

Review of cotton fiber fineness and maturity testing

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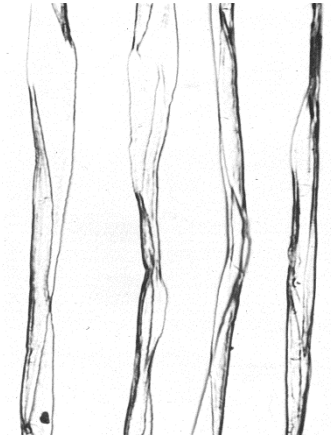
Properties, test methods & timing

Fineness

- Perimeter or biological fineness (P)
- Mass per unit length H (mg/km or mtex)
 - Airflow (from 1940s)
 - Automated length & weigh by Naylor *et al* (from 2004)

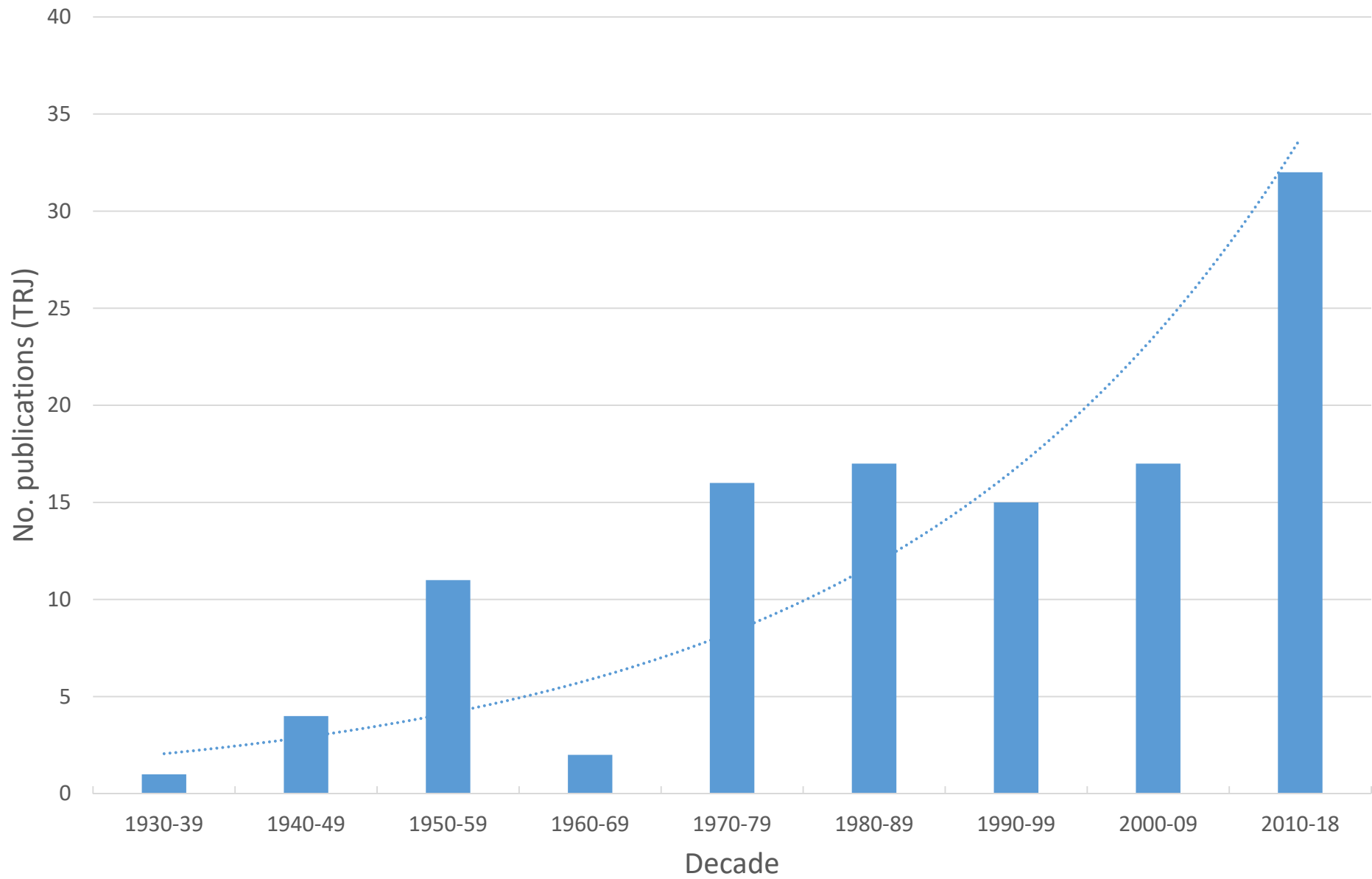
