USING SENSEMAKING TO INTERPRET STORIES ABOUT WATER USE EFFICIENCY PRACTICE

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ABSTRACT

For an effective ‘non-coercive’ change to more sustainable forms of agriculture a distinction between instrumental, strategic and communicative rationality in the use of intervention is required. This research focuses on identifying how the complex decision making associated with multiple extension intervention initiatives leads to change in water use efficiency practice and hypothesises that communicative intervention is a key part of the change process.

Postmodern analysis of story telling suggests the use of narratives is limited if they are ‘without context’. Similarly, the stories that practitioners and farmers tell about why they accept an extension intervention requires an understanding of their particular situation and practice. The concept of ‘sensemaking’ allows an explicit investigation of their decisions, the construction of their stories; and the subsequent outcomes at an individual and at a collective level. Enabling and disabling learning triggers are identified as part of the ‘sensemaking’ process.

The research outcomes suggest that the rich picture and 'thick description' of this type of analysis reinforces farmer and practitioner identification with their dairy farming community involved in improving water use efficiency practice. The transition from individual to group approach in one program indicates the potential for change when reflective learning is part of the communicative intervention process.

Our research identifies synergies, recognising the relationship between how an emerging appreciation of people’s view points about water use efficiency and intended actions can facilitate longer term change at the individual level and through group activities towards advocacy.
INTRODUCTION AND BACKGROUND

In recent years public extension approaches in agriculture worldwide have moved away from a predominantly ‘individual farmer’ consulting focus to one dominated by group extension and group learning methods (Mullen et al 2000). This change in focus challenges agricultural professionals and extension practitioners to consider themselves as interventionists rather than the traditional expert transferring technology. Building on Habermas’ distinction between instrumental, strategic and communicative rationality a description of corresponding forms of intervention appropriate for agriculture can be made Röling (2002). The related thinking to these intervention approaches can be described as:
1. ‘instrumental thinking’ - based on technology, regulation and hard systems design;
2. ‘economic thinking’ - based on economic, policy and market stimulation; and
3. ‘interactive thinking’- based on communicative approaches, social learning and contextual change (Röling 2002).

For an effective ‘non-coercive’ change to more sustainable forms of agriculture, Röling (2002) indicates that a trade-off among all three of these intervention approaches is needed. Using these categories as a contextual framework, our research investigates how WUE practice incorporating improved technology (an element of ‘instrumental intervention’) is expressed individually and collectively, to engage farmers in WUE practice when two other forms of intervention are also operational. The first is a financial incentive (a form of an ‘economic intervention’). This economic intervention involves farmers in an Incentives Program to assist in accelerating adoption of irrigation technologies. The second is a form of ‘communicative intervention’ with a group of farmers involved in an action learning framework to assist them in developing and implementing on farm irrigation improvement projects.

Improved water use efficiency (WUE) practice is a high priority for extension strategies in major dairy farming communities in eastern Australia, which rely on sharing of a common irrigation resource. Government utilises a range of extension intervention approaches as part of its contribution to improved natural resource management (Rose et al 2003). Traditionally involved with instrumental intervention practices, efforts are now being made to encourage more rapid uptake of irrigation technologies through the inclusion of elements of economic and communicative interventions.

Preliminary information regarding economic and learning intervention strategies with Australian irrigation dairy farmers suggests enhanced uptake rates of irrigation technology with noticeable improvement in on-grounds works and related practice (Department of Primary Industries 2003; Martin et al 2003; Natural Resources and Environment 2001a). However, little is known about how learning support programs influence decision making in the area of WUE practice.

Hypothesising that communicative intervention is a key part of the change process, our research focussed on identifying how the complex decision making associated with multiple intervention opportunities leads to on-ground practice change with dairy farmers. To investigate this interest we used ‘sensemaking’ (Weick 1995) as an explicit tool for
understanding how decisions are made around individual and collective action using stories collected from the research data.

THEORETICAL BASE

‘Sensemaking’ is an aptly named concept as “it literally means the making of sense” (Weick 1995:4). It is used extensively in the fields of organisational learning (see Boyce 1995; Weick 1995) and in public communication research (see Dervin 1980 & Madden 1995) to describe how sense is made in decision-making.

Individual and collective sensemaking

Investigators who use the ‘sensemaking’ concept, define elements of it in many ways including distinctions between decision making processes made at an individual or group (usually as an organisation) level.

