Using narratives to understand critical decision making by farmers and the implications for farm resilience.

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Summary

European agriculture continues to face a complex range of economic, environmental and social challenges, particularly so in the UK in the face of Brexit. Within this context of uncertainty, the stories or narratives of four Welsh sheep and beef farmers are analysed to develop an understanding of their critical decision making process and how this might impact on farm resilience. Narrative analysis enables researchers to gain an in depth understanding of the rationale surrounding farmer decision making when faced with change, uncertainty and risk and how farmers manage critical decision points in their farming businesses. This understanding is crucial not only for developing an understanding of the resilience attributes of family farming businesses but also for developing the tools and policy measures needed to support the UK agriculture sector going forward. The responses to risk and uncertainty identified in the study range from management changes in existing enterprises to maintain output (indicating robustness of the system), seeking out alternative sources of income to supplement the farm business (indicating adaptability) and changing the core of the farm business to something that is completely new (indicating transformability). Succession, either in its planning or after it has happened, is identified as a critical turning point affecting the future resilience of the farm businesses studied.

Keywords: risk, resilience, narrative, uncertainty

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1. INTRODUCTION

This paper uses narrative analysis to explore the complex range of economic, environmental and social challenges that face individual farmers and their businesses, particularly in the UK in the face of Brexit. Such challenges include a potentially significant reduction or loss of subsidies, high labour costs, changing trade relationships, more volatile producer prices and exchange rate fluctuations, and increasing reliance on off-farm income to support family farms. They raise questions about the long-term sustainability of farming, food production and the delivery of ecosystems services post Brexit. On top of this, farmers have to cope with existing pressures of responding to shifting consumer preferences and public perceptions of agriculture whilst maintaining a delicate balance between farm business performance and environmental sustainability in the context of increasing environmental risks such as extreme weather events.

Much attention, in both research and policy, to the ecological, economic and social resilience of farm businesses has been stimulated by these increasing external pressures on farming businesses and the contributions that they make to food production and environmental goods. Walker et al. (2004) identify three related attributes of socio-ecological systems that govern their future trajectories: resilience, adaptability and transformability. For them, resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks; adaptability is the capacity of actors in the system to influence resilience (in a socio-ecological systems, essentially to manage it); and transformability is the capacity to create a fundamentally new system when ecological, economic, or social structures make the existing system untenable. The recently commissioned Horizon 2020 project, Towards Sustainable and Resilient EU Farming Systems (SURE-Farm), defines EU farming systems resilience as maintaining their essential functions in the face of increasingly complex and volatile economic, social, ecological and institutional risks (Meuwissen, 2018). She suggests that resilience over time is achieved across a spectrum of robustness, adaptability and transformability attributes, representing system responses to short, medium and long-term external drivers, respectively. Maxwell (1986) also recognised that external drivers vary significantly in time and space, and distinguished four different types of perturbations: noise, when perturbations occur on a regular basis and are usually expected by farmers; shocks, when perturbations are unusual and difficult to anticipate; cycles, when the variation is due to cyclical change and trends, when the change is gradual over time.

Unlike many other family businesses, farming is usually space limited (due to restricted land availability and high price) and so development of the farming business occurs through time and is integrally linked with the evolution of the farming family across generations. In contrast to many other professions in

contemporary society, farming remains a largely inherited occupation and one in which the transfer of business control and ownership to the next generation is arguably one of the most critical stages in the development of the business (Uchiyama et al., 2008). Oral histories have been used to study different farming cultures and the processes of change in farming and the landscape (Riley and Harvey, 2007) and the analysis of narratives can be used to study the complexity of family farming businesses and to study strategies of resistance or resilience (Morris and Evans (2004)). Narrative analysis, therefore, enables researchers to gain in depth insight into the context and rationale surrounding farmer decision making in response to change, uncertainty and risk (e.g. MacDonald et al., 2014), and how farmers manage critical decision points in their farming businesses. This exploration of self-reported farmer business narratives shows how a broader understanding of reactions to external pressures can arise from the rigorous, coherent method of elicitation that we apply. It is useful to support development of the policy tools and measures needed to support the UK agriculture sector in future.

