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# Of poultry and the good farmer: Skilled role performance in antimicrobial use on poultry farms in Sweden, France and Vietnam

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**Abstract**

In this article, we advance the good farmer literature by assessing how farmers' understanding of what it is to be a good farmer is formed in relation to a less visible (enclosed) species (poultry). Findings demonstrate how the materialities of poultry bodies lead to similar practices across the three sites. These practices reflect the small size and rapid growth of poultry bodies and illustrate the multiple senses: visual, olfactory and tactile, which are encompassed in skilled role performance. The differing 'rules of the game' between the countries lead to distinctive 'moral capitals' attached to antimicrobial use, including stigma (Sweden), care-full farming (France) and moral obligation (Vietnam). We argue that although cultural capital is not accrued in the same way as for more visible species, farmers mobilise their social capital to express cultural capital. Farmers clearly respond to changing 'rules of the game' in the form of government regulations, developing normative expectations. Deployment of the 'good farmer' concept in Sweden demonstrates the potential to mobilise cultural capital through benchmarking.

**KEYWORDS**
antimicrobial resistance, care, good farmer, moral capital, more-than-human approaches

## INTRODUCTION

Reducing antimicrobial use (AMU) in livestock production is recognised as critically important for protecting both human and animal populations from the development of antimicrobial-resistant diseases (AMR; O'Neill, 2015; Woolhouse et al., 2015). Most European member states have set targets and instigated packages of measures to reduce AMU, such as promoting biosecurity and alternatives to AMU, developing the use of AM susceptibility testing, establishing guidelines for AMU, improving monitoring and surveillance networks, controlling sales and prescriptions of antimicrobials and benchmarking AMU amongst similar farms. In Europe, national efforts towards reducing AMU led to a 40% reduction in sales of antimicrobials for use in animals between 2011 and 2020 (European Medicines Agency, 2021). However, AMU is expected to rise worldwide by 67% between 2010 and 2030 as a result of the increased number of animals raised for food production, largely through intensification of agricultural production (Van Boeckel et al., 2015). Increasing rates of AMU in livestock production are particularly acute in Asia and Oceania and the Americas (Gil, 2023). The rapid development of modern (intensive) animal production and poor-quality veterinary services are amongst the factors underlying this rise (Hosain et al., 2021).

In this article, we consider how farmers' practices of AMU are formed, developing a conceptualisation of the 'good poultry farmer'. Research into farmer behaviour in recent decades has highlighted the importance of farmer identity and ethical practices to understanding behavioural persistence and change. It is well established in the academic literature—particularly in this journal—that social norms and symbolic activities play critical roles in farming practices. Farmers are resistant to changes that threaten their ability to produce culturally valued symbols, which include healthy livestock (Burton, 2004; Gray, 1998; Haggerty et al., 2009; Naylor et al., 2016; Shortall et al., 2018; Wilkie, 2005). These symbols are related to efficient, productive and profitable farming, although the relationship may not be direct. Common symbols of the 'good farmer' include: tidy, well-kept premises (indicative of sufficient time and resources to properly maintain the holding); even, weed-free fields (evidence of skilled deployment of machinery and understanding of soil conditions); and healthy-looking livestock (indicative of skill in livestock production). Identity as a good farmer may also include the reputation of being an up-right and valuable citizen, evidenced through participating in the local community (Burton et al., 2021).

To date, the literature on the good farmer has emphasised how farmers engage with the agri-environment (e.g., Burton et al., 2008; Cusworth, 2020; Franklin et al., 2021; Saunders, 2016; Thomas et al., 2019). The good farmer concept is less developed in relation to livestock farming. Two examples are Shortall et al. (2018) and Naylor et al. (2016). Shortall et al. (2018) identified two conflicting farmer identities in relation to cattle farming. Both were associated with farm size: large, commercial farmers who had the economic capital to invest in biosecurity and preventative veterinary services, and the 'good stock keeper', located on smaller farms, whose skills and attention to individual animals enabled them to manage herd health with limited veterinary assistance. Shortall et al. (2018) also found that veterinarians and farmers did not necessarily hold

the same ideals of the 'good farmers', with most (but not all) vets preferring the approach of the larger, commercial farmers. Naylor et al. (2016), in their study of cattle, pig and poultry farmers, found three intersecting farmer identities: the good stockman, the good neighbouring farmer and the good public-facing identity, reflecting the negotiation of practices between farmers and their stock, neighbours and the public (respectively).

