# Ongoing enthusiastic conversations are an alternative to a linear research-adoption paradigm

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## Introduction

Adoption is often viewed as an end point of research, something that is required when all of the required information is gathered and data analysed. When research is not formally recognised as being adopted, it can be viewed as a failure; after all, if the research didn't lead to an identified practice change, then the research has questionable value (if no-one adopts the research, did it really happen?). The term 'extension' has been used as synonym for adoption in agriculture and other fields, further implying that the activity is an add-on to an existing body of research work. The term 'end user' hints even more strongly that the process is linear and that the individual or group who can apply the innovation is passive in waiting for a solution from technical experts.

An alternative approach is to trigger and maintain active, enthusiastic and ongoing conversations amongst interest<u>ed</u> people. All participants (e.g. producers, scientists, agency staff, the broader supply chain, policy makers etc.) can all contribute to the conversation, albeit in different ways. The key to success is to use enthusiastic conversations in an environment of mutual acceptance. The boundaries between 'teaching' and 'learning' become blurred and experiences are positively reinforced. In this way, a culture of change is more likely to emerge than from the more conventional linear approach.

Learning and behaviour change is not a phenomenon restricted to humans. All animals, from single-celled bacteria to complex social groups of higher-order animals learn and change in response to stimuli and feedback signals. In the following sections, I use insights from research and from field observations to outline the main characteristics of a system that allows grazing livestock to learn, broaden their experiences, and modify their behaviours; in other words, how they learn to embrace change. I suggest these principles hold for people too.

## From a linear model of research-adoption

A linear and sequential process of research leading to adoption stems from a way of thinking that an identified problem has a single solution, or at least a defined set of solutions, that need to be discovered before they can be applied. There are situations where this model can be very effective, although the simplicity of a 'solution' is normally only evident in hindsight. The process is often much more convoluted, with a swirl of hypotheses, insights, data collection, testing, accidents, adaptions, experiences, mistakes and refinements.

There have been considerable efforts to identify what makes something adoptable. In fact, 'adoption' has become a research topic in its own right. It's almost ironic that the adoption of adoption research has not always been as successful as one might have hoped. Whilst it is broadly accepted that adoption is a dynamic process, it is still often described as a sequence such as (i) awareness of the problem, or opportunity, (ii) non-trial evaluation, (iii) trial evaluation, (iv) adoption, (v) review and modification and, sometimes, (vi) on-adoption or dis-adoption (summarised by Pannell *et al.* 2006).

Pannell *et al.* (2006) suggested two broad factors that drive adoption or non-adoption: relative advantage and trialability. Relative advantage is defined as the degree to which an innovation is perceived as being better than the idea it supersedes. Whilst I totally accept that the concept of 'relative advantage' is crucial, I suggest that the concept still carries the baggage of linearity; that is, one thing has to be better than the other for 'it' to be adopted. It also implies, although not explicitly, that a new practice must supersede an earlier practice. Simple solutions to simple

problems can and do exist, but in agriculture and natural resource management, complexity, variability, adaptations and emergent properties mean that single solutions are rare (Provenza *et al.* 2013).

Trialability relates to how well someone can learn about a practice and assess its effectiveness. Trialling a practice or testing an idea provides information to help evaluate the relative advantage of a practice (Pannell *et al.* 2006), but it also provides an opportunity to see and experience something in action. Trialability is a phenomenon than extends beyond scientific research; it is just as relevant to experiential learning, although a discrete trial with controls and treatments may never be formally established.

A fundamental problem with relying on a linear research-adoption model is that most people don't 'want to be told'. Feeling that you must do something because someone else says so, especially if you see the other person (or group) as being from outside your day-to-day world, rarely leads to enthusiastic or ongoing behavioural change. On the contrary, being encouraged and allowed to change is a more positive experience.  In other words, changing as a consequence of learning, rather than changing through obligation. Modifying practices through learning also increases the likelihood of multiple approaches or discoveries, because the circumstances, experiences and knowledge of different people at different times will shape the outcomes.

