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https://en.wikipedia.org/wiki/Karl_Georg_Christian_von_Staudt His "algebra of throws" provided the first definition of distance that did not depend on a prior agreement as to its meaning, but is based only upon geometric congruence. Thus it allowed us to discuss what space might mean without any need to be able to discuss its possible content.

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https://en.wikipedia.org/wiki/Separation_relation Axioms were needed to show that the "real numbers" needed for filling the detail of space were soon added.

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https://en.wikipedia.org/wiki/Hermann_Grassmann The work of this gentleman proved to be far superior to the vector and tensor mathematics that became "du rigeur", as has been acknowledged by mathematicians and physicists universally.

Whitehead, of course, was adamant about its importance in his "Universal Algebra" and planned to base the 4th volume of Principia mathematica on Grassman's approach.

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https://www.maa.org/sites/default/files/pdf/upload_library/22/Ford/DesmondFearnleySander.pdf A marvelous explication of the lack of understanding of linear algebra and the strengths of the correct approach developed long ago by Grassmann.

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<https://www.ams.org/journals/bull/1972-78-05/S0002-9904-1972-12971-9/S0002-9904-1972-12971-9.pdf> A well-known paper by physicist Freeman Dyson pointing out the opportunity that physics missed by not adopting Grassman's work early on. Dyson of course missed himself an opportunity of realizing Whitehead also developed a very strong theory of relativity.

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