Madden (1985) concurs with Atwood & Dervin (1981) who “treat information as self constructed in two main assumptions” (ibid., p.84). The first assumption is that as information cannot be passive or just simply received the associated sensemaking needs to be examined from the “message seeker not sender” point of view. The second assumption is that individuals ‘make sense’ about their information needs in response to their constantly changing personal environments.

Weick (1995) defines seven important processes that can assist in explaining individual’s sensemaking in an organisational context. Of particular relevance to our research are the processes involving the elements of ‘retrospection’, ‘enactment’, and ‘extracted cues’. The process of ‘retrospection’ involves working out what was learned through reflecting on previous actions. ‘Enactment’ is associated with how an individual acts which effects what they want to know about and ‘extracted cues’ are assessed for relevance before action is taken (Weick 1995). Using these as our key processes to interpret the sensemaking that occurred we focus on identifying changes to the farmers’ practice as a consequence of the extension interventions offered to them. These farmers as ‘message seekers’ relayed their decisions through their stories of ‘what happened’ and these stories captured their ‘sensemaking’ processes as individuals alone and as members of a learning group. Their narratives are not neutral, and their subjective meanings and consequent ordering are a process. Their stories are reflected in their analysis of what they are doing and this forms part of their daily practice. Their daily WUE practice is affected by the way they ‘make sense’ about their information needs, which occurs in response to constantly changing circumstances. Currently the key issues affecting their circumstances include depressed milk prices, a less favourable economic outlook in export markets, and longer-term dry season conditions. Practitioners, observing and monitoring these related sensemaking processes are similarly able to reflect on the intervention programs and recognise the importance of practice to identifying triggers that enable the use of story and the construction of meaning.

Psychologist Jerome Bruner defines narrative as being “…composed of a unique sequence of events, mental states, happenings involving human beings as characters or actors” (1990:43). Narratives or stories have been used extensively in the field of psychology (See Bruner 1990) to understand more about how individuals construct meaning. The act of
telling stories provides individuals with an opportunity to express their personal explanations (Berry 2001); told in isolation they do not necessarily create understanding for other individuals but when shared and retold can assist in describing how they ‘make sense’ of collective practice (Boland & Tenkasi 1995).

Stories are being increasingly used as a way of understanding how organisations learn, as they can expose what’s behind the related culture of the individuals that make up a particular organisation (Berry 2001). Kelly and Zak (1999) provide a connection between sensemaking and narrative in an organizational context, describing it as a sequence of events to develop ‘shared meaning’. They indicate that this shared cultural meaning, “…operates at a high level of rhetorical power in every context because stories are the way we make sense of our lives” (Kelly & Zak 1999:297). In this paper the cultural context is situated around WUE practice in the Macalister Irrigation District (MID) in south-eastern Australia. The community living this culture is comprised of the dairy farmers, the extension practitioners and the wider community involved in water resource management. The farmers in this area are generally interested in improved technology, largely as a response to an economic imperative to manage their production systems as efficiently as possible. Therefore, technology associated with WUE means more economical use of water, a strategy that already ‘fits’ their accepted operational criteria for adopting an instrumental intervention. However, government agencies are interested in changing practice associated with water distribution and allocation, which ultimately changes daily management practices, and longer term production expectations. Such changes are likely to require a different perspective, to the more ‘usual’ approach to agricultural intervention by technology transfer driven by instrumental rationality (Röling 2002). These changes involve the consideration of both economic and communicative rationality and include collaborative management of the resource on a collective level, and land tenure and water security at an individual level. Consequently, with this cultural scenario in mind, individual and shared construction of meaning was important to this research. The farmer stories associated with two different extension intervention approaches offered a way to pursue how the farmers’ sensemaking in WUE affected the uptake of these interventions; and how the resultant individual and collective practice was expressed.

A post modernist approach to story telling

A postmodernist approach to story telling as advocated by Boje (1998) was utilised, as it suggests the ability “to link (the) local story to embedded social, economic and cultural context(s)” (ibid., p4). Boje (1998) makes the distinction between two diverse approaches in organisational story telling, that he terms “stories-as-objects” and “stories-in-context” (ibid., p.1). Using an ‘object’ point of view involves describing it as a whole and aligns with reductionist methods of research that infer a story can be transferred outside the context of where it actually takes place. The postmodern ‘context’ based story telling is aligned with constructivist methods of research. Stories are described from settings across a range of individuals, time and within different spaces. This latter approach of stories in context therefore provided a way to tell the story of WUE practice in MID in a thicker and more ‘lived’ and realistic description. In WUE, the context of the story is everything! It defines the meaning of ‘WUE’ and how that associated meaning is constructed. What was efficient use in the past most likely had only an economic reality. Now there is the reality of
environmental and social constraints to consider. Conceivably, for example there may not be enough water for all the producers over time and space.