Learning is a dynamic and ongoing process, made most effective when there is support and positive feedback. Positive feedback can be in two forms: social or internal. Social feedback can be in the form of positive reinforcement from members of a social group or other peers, whilst internal feedback can arise when an individual is rewarded for their actions.  The literature on animal learning is rich, and below I take just a few examples to draw parallels to how people can best learn and change; i.e. the circumstances that best support adoption.

**Lessons from how animals learn to embrace change**

Dukas (2013) reviewed the effects of learning on evolution and how learning leads to robustness and innovation. He defined learning as "an internal representation of new information obtained from the current external and internal environments". By viewing the learning experience as an "internal representation", we can immediately see that what one individual perceives from new information is not necessarily the same as what another perceives.  It depends not only on the package of information itself, but the external environment in which it is received (i.e., the context) and the internal state of the individual.  The internal state, which could be the physiological state of an animal or an individual's state of motivation (its affective state), influences the degree to which an animal 'wants' something (the concepts of 'liking' and 'wanting' are described in detail in terms of feeding behaviour in Ginane *et al.* 2015).

Differences in the external or internal environments can help explain the typically large variation between individuals in their responses to the same signals, or to the packages of information. This phenomenon is described as between-individual differences in behavioural plasticity (Dingemanse and Wolf 2013). The great opportunity for managing change goes beyond the common sense that individuals are all different when we see that past phenotypes do not constrain current phenotypes. We can shape future animal behaviours by influencing their current experiences and providing positive feedback (e.g. through nutritional rewards), and pairing the rewards with consistent signals visual, olfactory, taste and tactile) that serve as cues. The value of the paired signals is that they help animals to know what to expect from a situation. How an animal behaves is strongly influenced by its expectations and experience (Ginane *et al.* 2015).

***A case study from Rangelands Self Herding and its relevance to adoption practices***

Over the past two years, the concept of Rangelands Self Herding has been refined and applied with pastoralists in Western Australia (Revell *et al.* 2015; Revell *et al.* 2016). Rangelands Self Herding is a behaviour-based approach containing tools that allow managers to positively influence grazing patterns and distribution, and change the relationship between livestock and people, using the capacity of grazing herbivores to learn and modify behaviours as their expectations and experiences

are altered. Grazing patterns, although complex, are not random; neither are they fixed. Foraging patterns are formed by associations between cues and consequences, individual and social learning, animal responses to familiarity and novelty, and spatial memory (Launchbaugh and Howery 2005). Each pastoralist is able to draw on common principles (Revell et al 2015) and make decisions and take actions that are relevant to their local environment and management objectives.

The elements to successful application of Rangelands Self Herding – which is presented here as an example of a behaviour-based approach that works *with* (not *on*) individual and groups – may have direct relevance to how people learn and change. We found the following elements were critical for positive change to occur:

1. The participants (which were livestock in the case of Rangelands Self Herding, but are people in the case of adoption) must have a choice; they must not feel 'forced' to make the change.
2. We must allow, and expect, changed behaviours to evolve and strengthen over time. Although initial responses can occur quickly, behaviour is dynamic as it responds to changing experiences and changes in the current environment.
3. Signals – i.e., the elements that create expectations – must be consistent (unambiguous) to create positive expectations and to build trust.
4. Ongoing reinforcement - i.e., support - continues to build confidence and encourage ongoing exploratory behaviour and group dynamics. The level of support, such as the provision of positive feedback or reward, does not need to be provided continuously once a positive environment is created, but nevertheless it is still required at key times to encourage continual improvement.