Identity as a good poultry farmer is likely to be distinctive from identity as a good farmer in relation to other livestock species. Whereas cattle and sheep are large-bodied and typically managed outdoors (i.e., where neighbouring farmers can easily observe and assess their condition), poultry are small and typically managed as flocks confined to sheds. Mahon et al. (2021) found that farmers treat cattle and sheep differently, in part because of the higher economic value of individual cows. Bock et al. (2007) argued that poultry farmers are less personally connected to the animals in their care than farmers of larger species. This reflects in part the amount of time they spend with individual animals (very little), the length of time those animals spend on the farm (commercial poultry may mature in as little as 30 days), and farmers' exposure to their animals (through the configuration of buildings, etc).

Poultry production is also highly mechanised—automated feeders and waterers not only reduce the amount of direct contact farmers have with their flocks, but these tools produce substantial datasets that can be deployed in flock management. Technologies change the way in which farmers and their livestock relate to each other, altering the behaviour of both. Recent research has drawn attention to how robotic milking changes the behaviour of both cattle and farmer and indeed machines: cattle learn to use the machines, machines 'learn' how to connect to cattle and farmers learn to use the data produced through those machines (Finstad et al., 2021). We specifically consider these materialities, enabling us to look more closely at the roles of technology and sensing in good farmer identity formation.

The aim of this article is to assess how the 'good farmer' concept applies to poultry farming, with a view to understanding how associated practices play out in AMU. We do so through three contrasting case studies of poultry care, where AMU has distinctive histories: Sweden, France and Vietnam. As such, we also advance the good farmer literature in relation to national differences: To date, the good farmer concepts have largely been developed in English-speaking countries (UK, the US and New Zealand), although there have been applications in Belgium (de Krom, 2017), Germany (Thomas et al., 2019) and Sweden (Saunders, 2016).

## Conceptualising the 'good poultry farmer'

The 'good farmer' literature espouses a heterogeneity of theoretical approaches: There is no singular 'good farmer' conceptualisation but rather a set of literature that addresses the cultural aspects of farm production (Burton et al., 2021). The most common approach to conceptualising the 'good farmer' is grounded in Pierre Bourdieu's concepts. In this article, we similarly draw on Bourdieu, particularly his work on the logic of practices. This aspect of Bourdieu's work provides a conceptual foundation for integrating concepts of 'moral capital', 'care' and 'more-than-representational' thinking.

Bourdieu (1984, 1986), in his efforts to conceptualise the social reproduction of class, argued that class went beyond traditional economic understandings of wealth, to include social and cultural forms of wealth or 'capital'. For Bourdieu, social capital is the resources that an individual can mobilise through social networks; cultural capital is the ability to recognise and reproduce valued cultural symbols. Bourdieu argued that families and social groups instil these capitals in

their members, particularly their children, through childhood socialisation and educational processes, which are reinforced in adult life. These processes are largely unconscious—embedded in an individual's 'habitus'—an ingrained disposition to act. The socialised norms of childhood become unconsciously understood as the natural order or 'right way' of doing things. For farming households, children are socialised from a young age into becoming 'good farmers' (Fischer & Burton, 2014; Sutherland et al., 2023), learning how to perform farming activities with high levels of skill (cultural capital), and gaining access to peer networks (social capital) in their farming communities.

Jaye et al. (2022) expanded on Bourdieu's capitals, in an empirical study of a livestock disease outbreak. They developed a conception of 'moral capital', which reflects adherence to shared moral positions. Like other symbolic forms of capital, moral capital has an economic value and is accrued amongst peers. Jaye et al. (2022) argue that any economy dealing with animal production is moral because of the sentient nature of the animals involved. The animals themselves embody moral capital. Jaye et al.'s (2022) findings demonstrated the reputational damage to farmers who did not seek to contain transmissible livestock disease and the importance of a 'good death' to farmers—the notion that livestock who had had a 'good chance at life' could then ethically be slaughtered. Jaye et al.'s work illuminated how livestock embody multiple forms of moral capital through the condition in which they are kept by their farmers but did not address how this moral capital relates to social or cultural capital. In this present article, we consider the interplay between capitals in relation to AMU.

Moral capital reflects the care that farmers give to the livestock in their keeping. Recent feminist literature addresses the importance of 'care work', emphasising that care is not a sentimental attachment. Instead, 'care' represents skilled performance of practices that facilitate healthy development (Krzywoszynska, 2016). It is about being responsible for, attending to and being concerned about the object of care (Hassink et al., 2020). Care-giving is conceptualised as a moral practice, performed as a logic (Mol, 2008; Mol et al., 2010). Examples of care in the context of livestock production typically emphasise regenerative or low input practices (e.g., organic farming), whereby more time is spent with individual animals, and the efficiencies of intensification are rejected in favour of more natural reproductive practices (e.g., Hassink et al., 2020; Stock, 2021).

