

**Working on Mars**, by W. J. Clancey (MIT Press, London), 2012. Pp. 310, 23.5 × 18.5 cm. Price £20.95/\$29.95 (hardbound; ISBN 978 0 262 01775 6).

William Clancey has taken on the difficult task of writing an analytical and narrative background to the scientific missions of the Mars Exploration Rovers (MER). It's not so much a scientific account as a description of the how and why of the mission, told from the viewpoint of its leading participants. From 2002 to 2005 Clancey led a NASA Ames team of computer and social scientists as 'participant observers' of the Science Team. They documented conversations, meetings, and plans by observing that team's scientific conferences from the landing of *Spirit* in 2004 January and finishing with selected interviews two years later.

Clancey asks how working with a mobile robotic laboratory changes the nature of field science. MER is compared with other missions, and Clancey moves on to discuss telerobotics and the nature of scientific practices, including the scientific team's 'virtual presence' on the Martian surface. He writes a lot about scientific cooperation and teamwork, including the idea of 'planning by consensus'. How the lessons from MER can inform and guide future missions forms the subject of the closing chapter. He concludes that chapter with this

perceptive comment: "If it turns out that remotely reprogrammed systems can be made adequate for scientists' needs .... then the articulated motivations for human spaceflight will need to shift from talk about scientific exploration to something more deliberately poetic, commercially practical, or frankly political and nationalistic." The author's Epilogue, however, shows him to be an optimist about human exploration and, as he nicely quotes Chris Mackay: "Even if computers progress so much they can go to Paris, taste the wine, eat the food and come back and tell me all about it, I'd still want to go myself."

In summary, Clancey has provided an interesting behind-the-scenes perspective about how scientists worked together to operate the MER. He's done a thorough job, and future participants in the field will have much to learn from it, but I suspect that the nature of the subject matter will limit its more general readership. — RICHARD MCKIM.