The traditional positivist approach to policy decision-making considers that the world is external and objective, and that real knowledge comes from observable facts and exists independently of people. Whilst there are benefits to this approach in terms of speed and cost of policy development, the approach is not very effective in understanding processes or the significance people attach to actions (Easterby-Smith et al., 2008). In contrast, the phenomenological approach to policy making, whilst it takes more time and resources to develop, recognises that the world is internal and subjective, and that knowledge is given meaning by people. Policy that recognizes the centrality of the human interests and needs should better enable improved adaptability and resilience.

2. RESEARCH METHOD

Biographical narratives were used to gather personal histories of four Welsh sheep and beef farmers. The farmers were selected purposively, via a gatekeeper, to exemplify part and full-time farmers (two of each) and early, mid and late career farmers (one, one and two, respectively). Part-time farming is prominent in Welsh agriculture, and is characterised, amongst others factors, by having networks and exposure to information sources outside the farming industry, being more time limited on the farm, and having a complementary income stream from off-farm employment (Lobley and Potter, 2004). Early, mid and late career farmers were selected to represent the different stages of farm succession which, as Uchiyama et al. (2008) argue, is one of the most critical phases in the evolution (and therefore resilience) of a farm business. The narrative interview technique encourages and stimulates an interviewee to tell their story about significant events in their life and social context. By telling, people recall what has happened, put experience into sequence, find possible explanations for it, and play with the chain of events that shapes individual and social life (Jovchelovitch and Bauer, 2000).

These four farmer histories provide a basis for testing the relevance of the concept of adaptive cycles (Holling et al., 2002), which represent different stages (growth, equilibrium, collapse, reorientation) through which systems pass in response to changing environments and internal dynamics. They allow scope for assessing the sequence, direction and speed with which farming systems move through these phases, with especial emphasis on reorientation, where pressures build towards ‘tipping points’ which prompt transformative change. The three main adaptive cycle processes in which our interest is paramount are the structure of agricultural production, farm demographics, and governance processes.

The process of narrative collection involved two visits to each farm. On the first visit, an unprompted, unstructured interview was used to obtain the farmer's own story, told in their own way with the emphasis that they wanted to give to its structure and elements. Immediately following this first visit, we listened to the recorded narrative to identify key events, turning points or issues needing clarification. We also constructed a first time-line of significant events in the farming narrative, and identified any issues requiring clarification or pivotal events. The resulting further exploration issues formed the basis for conversation at the second visit, and we were able to clarify life stories as they related to adaptive behaviours.

The conversations arising from both visits were transcribed for analysis, primarily to identify the challenges of, and narrators responses to, risk and uncertainty. Coding (Annex 1) was facilitated using NVIVO software. Different kinds of risks were categorized, their effects described, and responses explored, to contribute towards developing an empirical account of resilience for theoretical development and to identify a potential evidence base for policy development.

The histories of these four farmers were used to identify individual phases in their production, demographic and policy adaptive cycles (and consequences of interactions between them) as they have impacted on the individuals concerned and their business. Information was also gathered on the context in which these farmers made their decisions and the approach they took to risk management and decision making at critical points.

3. RESULTS

3.1. The stories

The stories of the four informants, whose names we have changed to protect the anonymity of the narrators, are summarised in this section to provide a context for the subsequent analysis.

"Ifan" is a part-time, early career farmer who has a full-time job in a non-agriculture related industry. He is married with two young children and both he and his wife are from farming backgrounds. Ifan worked on his family farm growing up with his two brothers and always wanted to go into farming. With the succession plan for the home farm being clearly communicated within the family, Ifan looked to develop his career off the farm and rent land to establish himself independently in farming. In 2015, Ifan had the opportunity to rent and run his Uncle's 35 hectare sheep and beef farm with the knowledge that he will inherit it in time. As well as continuing to work full-time, he has established his own commercial sheep flock and rears cattle for the store market. Finding time to fit everything in is an issue for Ifan and he has simplified the farming system to try to make management easier. Ifan eventually wants to farm full-time but at present the price of land is too expensive compared with the cost of borrowing for purchase. He is passionate about building up a family business that can be passed on to his children.