**Participatory research and the importance of conversations**

In contrast to the linear concept of research leading to adoption, there are alternative approaches that integrate the discovery of new information, its incorporation into existing practices or concepts, its testing and application under different scenarios, and ongoing refinement and adaption. These approaches include participatory research, experiential learning, or action learning. The work of Ray Ison and David Russell is amongst the most instructive approaches in social learning over the past 20-30 years (e.g. Russell and Ison 2005; Ison 2008). A point raised by them is the importance of conversation as a system for learning. They have identified a radical change in thinking from learning as an acquisition of skills and knowledge to the notion that "learning was embodied change that took place over time… created by conversation [that] shifted the emphasis from the targeted outcome to the process" (Russell and Ison 2005).

In a context where the processes of communication and conversation are not a simply a means to and end, but are in fact the very purpose of engagement, the type of communication used is critically important. Russell and Ison (2005) refer to Krippendorf's (1993) six metaphors of communication, and I think they are worth summarising here to highlight how efforts to 'cause' adoption, however well intentioned, have not adequately used the conversational model of communication, but instead have relied on packaging information and telling people about it.

1. The Container metaphor: The emphasis is placed on the content, and messages are usually discrete packages of information. An assumption is that what one person (usually the 'expert') puts into 'the container' is the same as what the receiver takes out of it. But as discussed earlier, the internal and external environment of the receiver shapes the behavioural response to information.
2. The Conduit metaphor: the emphasis is placed on the channel of communication. Perceived failure is considered to be due to the use of an inappropriate mode of communication. For example, the feeling of "hitting your head on a brick wall", where you are sure the message is right but you just can't get it through to the recipient.
3. The Control metaphor: it assumed that communication causes specific and predictable outcomes. Implied in this style of communication is that the senders are active and informed, and the recipients are passive and uninformed.

4. The Transmission metaphor: Messages are coded for transmission, and that the receiver must interpret the message (i.e. decoding is required). In this situation, the content of the communication is often shaped to suit the method of transmission. Communication via scientific journal papers, videos, or during field days, for example, each have their own characteristics, but not everyone is skilled across the different modes of transmission, and not everyone is able to decipher the coded messages.

5. The War metaphor: In this situation, arguments are either to be won or lost. Success is perceived when you are able to convince the other that your argument or approach was the correct one. Implied is the view that there is only one right answer, and people will either accept or not. The intention to win an argument rarely leads to a true dialogue.

6. The Dance Ritual metaphor. In this situation, the doing of the action is what matters most, and it involves all participants in an ongoing and co-operative fashion. It does not imply that everyone necessarily agrees – we may step on the toes of others! – but it does require a mutual acceptance amongst the participants. If we do not engage in an ongoing conversation, we risk the potentially damaging scenario of 'drive by science', where there is a short-term flurry of activity in an attempt to solve an issue, but it does not automatically lead to an ongoing conversation, continual improvement or local adaptation. Without ongoing support, short-term changes in behaviour are less likely to perpetuate.

The Dance Ritual metaphor has parallels to our insights of how animals learn and adapt in Rangelands Self Herding. Positive outcomes, however they are to be defined, are more likely to emerge over time when participants have positive expectations, have an opportunity to experience positive consequences of their experiences, receive support (or guidance) over time, and – perhaps most importantly of all – are able to make a choice.

**Conclusion**

Blurring the lines between senders and receivers, experts and amateurs, scientific research and practical experience need not diminish the standing of any individual. As Meuret and Provenza (2015) stated, "researchers and managers can become allied and linked with the challenges and opportunities …as social, ecological, and political landscapes transform". We need to move beyond what modern jargon describes as 'stakeholders', as this feeds into the War metaphor where each group has placed a stake in the ground and is reluctant to yield. Instead, the adoption of new practices will more likely occur as part of an ongoing and evolving process if interest*ed* participants share an enthusiastic conversation. I use the term 'enthusiastic' deliberately as it implies that people have a positive emotional involvement. Without emotion, a conversation is unlikely to continue. The aim should not be to find a single solution but, through mutual acceptance of everyone's experiences, to continuously generate new ideas and behaviours.

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