

# Geographies of science: persuasion, proximity and science citations



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## Research aim

Contemporary science is an interactive activity localised in such places as classrooms, laboratories, university offices and conferences. As an interactive activity, part of science is about scholars in particular places trying to persuade scholars in other places to conceive their work as relevant and valuable. As such, science is thus an inherently spatial activity. However, to say that science is inherently spatial is not to say that there are underlying spatial regularities in the replication of scientific statements per se. One such spatial regularity is concerned with the role of physical proximity. The aim of this research is to address the role of physical proximity in the process of ideas becoming scientific knowledge (i.e. replication).

## Central question

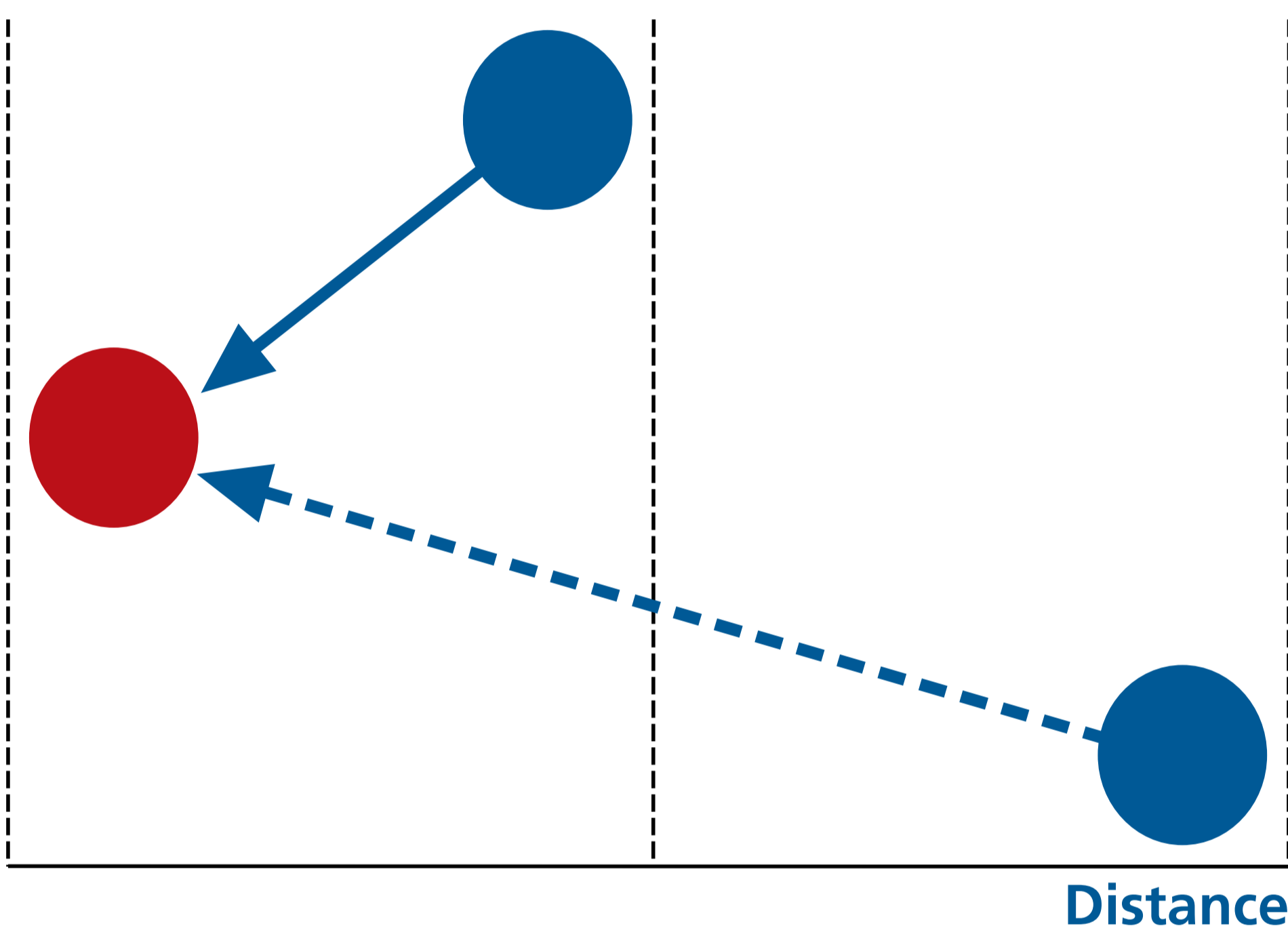
How and to what extent does physical proximity impact on ideas becoming scientific knowledge?

