern computer era.

b) Your agreement with (Sowa, 2000) about the field's name, "knowledge representation and reasoning," resonates with my own thinking. It highlights the indispensable role of reasoning in conjunction with knowledge representation. The symbiotic relationship between these two components, as you rightly pointed out, forms the core of AI's potential to derive conclusions, answer questions, and solve complex problems.

In my Initial post, I explored the historical foundations of KR, drawing parallels with ancient philosophical traditions, mathematics, writing, music, cryptography, and agriculture. Your perspective complements this exploration beautifully by emphasising the historical and interdisciplinary dimensions of KR. Together, our views highlight the multifaceted nature of KR, showcasing its rich history and the pivotal role of reasoning in unlocking its full potential.

References:

Sowa, J. (2000) Knowledge Representation: Logical, Philosophical, and Computational Foundations

Russell, S. J., & Norvig, P. (2016) Artificial Intelligence: A Modern Approach (3rd ed.). Pearson.

## 2. To Rory Maclean

Re: Initial Post - Rory

by Anastasia Rizzo - Tuesday, 5 September 2023, 3:42 PM

Hello Rory,

I would like to express my agreement with your recent post regarding the significance of Knowledge Representation (KR) even without reasoning. Your argument that KR holds inherent value is well-founded, and I believe this is a crucial point to emphasise.

Indeed, KR without reasoning can be immensely useful, especially in domains like healthcare. Your example of the Human Disease Ontology (Schriml et al., 2019) illustrates this perfectly. This structured knowledge representation allows for the harmonisation and analysis of diverse healthcare data sources. It serves as a foundational framework that enables healthcare professionals and researchers to navigate the complex landscape of medical information efficiently.

Furthermore, I'd like to add that the utility of KR in healthcare extends beyond data organisation. It plays a pivotal role in ensuring data accuracy, consistency, and interoperability, which are essential for making informed decisions and advancing medical research.

In essence, your point underscores the notion that while reasoning can significantly enhance KR, the intrinsic value of well-structured knowledge representation should not be overlooked. It forms the bedrock upon which more advanced applications and intelligent systems, such as automated diagnosis and treatment recommendation systems, can be built.

References:

Schriml, L.M. et al. (2019) Human Disease Ontology 2018 update: classification, content and workflow expansion. *Nucleic Acids Research* 47 (D1): D955–D962.