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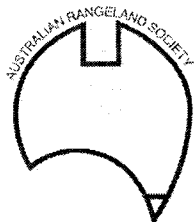
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WHAT IS WRONG WITH CONVENTIONAL TECHNOLOGY TRANSFER PRACTICE FOR AUSTRALIAN RANGELANDS R&D

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ABSTRACT

The track record of technology transfer within a rangelands R&D context is poor - even with new participatory approaches. The reasons for this relate to the nature of R&D problems, technology identification and specification, institutional frameworks, culture, and reward practices, identification of changing stakeholder interests, and the management of power relationships. A Punctuated Arena Model is used to suggest new directions for the way R&D is framed, conducted and evaluated, and how stakeholder relationships might be managed to increase the probability of technology transfer success.

INTRODUCTION

R&D managers are being challenged to effectively target scarce research resources towards the most serious problems facing rangeland resource users. To do this effectively involves: (a) addressing problems with large potential gains to stakeholders; and (b) having the R&D 'outputs' incorporated into useful managerial practices to provide beneficial 'outcomes'. However, despite recognition of this and some innovative participatory attempts to address it, the track record for adoption of R&D-sourced technology remains poor. Prior work (MacLeod 1995, MacLeod and Shulman 1994, Shulman 1993) suggests that this failure may be related to the uncertain nature of R&D problems, poor technology identification and specification, inappropriate and inflexible institutional frameworks, non-learning organisational cultures, and reward practices, and failure to identify changing stakeholder interests. In this paper we build on this work by focussing on the need for R&D project leaders to better manage the power relationships that are inherent within the R&D enterprise. New directions are advocated in the way that R&D can be framed, iteratively conducted and evaluated, and how stakeholder relationships need to be episodically managed as means of increasing the probability of beneficial outcomes.

EVOLUTION OF TECHNOLOGY TRANSFER PRACTICE

Technology transfer practice for rangelands R&D has its roots in traditional agricultural extension methods. The linear transfer of technology model, basically a conduit model of communication involving one way information flows (and power relationships) between R&D providers and a limited array of stakeholders, has been widely adopted. Variants, loosely categorised as transactional models of communication, have evolved with increasing levels of feedback between the parties and a wider array of stakeholders identified (Shulman 1993). The conduit and transactional models have been widely criticised on a range of grounds, including selective filtering of information through restricted channels, limited scope for 'empowering' stakeholders to both identify R&D problems and share solutions and failure to fully address the context within which the R&D output is to apply (e.g. Chamala and Keith 1995). These models have been largely supplanted by various participatory models of R,D&E which seek to more fully engage (i.e. empower) the various stakeholders. Typical is the participatory technology development model (Cox 1993) with more interactive communication between researchers, extension specialists and stakeholders. Depending on the degree of participation envisaged, the various groups influence the identification of R&D issues, design the R&D project, generate the 'technology' and ensure through corrective feedback and an appreciation of learning from mistakes (Sitkin 1992) that it is converted to an eventual 'outcome'. An implicit assumption is that stakeholder involvement throughout the process necessarily raises the scope for more widespread

and rapid adoption of the R&D 'outputs'. This model increasingly underpins much of the newer thrust in technology transfer for rangelands R&D (e.g. OFR, LCD, Benchmarking, Best Practice etc).

Our criticism of this model is that it remains essentially linear and the empowered stakeholders are too readily assumed to move towards a shared objective, especially when externalities are central to the R&D problem. In more naive variants there is an implicit assumption that all of the participants have equal power in the dialogue. However, R&D is rarely linear in execution and is increasingly trans-agency focussed. The possibility of multiple agendas or objectives, and incompatible agency cultures and reward systems are commonly ignored, as is their potential to be transitory and dynamic. Similarly, the objectives and power of parties not invited to participate or given token membership (e.g. non-farmers) is often also ignored. When these various interests and power relationships are accounted for, the assumed commitment and progress towards a common predetermined goal is less assured. We believe that these are the root causes of many technology transfer failures (MacLeod and Shulman 1994, MacLeod 1995).

A PUNCTUATED ARENA MODEL

The interaction between R,D&E personnel and stakeholders may be likened to the sphere of action of an arena. Arena Theory recognises that the composition, predisposition, and relative power of different stakeholders will, ultimately, determine the outcome of such an arena (MacLeod 1995). The entry of additional stakeholders to the arena necessarily changes the distribution of power and rules of engagement, and is a reality that is importantly and commonly overlooked by most participatory models. By necessity, this also changes the likelihood that a different outcome will emerge from the participatory process which may or may not be integrative (e.g. win/win). Therefore, the ability of R,D&E managers to manoeuvre the conflicting or collective interests into a desirable arena, or keep it within one, thereby activating some potential stakeholders and minimising the influence of others throughout the life of a given project, will shift control of the outcome. Within a context where power relationships determine R,D&E outcomes, it is not sufficient to identify the networks of potential stakeholders and invite their interest and participation. It is advisable to identify and contrast their power, objectives and available resources and to devise communication strategies and tactics that are appropriate to meeting project objectives, which necessarily also includes generating genuinely integrative outcomes.

When the Arena Model is applied to controlling R,D&E, it becomes compelling to suggest that past attempts to initiate improvements in technology transfer may have failed because they either: (a) did not recognise the context of the arena they were involved within; or (b) the champions were unable to change the structure and performance of these arenas. When the episodicity of R,D&E is considered, the likelihood of these applying is increased. The arena essentially becomes a series of arenas which are both spatially and temporally related, thereby increasing the complexity of the technology transfer process and the probability of a failed outcome (MacLeod 1995). We argue that the recognition of this punctuated arena structure and the appropriate strategic management of power relationships within a changing network of purposive stakeholder involvement can increase the scope for success.

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