"Rhys" is a full-time, mid-career farmer who run a commercial sheep flock and pedigree beef breeding herd on 72 hectares of owned and 40 hectares of rented land. Rhys is married, has three school aged children and both he and his wife (who works full-time off the farm) are from farming backgrounds. Rhys's wife (and business partner) inherited her family farm in 1999 and the decision was made for her to continue full-time off farm employment, whilst Rhys farmed full-time (he had previously worked on other farms and undertook farm contracting work). In the intervening years they have rented land to expand their business and in 2014 purchased further grazing land to farm with a residential rental property to provide an alternative income

stream. Rhys has increased the intensity of farming over the years in an attempt to make the farm more profitable and is concerned about the impact Brexit will have on the business. Rhys says that renting land provides them with some flexibility as it can be returned if finances become tight, however the business will have to contract alongside. Rhys provides most of the labour on the farm and the system (early/split lambing) has been designed to spread labour requirements out. Rhys is also keen to have something to pass on to his children, the driver behind buying the additional land and rental property.

"Tomos" is a part-time, late career farmer, who owns and runs a 36 hectare sheep and beef farm. Tomos is married with two grown children – his daughter is married to a farmer and his son, who is in full-time employment locally, works on the farm in his spare time. Tomos's wife (and business partner), has had a full-time career off the farm and now works part-time. Tomos has been in full-time employment in an agriculture related job all his adult life, now works part-time and is in the process of retiring. The farm has been in Tomos's family for 120 years, it was originally tenanted and then purchased by Tomos's parents in the late 1970's. Growing up Tomos always worked the farm with his father, mother and uncle, which has evolved from a dairy (under the tenure of his parents) to the beef and pedigree sheep farm it is today. He decided to take off-farm employment when it was apparent on his return from agricultural college that he and his father had different ideas about how the farm should be run. He did, however, continue to work on the farm part-time with his family and with death of his uncle, became a partner with his parents in 1992 and inherited the farm fully in 2012. Tomos has an extremely strong loyalty to his family and the desire to keep the family farm profitable and, in particular, debt free to pass over to the next generation. Like Ifan, he has simplified the farming system over the years to make it easier to farm part-time.

"Martyn" is a full-time, late career farmer who runs a 200 hectare sheep and beef farm in partnership with his wife. Martyn has two grown sons, one of whom is interested in farming and helps on the farm at busy times of the year. Both sons have their own careers. The original farm has been in the family for 110 years, was originally tenanted and subsequently purchased by Martyn's father in 1929. Martyn has no formal agricultural training but has worked on the farm since he was 14 years old. Martyn's father died in 1966 and the farm passed on to a partnership between himself, his brother, his mother and his uncle. His uncle died in 1977 and his mother in 1991, leaving the partnership between Martyn and his brother. Land was purchased over time and built the farm up to 360 hectares, which supported a dairy herd. The brothers continued to farm in partnership until 2001 when a family breakdown resulted in farm being split; 200 hectares to Martyn and 160 hectares to his brother. A lack of capital to invest in a new parlour and limited labour resulted in Martyn moving out of dairying and into commercial sheep and beef farming. He has had two major health challenges since splitting the farm when his brother, his wife, son and hired labour stepped in to ensure the farm kept running during his recovery. Martyn is unclear about succession of the farm and cannot see himself stopping work (aged 71).

3.2. The analysis

The interviews were coded into two main themes. Firstly, the drivers of risk and uncertainty which resulted in the farmers having to a make major decisions about the direction of the farming business in the future, and secondly, the varying responses to those identified drivers, focusing on how the risk or

uncertainty was mitigated. Table 1 summarises the main challenges, responses, personal attitudes/drivers, resilience attributes and resilience enhancing strategies for the four farmers.

Table 1. The main challenges, responses, personal attitudes/drivers and resilience attitudes for the mid, early and late career farmers.