Also in line with our postmodernist approach to story telling we incorporated two further concepts based on a constructivist approach. Both related particularly to that part of the research, which explored farmers learning about WUE as part of an ‘ongoing’ group. Firstly a systems approach to the facilitation of a farmer learning group was discussed and a conscious implementation of ‘systems thinking’ (Bawden 1984) was adopted by the participants. With a systems approach to thinking, social reality is seen as a construction of systems of meaning from an emerging appreciation of peoples’ view points and intended actions (Checkland 1990; Flood 2000). Secondly we observed this learning group in a ‘community of practice’ described by Wenger (1998) as a group of people linked informally by shared skills and interest for a joint undertaking.

METHODS AND DATA SOURCES

To investigate the sensemaking that occurred when economic and communicative interventions are used in conjunction with improved irrigation technology (a form of instrumental intervention) the research was conducted in two stages.

The first part of the field data consisted of semi-structured telephone interviews with most of the 100 farmers involved in an Incentives Program. This was an economic intervention intended to increase individual farmer’s uptake of irrigation technology. Introduced recently by the Victorian Department of Primary Industries, the Program’s aim was to improve farmers’ WUE practice. The financial incentives involved: i) 50% cost recovery if a professional whole farm plan (WFP) was undertaken; ii)50% cost recovery with on-ground works such as re-use dams; and iii)15% cost recovery with on-ground works involving conversion from flood to spray irrigation. A professional WFP had to be completed and approved by government personnel before a farmer could apply for either of the other two incentives related to on-ground works. The WFP was required for two key reasons. The first assisted government to be seen as responsible with public money through insisting farmers have evidence of their intended long-term irrigation systems as represented on a professionally developed plan. Secondly it was intended that farmers use the WFP as an instrumental tool in everyday management practice to make decisions and therefore ‘make sense’ about the most appropriate irrigation options.

Then 30 months later still as part of this first stage, 20 of these farmers were re-interviewed to retrospectively explore how they were ‘making sense’ in the longer term of the incentives on offer. The farmers were randomly selected to cover a range of issues raised as key ones in the first round of interviews. This additional ‘view’ added to our in-context approach to story telling. The revisiting of appropriate farmers allowed us to identify if the decision processes and related sensemaking changed over time and what caused these altered conditions.

The second part of the field data emanated from activities of a group of MID farmers learning about WUE. This group ‘the MID WUE Group’ was one of four pilots of the Continuous Business Improvement (CBI) Project conducted for 18 months by Target 10 (the dairying sector of the Victorian Department of Primary Industries) and completed in June
2002. This larger project was a communicative intervention intended to link a business approach of learning to overall farm management. The aim of the CBI Project was to assess the applicability for Victorian dairy farmers of continuous improvement and innovation in farm management in four dairying regions. Central to this project was an action learning framework named the Better Practices Process (BPP), developed at the University of Queensland, Gatton in Australia. This process consists of six cyclical steps namely: 1) situation analysis; 2) impact analysis; 3) action planning; 4) taking action; 5) observing; and 6) learning and creating (Clark & Timms 2000). Knowing that a crucial element to facilitating change is for participants to take action, two critical domains were tested with dairy farmers in the CBI Project. These were firstly whether a group or individual farm business focus was important to the outcome of learning and secondly whether a formal or informal approach to implementing an action learning intervention influenced the effectiveness of the learning process (Natural Resources and Environment 2001b).

In the case of the MID WUE group, the eight dairy farm families focused on farm management associated with the new realities of WUE practice, using an informal approach to using the BPP. The informal approach to the BPP emphasised the action learning process because individuals could access the six step learning cycle at any step rather than beginning at a particular point. At the request of the group members, the group continued to meet and instigate collective action after the completion of the CBI project. The MID WUE group, still continues to meet on an ‘as needs’ basis. This second part of the field work included both transcribed in-depth semi structured interviews and meeting notes from all members of this group plus associated observations, learning log and reflection notes.

Data from both sources was analysed using a qualitative software package involving coding at various categories. This approach is in line with grounded theory using a constant comparative methodology to analyse the data (Glaser 1967), which was coded in more than one theoretical category with cross-referencing made across all data sources as suggested by Berry (2001). For example with our research data ‘collective’ appeared in elements of ‘learning’, ‘facilitation’ and ‘taking action’; and ‘planning’ appeared in elements of ‘learning’, ‘WUE practice’ and ‘facilitation’.