This shared emphasis on capitals and practices connects the literatures on moral capital and care of livestock to Bourdieu's (1990) 'logic of practice'. Bourdieu advanced his conception of capital and the habitus, emphasising how actions or 'practices' both embody and enable the development of skills. It is through practices that skilled role performance is both learned and displayed. He argued that the associated knowledge is often tacit and embodied—embedded in the 'habitus' rather than consciously pursued. Through practices, individuals experience the 'rules of the game' for the field in which their practice is situated, learning these skills on an ongoing basis as the field develops and their competence within it accrues. Farmer behaviour may appear resistant to change because of the economic and cultural capital invested in current practices, but behaviour does change over time, as new practices are performed in response to changing rules of the game (Sutherland & Darnhofer, 2012). These rules of the game can include regulations (e.g., surrounding AMU).

Consideration of how skilled role performance is learned enables us to link Bourdieu's concepts of practice to the materialities literature on knowing. Carolan (2008) has drawn attention to how farmers learn—specifically in relation to land. He argued that landscapes are known in the body—reflecting the kinaesthetic and somatic sensations of being in the land. This resonates with the notion of the 'good farmer's eye'—the ability to visually appraise farming practices, learned through performing them (Burton et al., 2021). The more-than-representational literature also

enables us to consider the use of senses in good farmer identity and practices. Visual appraisal is a key component of the good farmer identity. Farmers intentionally perform well in spaces that are visible to other farmers—such as front fields or auction marts (Burton, 2004). In relation to livestock, the 'good stockman's eye' has been identified as an important attribute of the good farmer—the ability to recognise livestock health and welfare. In both Naylor et al.'s (2016) and Shortall et al.'s (2018) studies, the 'stockman's eye' was identified as an important element of the good farmer identity.

This emphasis on practices within 'fields' offers ontological consistency between Bourdieusian and more-than-representational thinking. Non-representational thinking is an umbrella term for approaches that seek to go 'beyond', for example, 'more-than-human', 'more-than-textual' and active cognition, to consider multiple senses and the relations between human and non-human actants (Lorimer, 2005, p. 83). Use of non-representational approaches enables us to consider the materialities of good farmer identity construction; that is, how this identity is formed in relation to the other species, objects and spaces where farming is practised. Although it has been recognised for some decades that farmer identity is constructed in relation to their holdings (e.g., Gray's, 1998, seminal work on the 'consubstantiality' of farming identity, which is embedded in the farm through which identity is constructed), this perspective has not been foregrounded. In the good farmer literature, farms and livestock are typically seen as the background or instruments on which food farming identity is practised rather than active agents in their own rights.

In summary, in this article, we assess how identity as a 'good farmer' is formed in relation to poultry farming. We focus particularly on how the materialities of poultry bodies are enrolled in farmers' understanding of skilled role performance, and how the mobilisation of different types of capital is reflected in practices of care, particularly AMU.

## METHODS

Case studies of poultry farmers' AMU were undertaken as part of the Horizon 2020 RoadMap (Rethinking the use of antimicrobials in livestock production systems)[1] project. The focus of the RoadMap project was to foster reductions in AMU along the supply chain. Semi-structured interviews were conducted with poultry farmers in one case-study region in each of France, Sweden and Vietnam. The countries were chosen to reflect the differing 'rules of the game': Sweden, where AMU is rare in poultry; France, where it is more common but increasingly restricted by regulations; and Vietnam, where AMU is common. Study participants were selected to represent a diversity of farmer types. Within Sweden and France, this diversity was limited to the intensive poultry sector; in Vietnam, where intensive poultry production is less common, integrated (with a larger company), family commercial farms and a household-level farm were interviewed. Details on the study participants can be found in Table 1.

Interviews addressed processes of becoming farmers, poultry care, AMU, social norms, triggers for change in AMU and barriers to change (including systems and supply chains). Interviewers also recorded their use of language. Interviews ranged in length from 30 to 90 min, were transcribed in full and analysed using qualitative data analysis software. Transcripts from France and Sweden were analysed in their original language, whereas transcripts from Vietnam were translated into English. The analysis presented in this article was specifically undertaken to address how notions of the 'good farmer' were reflected in AMU. Transcripts were analysed in table form, compiling evidence in relation to descriptions of poultry keeping practice, emergent symbols of the 'good farmer' and how these differ between types of farmer, how these symbols were formed,

**TABLE 1** Characteristics of study participants.

| Country | Number of interviews | Gender of interviewees | Age range | Educational achievement | Interviews conducted |
|---|---|---|---|---|---|
| France | 16 (seven conventional, nine antimicrobial free) | One female, 14 male, one couple | 35–60 years old | Levels 3–5 (secondary school to university undergraduate) | Face to face |
| Sweden | 10 | Five female, five male | 30–70 years old | No data | By telephone |
| Vietnam | 18 (three integrated, 14 family commercial, one household-level farm) | Four female, 14 male | 25–60 years old | Levels 2–6 (primary school to post-graduate degree) | Face to face |

how these symbols are shared, the characteristics and observations of skilled role performance, the sensory component of skilled role performance, and how these performances relate to AMU.