Farmer	Ifan	Rhys	Tomos	Martyn
Farmer situation	Early career, part-time	Mid career, full-time	Late career, part-time	Late career, full-time
Challenges faced	Limited capital for investment Labour availability – livestock management Poor profitability (no SFP) Brexit uncertainty Farm not big enough to take full advantage of agri-environment schemes	Limited capital for investment Foot and mouth disease Limited labour Poor profitability with SFP Availability of livestock markets Brexit uncertainty Farm not big enough to take full advantage of agri-environment schemes	Disaster – farm house fire Health of business partners Off farm community commitments – restricted labour Agri-environment policy Cross generational differences of opinion	No capital for investment Family breakdown Poor profitability with SFP Farm not profitable enough to partner with son(s) Agri-environment schemes too restrictive Changed from a profitable (dairy) to not so profitable (sheep/beef) enterprise for labour reasons Physical injury from milking for 45 years Two major health challenges
Responses to challenges	Off farm employment Enterprise change – from breeding to fattening cattle Simplification of farming system Detailed farm business accounts and monitoring	Off farm income - wife Early batch lambing to spread labour out Rented land – greater flexibility Increased land area, stock numbers and infrastructure for more cattle More profitable beef breed Share machinery with family Purchased farm land with residential dwelling to rent Changed meat buyer – local collection points, less stock transport	Went out of dairying due to limited labour Established pedigree Dorset sheep flock and fatten cattle Low management input sheep flock Off farm employment Clear succession planning throughout the farms history Previously in agri-environment scheme, not now (too bureaucratic) but have kept on some worthwhile practices. Discussion group leader	Split the farm with sibling and went out dairying and into sheep/beef Considering purchasing rental property as alternative income stream Changed from fattening cattle to selling as stores Considering selling beef breeding herd Introduced easy lambing breed Off farm income – wife (until retirement) Wife/brother/employee took over farming to cover health challenges Undertakes some off farm contracting
Personal beliefs	Strong business focus Desire to hand something over to the next generation Strong work ethic but wants time with family	Desire to hand something over to the next generation Loss of support payments with Brexit will have a significant negative impact on farm business	Simplify the system as much as possible Desire to hand something over to the next generation Do not want to hand over any debt to the next generation Strong family ties to the land Best way to diversify is to get a job off farm	Never seen farming in such a poor state Regrets going out of dairying but investment required to go back in too high Desire to hand something over to the next generation

Table 1 (continued). The main challenges, responses, personal attitudes/drivers and resilience attitudes for the mid, early and late career farmers

Farmer **Prevailing type of resilience**	Ifan Adaptability	Rhys Robustness	Tomos Adaptability	Martyn Transformation
Resilience attributes and resilience enhancing strategies	Off farm income Simplification of the system in terms of labour and capital requirements	Incremental changes to the system to reflect changing markets and policies. Rented land that can be disposed of if single farm payment disappears.	Off farm income Simplification of the system in terms of labour and capital requirements. Aversion to debt Clear succession plan	Change of enterprises to reflect change in land ownership, capital and labour availability

The most commonly identified drivers of risk and uncertainty included retirement or death of a key member of the farm business and the resulting succession; the lack of available capital to reinvest in the business and take advantage of opportunities when they arise; the uncertainty surrounding future farming policy support and the perceived "value" of current policy (especially agri-environment schemes); the health of a key member of the farm business; the availability of labour to be able to operate certain enterprises and low or no profit derived from the farming business. Other drivers of risk and uncertainty mentioned less frequently included the lack of a formal agricultural education and interpreting the applicability of information to the farm business; animal health problems (e.g. Foot and Mouth, TB); family breakdowns; disaster (e.g. severe weather events) and fluctuating input costs.

In terms of responses to the risks and uncertainties identified above, the personal attitudes of the farmer played a dominant role in the decision making process. The ability to be able to hand something over to the next generation came through very strongly and this meant that generally there was an aversion to overburdening the business with debt that might have to be borne by the next generation. This attitude applied equally to the early and late career farmers interviewed.

Tomos: *"Definitely I would hate to hand over a debt to my son. When we, we bought the farm and I remember … I wanted to change things around and my mother said, look we've only just finished paying for it and I don't care if you become a partner or not but there, my mother and father decided then that they would never be in debt again and that was it. So that was one of the reasons why we never had new machinery, why we never had anything is because they just said unless you can pay for it we're not having it and that was it."*

There was also a very strong loyalty and sense of duty towards those that had farmed before them and the desire to ensure the future of the farm business.