FARMERS MAKING SENSE OF THE MIDNRP INCENTIVES PROGRAM

This section presents and discusses key results about the sensemaking and resultant individual and collective action that occurred when individual farmers in the MID responded to an economic intervention (in this case a financial incentive) in conjunction with improved irrigation technology (a form of instrumental intervention).

Initial sensemaking of the incentives

Weick’s reference to the focusing on and extracting of cues was a key element in observed decision making among farmers applying for an incentive. They made decisions about the worth of using the incentive and the WFP as part of their WUE practice. Weick (1995) describes the use of cues works as “…specific observation becomes linked with a more general form or idea in the interest of sensemaking, which then clarifies the meaning of the particular, which then alters slightly the general and so on” (ibid., p.51). Such cues were observed at various times as either a ‘constraining’ or an ‘enabling’ learning trigger. Both
triggers were strongly evident in the initial sensemaking of these individual farmers. For the farmers who saw the Incentives Program as an ‘enabling trigger’ their sensemaking centred on feeling comfortable with the additional requirement of having a WFP done. In some cases the requirement was seen as a logical cue signifying that they saw it as a precursor to getting on grounds works done as part of their normal operation. In other cases participants influenced by an ‘enabling trigger’ were intellectually stimulated at the time to apply firstly for the planning incentive. Their cue for sensemaking centred around the worth of using the WFP as a learning tool to determine the most appropriate on grounds works. For example one farmer said:

“I am going with the WFP first of all …I am wanting to do the WFP to try and get a decision about whether we would go ahead with something else or not in terms of the feasibility of various on ground works options” (#24, round 1 incentives).

The ‘constraining’ trigger in the cues for sensemaking dominated for those farmers who expressed they were either not going ahead at all or were conditional about continuing their participation in the Incentives Program. The trigger for them was expressed as a constraint; the incentive was part of a package associated with interference with their ongoing management. Key issues relevant to this trigger were whether they were being duped into doing a WFP; whether it was an inadequate rebate for doing a WFP; the relative size of the planning job and the insecurity of continual funding for related on grounds works. Also in the case of some farmers plausibility appeared to dominate over accuracy when it came to making a decision about going ahead through the need of having to make a quick hasty decision (Weick 1995). These farmers appeared to make a hasty decision as they perceived that the money for improvements might be withdrawn before they could finish their WFP in readiness for their planned on-ground works.

A number of farmers felt they knew their property well enough and didn’t need to spend money on a plan that wasn’t going to tell them what they already knew. The retrospective characteristic of sensemaking (Weick 1995) was evident in the way their previous experience or ‘non’ experience with planning was used to influence their decision not to take up the incentive offer. Typical comments included:

“Had a WFP done for the old farm (half of the property). Then got the contractor in. He [the contractor] didn’t really use it so we wondered why we needed the WFP” (#06, round 1 incentives).

“On this farm it’s pretty straightforward. There is no way a WFP will tell me anything different”(#16, round 1 incentives).

Sensemaking around changed circumstances in the Incentives Program

Conducting another phone interview with selected farmers, 30 months later revealed some changes to their stories. This follow-up provided us an opportunity to look at various stories ‘in context’ across time and to evaluate any changes to their sensemaking. Had we not followed up the causal factors, which effected their decision-making, the ‘depth’ around why their sensemaking had changed would have been missed. In analysing these ‘altered’ stories there appeared to be two key elements. Firstly some farmers who at the time of the first interview weren’t going ahead with the WFP, had in fact gone ahead by the time we re-
contacted them. Secondly some of those farmers who indicated they were going ahead in the first interview, had not progressed very far down the track in relation to completed whole farm plans and on-ground works. These results support the idea that an individual’s sensemaking must be considered as part of changing personal environments (Madden 1985). The two key reasons in that intervening time period for these changes were the increased rebate to 75% for the WFP and the consequences of drought and reduced commodity prices.