## Theoretical considerations

In order to persuade others, scholars inscribe new scientific statements using existing scientific statements (Gilbert 1976; Gilbert 1977). The use of an existing scientific statement for the inscription of a new scientific statement requires credibility of and tacit knowledge on an existing scientific statement (Shapin 1994; Collins 2001). In that both credibility and tacit knowledge are constructed through frequent interaction among scholars and frequent interaction is facilitated through physical proximity, physical proximity has an impact on the use of an existing scientific statement for the inscription of new scientific statements. However, the role of physical proximity among scientific statements might decrease over time as a result of the emergence of uniformity in meaning over the existing scientific statement (Small 1982). Uniformity in meaning signals generality in the credibility of and the required tacit knowledge on a scientific statement. When credibility of and tacit knowledge on an existing scientific statement get distributed the use of an existing scientific statement requires less frequent interaction, decreasing the role of physical proximity.

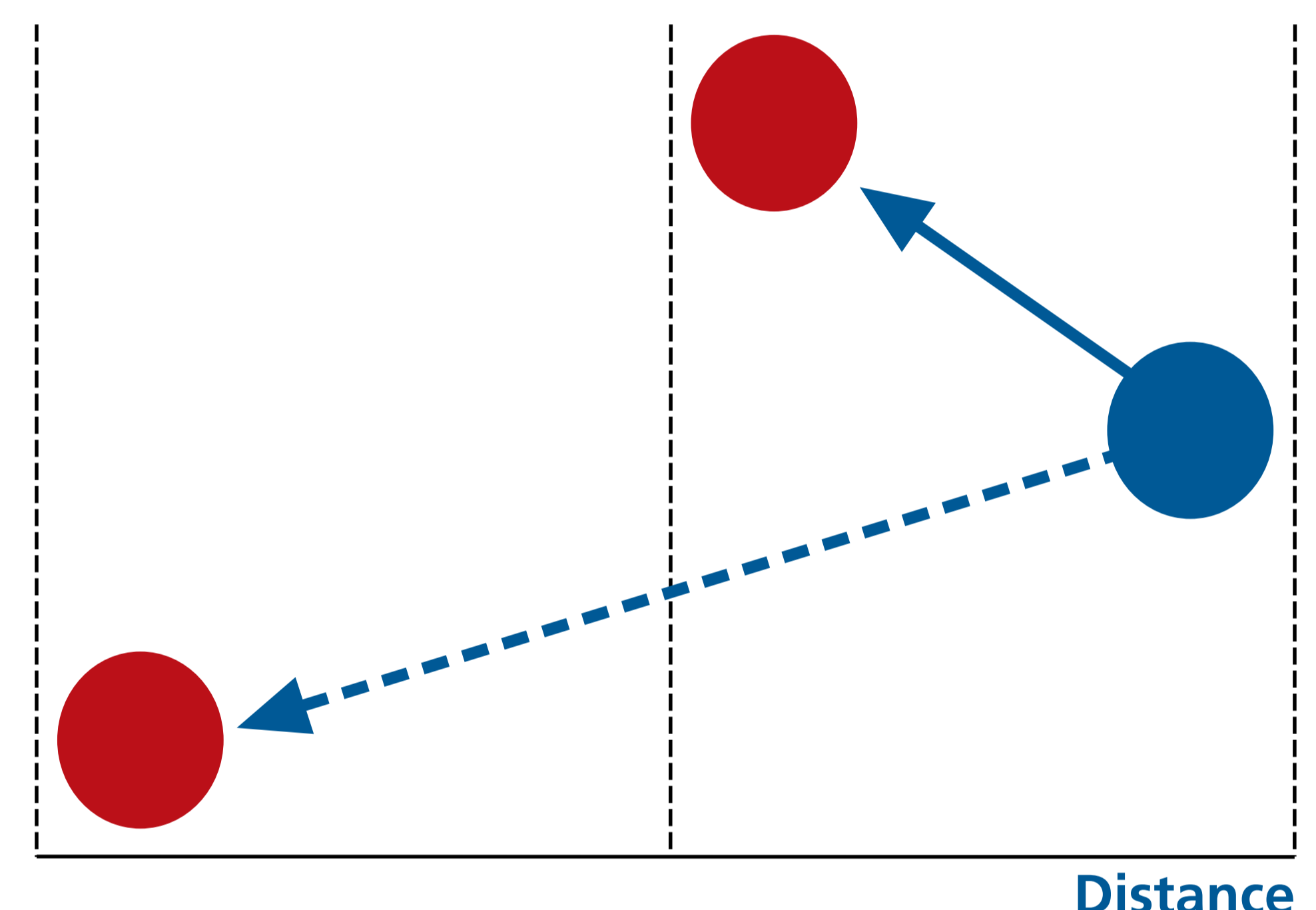
### Issue 1: Persuasion and proximity

To what extent does physical proximity between an existing scientific statement and new scientific statements impact the actual use of the existing scientific statement?

