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How to make judicious use of current physics in reconstructing its history

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Using three concrete examples, I illustrate both benefits and pitfalls of approaching the history of relativity and quantum theory with current textbook knowledge of these subjects. First, I show how knowing something about energy-momentum tensors in special relativity makes it easy to see that special relativity did not, as has been suggested, simply kill the program of Abraham and others at the beginning of the 20th century to reduce all of physics to electrodynamics, but co-opted key elements of it. Second, I show how knowing something about coordinate conditions in general relativity can be an obstacle to seeing why Einstein initially rejected field equations based on the Ricci tensor. Third, I show how knowing something about Hilbert space can be an obstacle to seeing the logic behind Jordan's statistical transformation theory. These three examples suggest that knowledge of modern physics is beneficial for historians, but only when used judiciously.