

The Initiation, Propagation, and Arrest of Joints and Other Fractures

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The Initiation, Propagation, and Arrest of Joints
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Preface

We dedicate this volume to the memory of our colleague and friend, Paul Hancock. In doing so, we second the feelings expressed by Bill Dunne, Iain Stewart and Jonathan Turner in the special issue of *Journal of Structural Geology*, the Paul Hancock Memorial Issue of 2001. Although it has been 5 years since Paul's passing, we still feel his presence as a colleague who took a special interest in brittle fracture. One of us (Terry Engelder) had the special pleasure of collaborating with Paul on developing an understanding of neotectonic joints. It was Paul who introduced both of us to the 'world-class' outcrops at Lilstock beach and we have both had the opportunity of discussing fracturing with him at numerous localities around the world ranging from Taiwan to the Appalachian Plateau.

When organizing a field workshop on joint initiation, propagation and arrest we wished to incorporate a field trip to one of the world's best outcrops for the study of joint initiation, propagation and arrest. Lilstock beach came immediately to mind. The legacy of Paul at Lilstock beach lives on in more than one paper in this Geological Society of London Special Publication titled *The Initiation, Propagation, and Arrest of Joints and Other Fractures*. Our field workshop was held in Weston super Mare, UK, less than an hour's bus drive from the outcrops. In inviting participants to our field workshop in August 2001, we announced our intention to dedicate the conference to Paul's memory. Such an invitation

attracted more than two dozen participants from several countries in Europe, North America and the Middle East. The collection of chapters in this volume grew from the questions addressed during the field workshop.

We attempted to understand joint development in the crust through the following general questions. What is the mechanism by which joints are initiated? What are the mechanisms controlling the path they follow during the propagation process? What is responsible for the arrest of joints? These are the three questions implicitly found in the title to this special publication, *The Initiation, Propagation, and Arrest of Joints and Other Fractures*. Many of the answers to these questions can be inferred from the geometry of joint-surface morphology and joint patterns. Joints are a record of the orientation of stress at the time of propagation, and as such they are also useful records of ancient stress fields, regional and local. Because outcrop and subsurface views of joints are limited, statistical techniques are required to characterize joint and joint sets. Finally, joints are subject to post-propagation stresses that further localize deformation and are the focus for the development of new structures. Our special publication has one or more chapters that address in detail each of these questions or topics.

T. Engelder
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