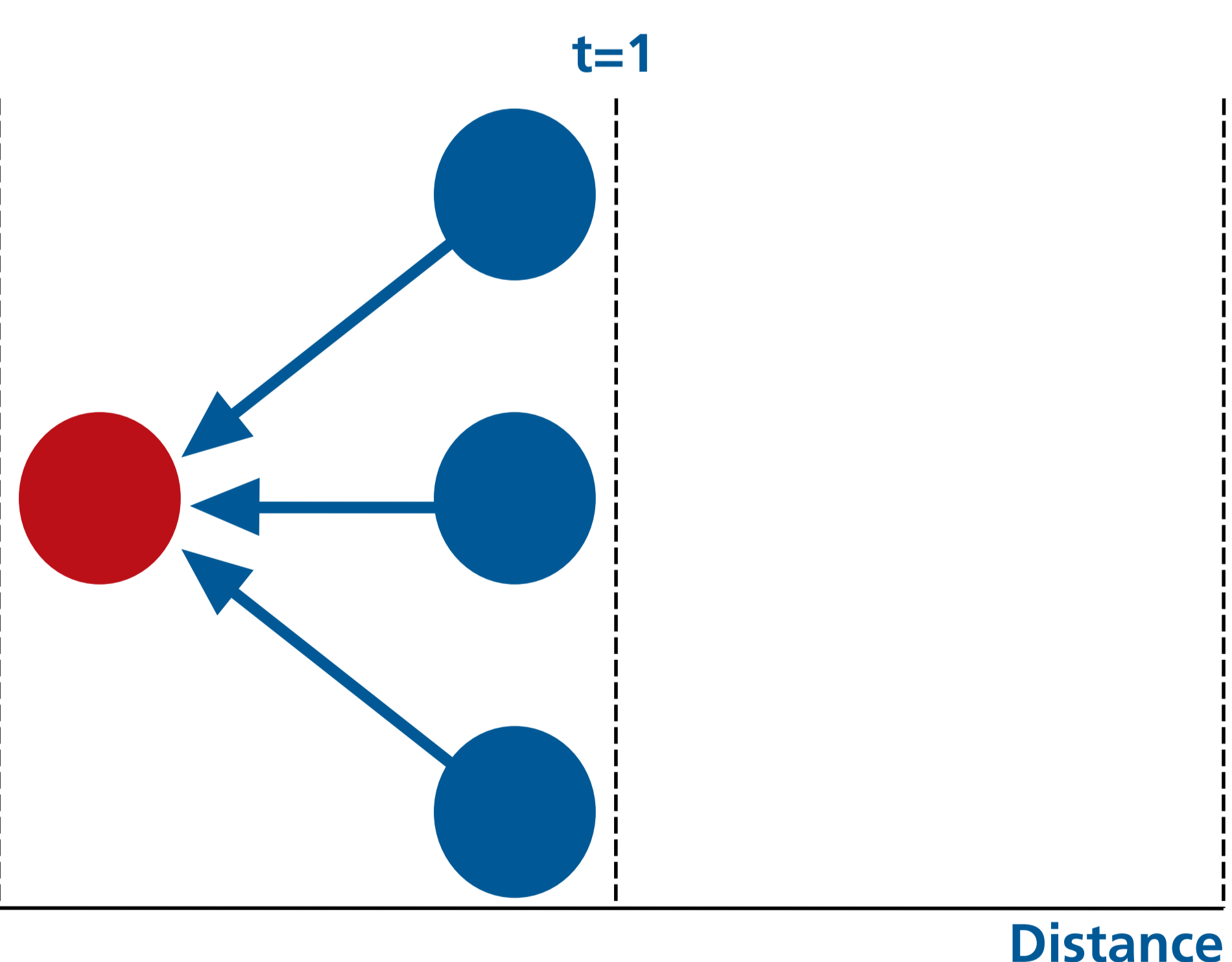


### Issue 2: Discourse and proximity

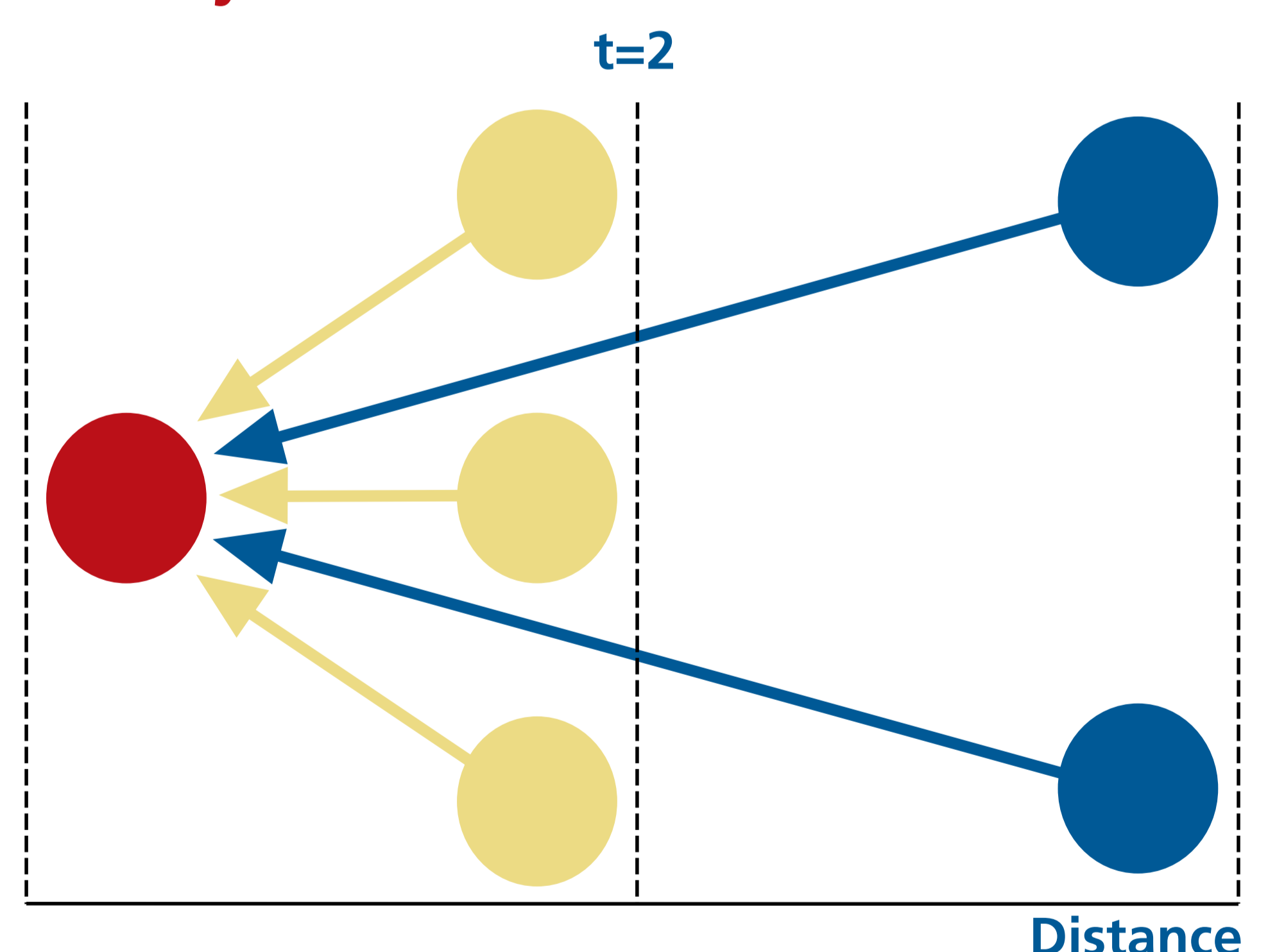
To what extent does physical proximity between existing scientific statements and a new scientific statement impact the actual use of an existing scientific statement?



### Issue 3: Persuasion, dynamics, and proximity



To what extent does the role of physical proximity between an existing scientific statement and a new scientific statements change over time?



## Data & methodology

We propose to assess the use of existing scientific statements in inscribing new scientific statements using citation analysis. Whereas existing scientific statements are considered as cited texts, new scientific statements are considered as citing texts. Physical proximity is measured as the inverse of physical distance between the first authors of the cited and citing text. We control for social proximity by constructing past co-publication networks. We compare the probability of a text being proximate to another text conditional on a text citing another text, with the probability of a text being proximate to another text not conditional on a text citing another text. In order to make this comparison we construct a control group of texts that are similar to the citing texts in all respects except for the fact that they do not cite the cited text.

## References

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