

# THE PUNCTUATED ARENA MODEL - A NEW APPROACH TO TACKLING TECHNOLOGY TRANSFER FAILURE

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## ABSTRACT

Valuation of the worth of research and development activities is increasingly shifting from outputs to outcomes. The technology transfer record of agricultural R&D focused on pastures and resource management remains generally poor. Participatory R&D approaches have been developed and promoted to overcome this, but these also have performance problems. Based on the authors' experience with R&D and communication management a Punctuated Arena Model has been developed which is argued to offer scope for improving technology transfer outcomes.

## KEYWORDS

Technology transfer, arena model, participatory R,D&E, stakeholders

## INTRODUCTION

Research and development (R&D) projects in the agricultural and resource management field have been criticised as excessively focusing on research outputs, while failing to address the effectiveness of those outputs (ie. outcomes) from the viewpoints of identified stakeholders. This is often treated as an *extension* failure, although the problems may lie at more basic levels, including the relevance of the actual questions being *researched* (Cox, 1993). Participatory R&D models, which involve an interactive dialogue between researchers and stakeholders throughout the life of a project, are being increasingly advocated. However, this often involves an implicit assumption that participation by key stakeholders will guarantee success, although the *context*, *process* and basis for *evaluation*, are rarely made explicit (Scoones and Thompson, 1994). More often, participation is simply assumed to bridge the output-outcome gap.

In 1992 the authors became involved with a program of applied communication research aimed at using an integrated framework of participatory interventions to improve R&D performance for a large beef cattle grazing trial. That communication project was terminated in 1994, and a detailed process of reflection and re-assessment of the experience with stakeholders led to a serious questioning of technology transfer performance for R&D projects (MacLeod, 1995), including that associated with the emerging class of participatory methods. Out of this reflective stage, an alternate approach to R&D management, centred on the Punctuated Arena metaphor emerged that provides a basis for overcoming some of the problems encountered in practice.

## DOES PARTICIPATION NECESSARILY VALUE ADD?

Technology transfer practice for much pasture-based R&D remains centred on the linear transfer of technology (TOT) model, involving limited information flows between R&D providers and a narrow array of stakeholders. Participatory models (eg. the Participatory Technology Development model - Cox, 1993), represent a significant departure from the TOT model in their incorporation of a more interactive dialogue between the researchers and stakeholders. In some, but not all cases, the stakeholder net is extended to capture a wider array of interest groups (eg. non-farmers). Much of the superiority attributed to participation centres on a viewpoint that the perceptions of different stakeholders will vary on various resource

use issues including their importance, relationships between cause and effect, and credibility of knowledge sources (MacLeod and Taylor, 1993) and an expectation that 'two heads are better than one'. It also rests on the assumption that participation leads to accepting responsibility for the decisions made (i.e. empowerment). Positive actions taken to recognise these different perceptions, when supported by an appropriate dialogue to re-align them, and activities to promote a sense of empowerment, are supposed to improve the prospects for generating positive R&D outcomes.

However, most, if not all participatory R&D models remain essentially linear and continuous in their description of the R&D process and their authors assume too readily that the 'empowered' stakeholders are motivated to move towards shared or negotiated objectives. Examination of the cattle grazing trial communication project (above) and subsequently other projects (Shulman and Martinek, 1996) suggests that much R&D is discontinuous and is increasingly trans-agency focused. It involves different episodes of potential engagement with different stakeholder groups, and a shared commitment to a given outcome is not necessarily guaranteed, especially when environmental externalities (common in land resource management) are central to the underlying R&D problem. The possibility of multiple agendas or objectives, and incompatible agency cultures and reward systems are commonly ignored, as is their potential to be transitional and dynamic. Similarly, the objectives and power of parties not invited to participate or given token membership are also often ignored. When these various interests and power relationships are accounted for, commitment and progress towards common goals is less assured. We believe that these issues are the root causes of many technology transfer failures (MacLeod and Shulman, 1994; MacLeod; 1995) and whether many participatory methods really add value to R&D remains an open question.

## THE PUNCTUATED ARENA MODEL

Interactions between R&D teams 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 (Schattschneider, 1960; MacLeod, 1995). The entry of additional stakeholders to the arena will necessarily change the distribution of power and rules of engagement. This changing of arenas, a reality that is importantly and commonly overlooked by most participatory models, also changes the likelihood that a different outcome will emerge from the participatory process which may or may not be integrative (eg. win/win). Therefore, the ability of R&D managers to manoeuvre the conflicting or collective interests into a desirable arena, (or keep it within one) will shift the distribution of control of the outcome. The management of arenas will require skill in activating the interest and engagement of some potential stakeholders and minimising the influence of others throughout the life of a given project. When stakeholder interfaces and power relationships determine R&D outcomes, it is not sufficient to identify the networks of potential stakeholders and invite their interest and participation in the R&D project. It is also necessary to identify and contrast their power, objectives and available resources and to devise communi-

cation strategies and tactics that are appropriate to meeting project objectives or re-establishing them in a mutually acceptable or at least recognised direction. This can and should include generating perceptions of genuinely integrative outcomes.

When insights from the Arena Model are applied to managing R&D for successful outcomes, it becomes compelling to suggest that past attempts to initiate improvements in technology transfer may have failed because the R&D managers either (a) did not recognise the context of the arena they were involved within, or (b) the R&D project champions were unable to change the structure and performance of these arenas. When the episodicity of R,D&E is considered, the probability of failing to recognise the context of the arena and control structure and makeup of the arena increases. The arena then becomes a 'punctuated' series of arenas which are both spatially and temporally related. Based on our analyses within the post termination episodes of the beef grazing communication project, it also appears that the temporal relationship can affect the perceptions and evaluations of outcomes recursively; acceptance of former outputs are often changed because of reinterpretation within a current arena - and visa versa. Failure to recognise and manage this punctuation will also increase the probability of a failed outcome (MacLeod, 1995; MacLeod *et al.*, 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 R&D outcome success. Our own program of research into the *context, process* and basis for *evaluation* of the model is ongoing.

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