Maturity

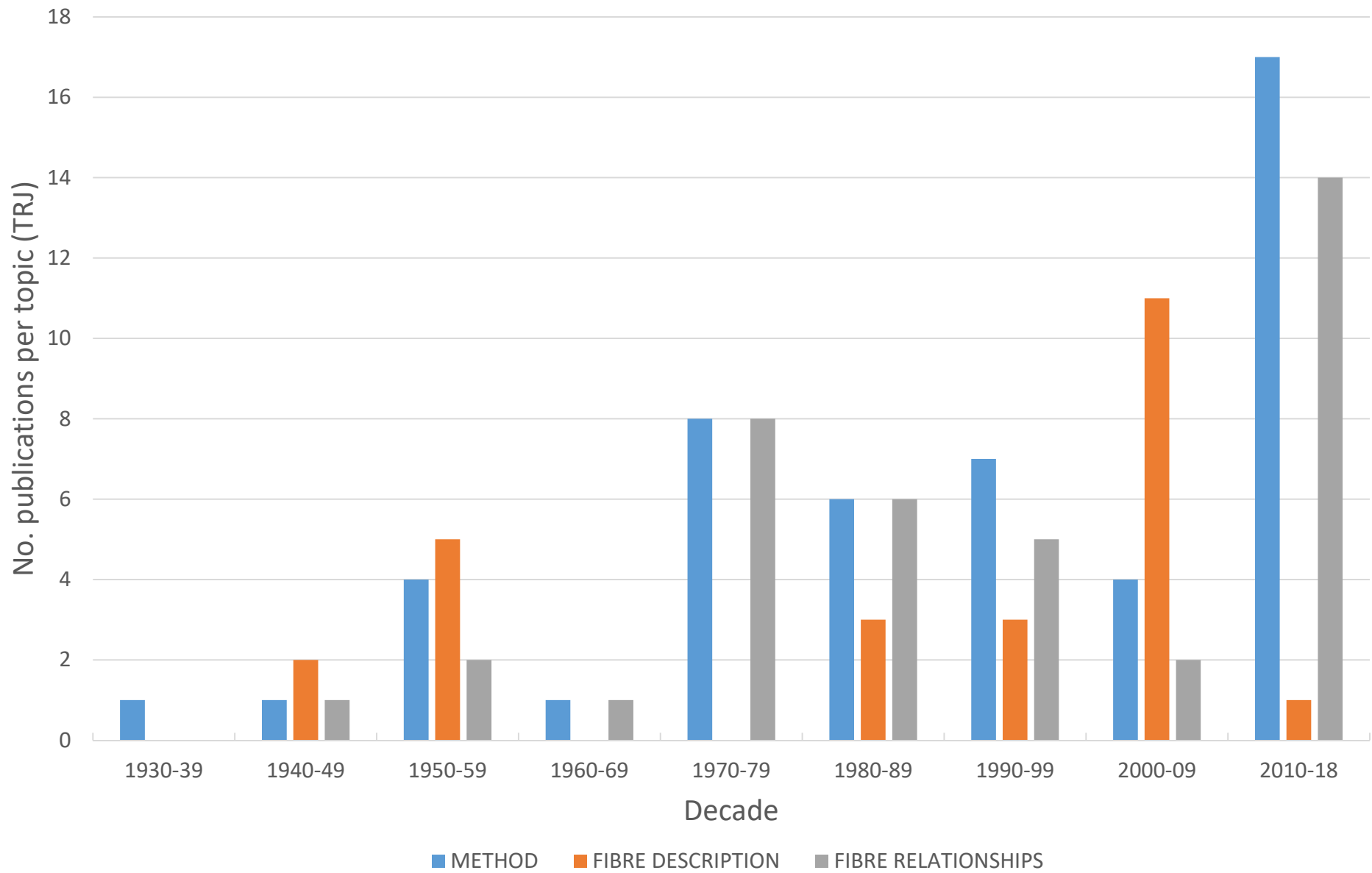
- Degree of cell wall thickening (θ) = $4\pi A_w/P^2$
- Maturity ratio (M) = $(N - D)/200 + 0.70$
 - M correlated with θ by Lord (in 1939)
 - XS analyses w/ image analysis by Thibodeaux (from early 1990s)
 - Correlated with AFIS light attenuation by Uster (in mid 1990s)
 - Correlated with polarized light images by Gordon *et al* (from 2004)