Farmers involved in the Incentive Program essentially did their sensemaking in isolation. This changed temporarily when two outraged farmers organised a meeting to discuss the inadequate incentive on offer for the WFP. The farmers noted that the incentive for the WFP was small relative to the amount of money the farmers would have to invest in a plan. The plan was not itself the improved or efficient technology as they understood it. Therefore if the government wanted them to do the plan, they needed more of an incentive. This led to the calling of a meeting and an opportunity to bring individual farmers’ and service providers’ sensemaking together. Collective sensemaking resulted in an understanding of what elements of planning were important to both parties. It was agreed at this meeting that the 50% rebate needed to be increased to 75% to attract more farmers, and this was subsequently put in place. Once the rebate increased so did the number of farmers committing to the Program. Evidence from the second round of interviews indicate that the increased rebate appeared to be a key cue of ‘relevance before action’ (Weick 1995) for more farmers to do a WFP.

“I did an elaborate one (WFP) and a simple one because of two farm titles. I think the 75% was a key factor. We had to have two whole farm plans... Definitely was a big bonus having the rebate” (#16, round 2 incentives).

“It [the rebate] was originally 50%. I hadn’t gone ahead at that stage but when it went to 75% I was interested…I have a profile of the farm now - the areas that didn’t drain earlier – the plan makes it pretty obvious now” (Farmer #49, round 2 incentives).

No further collective action was evident from our research results. This group of farmers and service providers only met once.

The lower milk prices and drought conditions resulted in lower cash reserves to implement on farm changes to irrigation and water use approaches. A major effect was that farmers were holding off on being involved in the Incentive Program and therefore weren’t as far down the track as they would have liked. Two examples that highlight this effect are:

“The Department people wanted to come out to discuss doing a WFP but I kept them away because of the drought and times were tough financially…I haven’t got the debt load I had three years ago so I am now ready to move on it” (#10, round 2 incentives).

“We haven’t done anything in regards to on grounds works. We’ve just got our WFP finalised… It’s put on hold because of the tough season” (#39, round 2 incentives).

Using a process of sensemaking of their individual stories showed us how these farmers as individuals understood and used incentives to suit their needs, including taking collective action as it was required. It also signalled for us the lack of ongoing learning or
understanding associated with reductionist policies like financial incentives (a form of economic intervention) evident through their reactions to a WFP requirement.

SENSEMAKING OF FARMERS IN THE MID WUE GROUP

This section presents and discusses key results about the sensemaking and resultant individual and collective action that occurred when farmers in a learning group (MID WUE Group) responded to a communicative intervention in the form of an action-learning framework. This BPP framework was offered in conjunction with improved irrigation technology (a form of instrumental intervention).

In the group’s control - from constrained to enabled learning

Initially when the MID WUE group formed a constraint to learning was identified as they were not used to an action learning framework and directing their own learning. This was overcome through the use of facilitation skills and the explicit systems approach to thinking, acting as an “enabling” trigger for the learning of this group. In sharing stories about their individual farm WUE projects they started developing questions together in the group about water delivery ‘in the MID’. Then linking their stories with proposed group action (Boyce, 1995) they discovered a number of elements they wanted to know about through the process of what Weick (1995) terms enactment. Through using a systems thinking approach, the opportunity was provided for group members to explore their thinking in the context of their individual farm systems and their community within the complexity of interconnecting systems of learning around WUE practice (Rose et al, 2003).

Sustained Action – moving between individual and collective states

The group members of the MID WUE Pilot, acted both as individuals and as a collective, in response to adjusting ‘ongoing’ stories. Our first example highlighting this observation provides a contrast to one we cited earlier, where farmers were taking up a financial incentive to do a WFP based mainly on their individual sensemaking about what was ‘economically attractive to them’. A crucial element to ‘going ahead’ with the incentive was the increase from a 50% to a 75% financial rebate. In assessing the sensemaking of individuals in the MID WUE Group, the key reason for doing a WFP was attributed to group learning. Not all farmers in this group had a WFP. In sharing updates about their individual farm WUE projects, various farm plans were brought along on several occasions to explain how they were using them and to get feedback and ideas from other group members. As a result of this ongoing activity one farmer had a WFP done. He indicated that:

“…the one thing that has come out of the group that has changed for me is that I had a WFP done which I certainly wouldn’t have done so earlier” (# 08 MID WUE Group).

Rather than basing his decision mainly on an economic gain, his story indicated that how he ‘made sense’ about doing a WFP was mainly as a result of his ‘being part’ of how plans were used by and in conjunction with other members of the group. The various plans were being used as a group learning tool.

