Classification of Sandwich Types: A Set-Theoretic Analysis

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***Abstract*— This paper provides a set-theoretic analysis of the relationships between cheeseburgers, hamburgers, and double hamburgers, offering a comprehensive understanding of their categorization in the context of culinary classification. We examine the subsets and intersections of these sandwich types based on their ingredients and patty counts, emphasizing the variability in their classification under different culinary viewpoints.**

I. Introduction

The classification of cheeseburgers, hamburgers, and double hamburgers has long been a subject of debate, with varying perspectives on their categorization. This study aims to clarify these culinary terms and their hierarchical relationships while recognizing the potential for differing viewpoints.

II. Methods

We apply set theory to categorize and define the relationships between these sandwich types:

1. **Cheeseburgers (C)**: A subset of hamburgers, characterized by the inclusion of cheese as a primary ingredient.
2. **Hamburgers (H)**: The broader category encompassing all meat patty sandwiches. This term is applicable to sandwiches both with and without cheese, making it inclusive of cheeseburgers.
3. **Double Hamburgers (D)**: A category defined by the presence of two meat patties, with single hamburgers being a subset of this category.

III. Results

Based on our rigorous set-theoretic analysis, an unexpected paradox emerges regarding the relationships between these sandwich types:

- **C ⊂ H:** Cheeseburgers are a subset of hamburgers, as they are a specific type of hamburger that includes cheese. This implies that cheeseburgers are inherently linked to the broader category of hamburgers.
- **C ⊃ H:** Paradoxically, hamburgers, encompassing all meat patty sandwiches regardless of cheese, are also a subset of cheeseburgers. This indicates that cheeseburgers encompass the more inclusive category of hamburgers.
- **H ⊂ D:** Double hamburgers, defying conventional expectations, encompass single hamburgers as they share the common element of meat patties in a sandwich. This suggests that double hamburgers represent a broader category that includes the traditional single hamburgers.
- **H ⊃ D:** Paradoxically, hamburgers, inclusive of all meat patty sandwiches, are also a superset of double hamburgers. This unexpected relationship implies that double hamburgers, with their two patties, can be seen as a subset of the conventional hamburger category.

A. Discussion

It is important to acknowledge that the classification of these sandwich types presents a bewildering paradox. Our set-theoretic analysis defies traditional categorization by concluding that cheeseburgers, hamburgers, and double hamburgers have overlapping relationships. The unexpected results challenge conventional assumptions and highlight the complexity of culinary classification.

B. Conclusion

In this peculiar study, we employed set theory to examine the relationships between cheeseburgers, hamburgers, and double hamburgers. Our unexpected findings reveal an intriguing oxymoron: cheeseburgers are both a subset and a superset of hamburgers, while hamburgers are likewise both a subset and a superset of cheeseburgers. Moreover, double hamburgers encompass single hamburgers, just as single hamburgers can be seen as a subset of double hamburgers.

IV. Acknowledgments

We would like to acknowledge the complex nature of culinary taxonomy and the unforeseen paradoxes that arise through systematic analysis.

979-8-3503-2934-6/23/$31.00 ©2023 IEEE