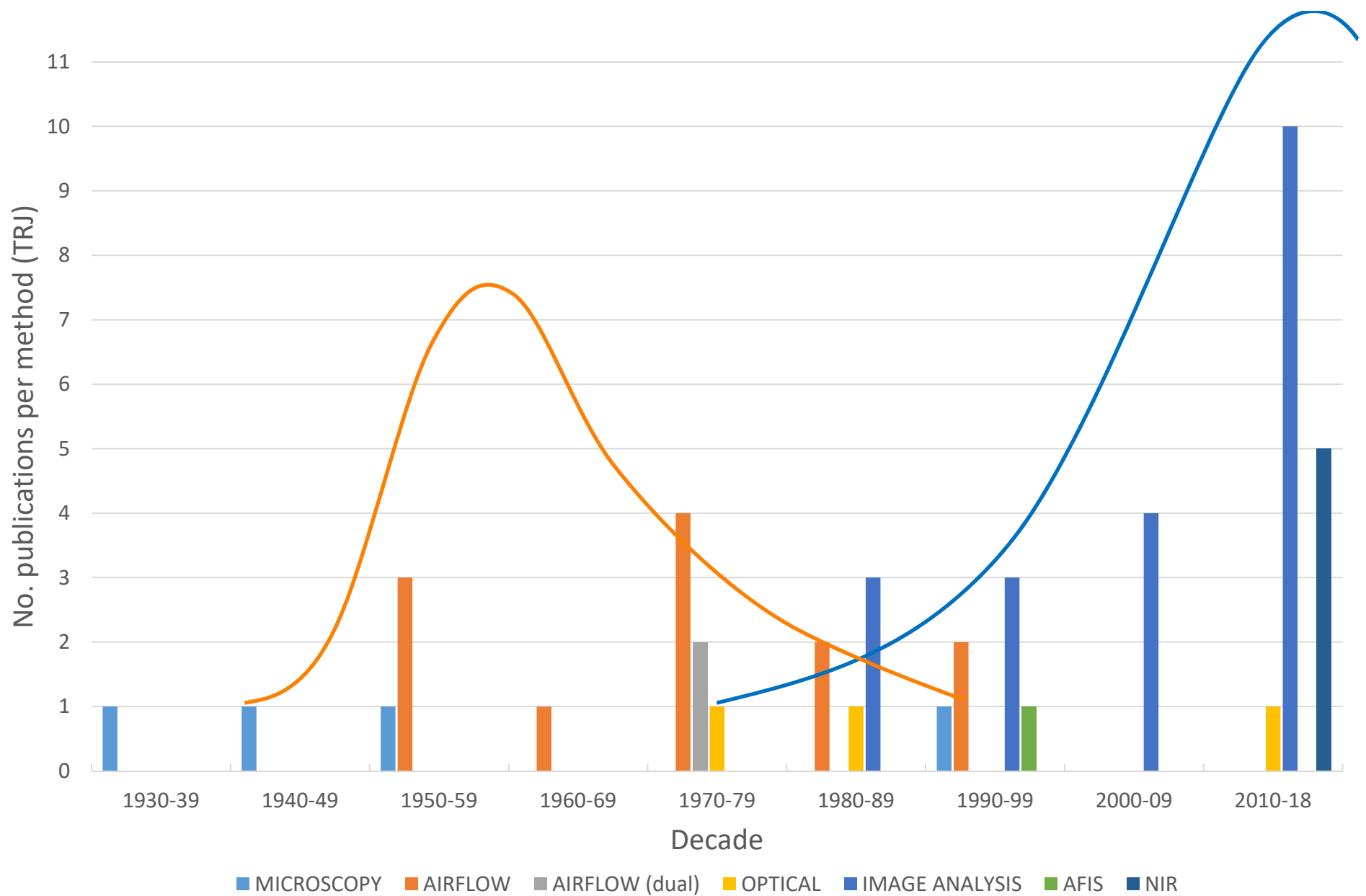


Literature review

- Fineness and maturity peer review papers (TRJ)
- Counted on decadal basis
- Subject matter classified into ‘methods’, ‘fibre descriptions’ and ‘fibre relationships’
 - Methods = focus on single test method examination and development
 - Fibre descriptions = None standard test is used to describe non-commercial elements of fibre, e.g., fine structure and chemical analyses
 - Fibre relationships = relationships between fibre quality and fibre treatments, e.g., field and processing treatments
- Methods classified into ‘microscopy’, ‘airflow’, ‘image analysis’, ‘optical’, ‘AFIS’ and ‘NIR’







Thank you

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