## Case studies and translation of the 'good farmer'

In all three cases, sampling was oriented towards identifying as varied a range of participants as possible. In Sweden, study respondents were independent producers, selling under contract to slaughterhouses. These slaughterhouses use these contracts to secure the number of birds per year that they can slaughter and set standards (e.g., required weights of individual birds). As AMU is rare—requiring a veterinary prescription—the interviewed farmers' experiences were very limited or non-existent. The farmers were recruited via the branch organisation Svensk Fågel [Swedish Bird], which enrols 98% of the Swedish poultry producers. Multiple terms were used by farmers, which were classified by the researcher as relevant to the notion of 'good farming' or 'good farmer': good, skilled, successful, careful (respectively: bra, duktig, lyckad, noggrann). Respondents preferred to describe what it is to be 'successful' or 'skilful' and what it means to fail or 'cheat' as a poultry farmer or breeder. They described specific farming practices in positive terms (e.g., 'important' or 'crucial') and others in negative terms.[2]

In France, the majority of poultry production is organised with an integrative, contract-based system. For nine of the 16 farmers interviewed, contracts included bonus payments for the production of 'antimicrobial-free' poultry (i.e., poultry that had not received antimicrobials during their lifetime). In French, 'good' can be translated as 'bon' in the sense of 'bien' 'correct'. It can also translate as 'ce qui doit être fait dans l'idéal' (you need to.., it is important to, you should…), implying a moral obligation. It can also include the notion of what is 'justified' to do, for example, about the use of antibiotics when farmers believed that they had no other options. In France, instead of using the term 'good farmer' or 'good farming', farmers explained 'what is a good flock' and 'what are good practices'.

In Vietnam, there is a wide range of poultry farming scales, from backyard flocks sold at local markets to flocks of more than 8000 birds to be sold in supermarkets. The largest flocks are managed by contracts similar to those in France. Antimicrobials are easily accessible (e.g., from drug and feed supply stores), both with veterinary supervision and over the counter. New regulations ban AMU for growth promotion. Correct AMU is enforced through testing for residual antimicrobials at abattoir facilities, but this testing primarily impacts the integrated system as poultry sold directly to consumers (e.g., at public markets) are not typically tested.

In the Vietnamese cases, the question 'What is it to be a good farmer in your opinion' was translated to 'Theo Anh/Chị, ngày nay thế nào là một người nông dân thành công?' The closest English translation of 'người nông dân thành công' is 'successful, high quality; morally right and kind'. Like English, the term 'good' thus has multiple meanings, including quality, morality and kindness, which may be why the term was more accepted by farmers than in the other two case studies. However, the two translators translated the question somewhat differently: one of the translators interpreted the question to be aimed at eliciting descriptions of 'successful', and therefore used the term 'thành công'. Another explored 'successful' and 'moral' separately, to adequately address the question (see also Bâtie et al., 2022).

Consideration of the translation of the term 'good' therefore demonstrates variations of meaning across the sites, typically including skilled or successful production, with moral nuances included in France and Vietnam. As a methodological approach, the use of the 'good farmer' question in French, Vietnamese and Swedish highlighted the challenges of deploying concepts across linguistic boundaries.

## Findings

The findings sought to identify how farmers' normative expectations and symbolic performance of poultry care are formed, and how these expectations play out in relation to AMU.

### Good poultry care

The central aspects of good poultry care were consistent across the case study sites, reflecting the similarity in material characteristics and performances of chickens as a species. Consistent with other literature on the 'good farmer' (e.g., Haggerty et al., 2009; Shortall et al., 2018), these practices included cleanliness and tidiness, timeliness, hard work and livestock condition. Participants spoke at great length about how they maintain the health of their flocks, thus expressing the primary elements of skilled role performance. Hygiene was central:

> Hygiene is the first concern in breeding, we need to do it strictly. We should make everything clean, from the barns, feeders, all utensils and the environment, etc… Chickens are raised in a half free-range system, so when we let the chickens out, the garden must be free of garbage and puddles, it should have a rainwater drainage system. (Farmer 4, Vietnam)

Farmer 4 described how hygiene practices extended throughout the indoor and outdoor facilities, implying an extensive workload to maintain conditions. Cleanliness was also encompassed in broader efforts to 'avoid stress' to the animals. Farmers avoid stressing the chicks from their arrival and during their early days by ensuring good environmental conditions (temperature and hygrometry, litter), transporting them in good conditions, being careful when unloading the chicks from the truck, ensuring access to water and feed as soon as the chicks arrived, strengthening the immune and digestive system by the preventive contribution of vitamins, trace elements, organic acids, rehydrating and vaccination.

