

Reading Guide #21 - Nominalism and Explanation

Sorin Bangu, “Inference to the Best Explanation and Mathematical Realism” and
“Indispensability and Explanation”

“Inference...”

1. How does Melia use the explanatory indispensability argument to increase the burden on the indispensabilist? How is Baker’s paper an attempt to meet this challenge?
 2. Describe Field’s version of the explanatory indispensability argument.
 3. Why is it essential to Baker’s argument that the physical phenomenon purportedly explained by a mathematical fact be outside of mathematics?
 4. What is the explanandum in Baker’s cicada example? How is it a mixed phenomenon? What are the elements of the mixture?
 5. How is Baker’s argument circular? How does it beg the question against the nominalist?
 6. Do scientists take Baker’s explanandum to be true? Does this opinion sway philosophers? Should it?
 7. How does Bangu’s argument extend to a general argument against any strategy to defend mathematical realism which relies on inference to the best explanation or the explanatory indispensability argument?
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“Indispensability...”

8. What criterion of ontological commitment does Melia invoke? How is it contentious? How does Bangu think we should understand Melia’s challenge?
9. How does Bangu see the core question in the recent debate between realists and nominalists?
10. How does Colyvan invoke the relationship between unification and explanation to argue for mathematical realism?
11. What is the role of complexity in arguments about indispensability?
12. Describe two unwelcome consequences of using complex examples in discussions of indispensability.
13. How does simplicity play a role in the explanatory argument that it does not play in the standard argument?
14. What is Bangu’s ‘nominalize’ desideratum?
15. What is Bangu’s ‘indispensability’ desideratum? Be specific.
16. Describe Bangu’s fourth desideratum, ‘explanation’.
17. Describe Game. What is the outcome? How is Game * different? How is it similar?
18. How does the realist explain the common features of Game and Game*?
19. How does ‘nominalize’ apply to the explanation of the common features of Game and Game*?
20. What is the role of the law of large numbers in Benacerraf’s example?
21. How does Bangu respond to the concern that games, as abstract objects, are contentious examples?
22. What is Q, the qualitative explanation? What difficulty does it face?
23. How can the nominalist appeal to a rearrangement to explain the outcomes of Game and Game*?
24. Explain the Joe and Moe analogy. How does it apply to the explanations used for Game and Game*?
25. What explanatory factor is available to the realist but not the nominalist in Bangu’s example?