Tomos: *"And yeah that's how it's always been. And then my son is the same, he's working now and then he comes home and helps me at the weekends, at night so that's how it is. It's, one of these things, my roots are here, I owe it to them."*

In response to labour, financial and health uncertainty the most common response was to change enterprises on the farm and or change the management approach to existing enterprises.

Martyn: *"Yeah, I couldn't carry on much longer because the wet, cold, done it for 45 years milking, my shoulders had gone. Because you're holding that in the wet all the time I was getting rheumatic."*

In response to financial risks and uncertainties, the predominant response was to generate off farm income. Of the four farm businesses in the study, all had one or both members of the husband and wife farming partnership working off farm. This was particularly important for the smaller farms where the farm business alone was unable to support the farming family, the off farm income was important for cash flow in the farm business or where the off farm income was viewed as an invaluable source of capital for investment in the farming business.

Rhys: *"It was just a full-time job and it was local and it was good money. And she could make more there in a week than I could probably do in three weeks of those, outside. And the money's coming every month."*

All the farmers interviewed saw succession and handing over the farm business as an important outcome of their farming careers. Some farmers approached the issue openly with their families and had succession plans in place whereas others did not mention succession planning at all (most notably one of the farmers approaching retirement age). One of the key responses to ensuring clear lines of succession and farm ownership was to change the ownership structure either as a response to a death in the family or in preparation for retirement. Family breakdowns also resulted in changes to the ownership structure of the farm business.

Tomos: *"So, my father and mother and my uncle, they were running it and then when my uncle passed in '92, I became a partner. And then my parents deceased in 2004 and 2012 so it's my wife's and myself, that way." "… I'll make my son a partner within the next few years…"*

Specific responses for animal health, family breakdown, disaster and education/information uncertainty were not forthcoming from the interviews.

4. CONCLUSIONS

The results highlight the importance of considering the context in which farmers are making decisions and their rationale (which appears to be driven by their personal experiences and norms) for making the decisions they do. The importance of being able to hand something over to future generations, a strong sense of loyalty to those that have passed the farm on to them and a strong aversion to accruing debt are all examples of these experiences. This may be linked to the type of farm being studied, in this instance small family farms, but it may also be part of the Welsh farming culture.

The responses to risk and uncertainty identified in Table 1 indicate a certain level of robustness in all four farm business narratives. Robustness is the ability to maintain desired levels of outputs despite the occurrence of perturbations (Urruty et al., 2016). A good example of this are the management changes that both Ifan and Tomos have implemented in their farming businesses to simplify day to day activities to fit in around full-time off farm employment. There is also evidence of adaptability, with Ifan and Tomos undertaking off farm employment to supplement the farming activities and ensure the continuity of the farm business. Rhys also rented land to give him flexibility should single farm payment be reduced/disappear after Brexit. Examples of transformability are also in evidence. This is the capacity to create a fundamentally new system when ecological, economic, or social structures make the existing system untenable (Walker et al.

2004). The decision of Martyn to get out of dairying and start sheep and beef farming after the split with his brother is a good example of transformability.

This work has highlighted the central importance of the farmers in the survival of the family farms and the culture that goes with them. Their passion, their sense of responsibility to previous and future generations and taking a long-term perspective are deeply embedded in their farming psyche and practices. However, their health and family support are crucial factors in translating this passion into endurance.

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Annex 1 – NVIVO coding structure

Nodes
Nodes\\Driver
Nodes\\Driver\Animal health
Nodes\\Driver\Capital
Nodes\\Driver\Disaster
Nodes\\Driver\Family breakdown
Nodes\\Driver\Farm Income
Nodes\\Driver\Health
Nodes\\Driver\Information
Nodes\\Driver\Input costs
Nodes\\Driver\Labour
Nodes\\Driver\Policy
Nodes\\Driver\Succession
Nodes\\Response
Nodes\\Response\Enterprises
Nodes\\Response\Management approach
Nodes\\Response\Off farm income
Nodes\\Response\Ownership structure
Nodes\\Response\Personal attitude
Nodes\\Response\Supply chain