Another example showing the group’s ability to adjust between individual and collective action involves the initiation of a learning partnership with Southern Rural Water
SRW), the organisation that supplies the majority of MID irrigation water. The group’s increasing ability to carry out a deeper level of collective questioning reflection and inquiry resulted in the members recognising that there was a great need to learn simultaneously about WUE with SRW. The start of this learning partnership was a presentation meeting with one of the managers of the organisation. Unique to this meeting was the group’s ability to present a collective view without losing sight of the individual elements highlighted by the following comment from a group member.

“Our group was able to put issues together…everybody believed in each other’s issue - that was the difference. I liked the way this was put across as a group plus everybody had their individual questions” (#5, MID WUE Group).

Acting as a group and being able to appreciate that there was an opportunity for many different perspectives to be discussed (through the use of systems thinking) meant that individual farmers had the confidence to present their issues to the SRW representative, assured of the support of other group members. In this way they were more likely to be heard (Rose et al, 2003). Also at the meeting, previously unknown information that was important to various individual’s situations (such as time lines for upgrades of irrigation channels being brought forward) was discovered. This meant that individual farmers could take this information collected by the group and apply it at an individual farm level.

In using a context rich approach to story telling, it was possible to observe WUE practice incorporating improved technology as a result of a different form of intervention to sole reliance on an economic incentive. In the case of this MID WUE Group a communicative intervention stimulated the sensemaking which triggered members into an ‘emergent learning’ behaviour. This was evidenced in the construction of shared ideas for ongoing collective action. Collectively, the group appreciated various ‘social realities’; the farmers listened to each other and recognised similarities and differences in their stories. Then when SRW or the extension practitioner tells a different story, they can recognise that too is all part of the whole system related to WUE practice. This type of action extends participant boundaries and their ability to ‘deal’ as they negotiate individual and collective action states. The sensemaking associated with the use of a WFP incentive (a form of economic intervention) observed within another form of intervention (in this case a communicative one) suggests a more complex narrative, deeper understanding of issue complexity and increased likelihood of follow up action. This key observation supports Röling’s comment that sustainable agriculture is more likely through a trade-off of all three forms of intervention.

In essence, the group has demonstrated characteristics of a ‘community of practice’ in social action described earlier in the paper as a group of people tied together informally by shared skills and interest for a joint undertaking – in this case WUE. As a community of ‘social’ practice (Wenger 1998) the MID WUE Group farmers showed a willingness to enhance and challenge their own learning and the learning of others in the group. They took on the task of representing their aspirations and practices at a regional level, in discussion with regulators and industry. The extension of individual interest to what could be described as the public good, added another level of learning and ‘doing’ to their individual and collective practice. This followed as a result of reasoned reflection, in which the reflexivity...
(which was part of the documented process underpinning their actions) was made clear to
group members via facilitation activities assisting them to ‘make sense’ of their situations to
move between individual and collective learning states. This observation stands in stark
contrast to the farmers involved in the Incentive Programs. For although they too are part of
the same larger community of the MID involved in WUE practice, they have not behaved as
a ‘community of practice’ that is social in ongoing collective action.

CONCLUSION - EDUCATIONAL IMPLICATIONS

Sensemaking is a useful tool to analyse context rich stories about decision making
which emerge from the use of different forms of extension interventions in agriculture.
Sensemaking assisted in making explicit how economic and communicative interventions in
conjunction with improved irrigation technology (a form of instrumental intervention)
enhanced WUE practice. The research indicates that farmers will use a financial incentive at
the level that is ‘economically’ attractive to them. Sensemaking showed us how they
understood and used the incentive to suit their needs, including the use of collective action
when it was necessary. It also highlighted the lack of ongoing learning or understanding
associated with instrumental or economic incentives alone. The complexity of the decision
making process, made penetrable through a sensemaking analysis suggests that simple,
isolated interventions are reductionist and limited in both scope and likelihood of achieving
longer term outcomes.

When individual farmers came together as a learning group (a form of communicative
intervention) sensemaking helped them determine the range of issues for exploration, which
resulted in both individual and collective gain. The learning was richer and more reflective
involving on-going change and ultimately a more knowledgable commitment to WUE in the
MID. Their learning was seen as social and in action and therefore contributed to behaving
as a ‘community of practice’. The research identified a relationship between how an
appreciation of peoples’ viewpoints about water use efficiency and their intended actions;
and how this can facilitate longer term change at the individual level. The analytical process
empowers individuals and groups and may lead to advocacy.

This research contributes to the literature in the area of longer-term natural resource
management change in the Australian dairy industry and more widely for extension
practitioners in other commodity and community endeavours worldwide. These insights also
assist farmers interpret their learning and practice change experiences.

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