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CONSTRUCTING DYNAMIC GEOMETRY: THE INTERPRETATIVE FLEXIBILITY OF MATHEMATICAL SOFTWARE IN TEACHING PRACTICE

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The idea of 'interpretative flexibility' acknowledges that any technology retains a degree of fluidity in its conception, shaped not just by its designers but by its subsequent users. In particular, this opens the way to important variation in modalities of use. This lecture applies this perspective to one form of software which has attracted particular attention in mathematics teaching: dynamic geometry. Drawing on a study conducted in professionally well-regarded mathematics departments in English secondary schools, the lecture will sketch the wider curricular context, provide an overview of each of three contrasting cases of teaching practices making use of dynamic geometry, and present cross-cutting themes through which these contrasts can be characterised. These themes are: employing dynamic geometry to support guided discovery; evaluating the costs and benefits of student software use; handling apparent mathematical anomalies of software operation; supporting learning through analysis of mathematical discrepancies; promoting mathematically disciplined interaction through the software; privileging a mathematical register for framing figural properties; incorporating dynamic manipulation into mathematical discourse. The lecture will conclude with reflection, in the light of wider research, on the way in which teaching practice might productively be developed further, and such development be better supported by curriculum specifications and resources.