A particular aspect of poultry care is speed. Commercial poultry breeds grow very quickly under optimal conditions, reaching maturity in less than 2 months in the French and Swedish

cases. Growth rates were more variable in the Vietnamese case, reflecting a greater diversity of breeds. Farmers across all three cases expressed that 'a sick animal does not grow'. Rapid growth is considered to be evidence of health. It also leads to a need for rapid response when the speed of development is slower than anticipated and a reliance on the farmers' own skill in diagnosis. Chickens also become unhealthy—and die—quite quickly. Rapid response is necessary to address disease, which is the skill of a good farmer.

These acts of care are ultimately linked to the profitability of production—sick animals grow slowly (or die), increasing costs of feed, housing and so forth. Dealing with sick animals is also more labour-intensive. There is a direct cause-and-effect loop between care for poultry and the profitability—and therefore longevity—of the farming business. This is described by Sutherland (2013) as the 'taste of necessity': A good farmer is one who stays in business.

## Sensing good poultry care

Good poultry care consists of more than following a set of hygiene and management rules. Farmers also described the importance of sensory appraisal of their flocks. This was consistent with earlier 'good farmer' research, which identified the importance of the 'good stockman's eye' (Naylor et al., 2016; Shortall et al., 2018): an innate sense, based in visual appraisal, of whether an animal is 'right' (healthy, behaving normally).

> First and foremost it is to have extremely good animal eye. So that you are able to see, smell, understand if there is something that is not right in the shed. And then you have to make changes. (Farmer 2, Sweden)

In the cases studied here, skilled farmers are described as having an embodied ability to see, but also to smell, hear and feel the health status of the animals. Whereas in larger livestock, this sensory ability is primarily visual, in poultry, this sensory appraisal also includes smell—intensive poultry production is odorous, but not uniformly so.

> And the smell, even when you arrive, the smell of the fan, I already know that there is a problem! When I smell the dust and the feathers it's better. (Farmer 4, France)

There are changes to the condition of animals that yield changes to the content of manure that can be appraised through olfactory sensation, alerting skilled farmers that there is a problem.

Healthy poultry are more mobile, moving at recognisable speed. Farmers in all three cases identified the movement of the flock in general—rather than specific animals—as important to successful management. The extent to which animals group together or are dispersed, and the speed at which these groupings shift, were both identified as observable elements. Movement and clustering also provide feedback on temperature—birds will huddle together for warmth. Notably, a dead bird in itself is not cause for alarm, the way it would be for a larger species. Death is accepted as normal. It is the volume or frequency of deaths that the farmer must register. Simply seeing or smelling is insufficient; the farmer must be able to correctly interpret these sensory perceptions.

In most of the flocks in this study, production is highly mechanised: automated feeders, waters and temperature controls not only produce uniform conditions, but they also provide data on the welfare of the poultry. Decreases in consumption (e.g., of water or feed) signal a problem which

may not be visibly apparent (yet). All the Swedish farmers use statistical data in combination with their ability to assess health themselves, some describing their ability to sense a problem, which was later identified in the statistics. For others, the ability to sense an ill flock is sometimes described as something that needs to be combined with statistical data on growth, mortality, intake of feed, water and so forth. As one French farmer pointed out: 'A novice can tell just by looking at the curves if there is a problem or not' (Farmer 9, France): These visual perceptions are augmented by the data available in intensive systems:

> Well, concretely you can… at first you get a feeling, when going in to the stable, that things are maybe not all right. But then you see, almost directly, from the water and food consumption… so you have to keep track of those things. […] Every day we write how much they eat and drink and we have reference graphs that we relate to. (Farmer 6, Sweden)

Checking monitors and recording observations are included amongst the characterisations of skilled role performance. Comi (2020) has written about the distributed farmer—describing how the technological equipment utilised to monitor and produce agricultural commodities becomes embedded in the farmers senses and additional 'sense' for use. This was evident amongst interviewees who had access to these data (France, Sweden and three Vietnamese farmers), with the added feature of speed of production—the rapid speed of growth makes it easier to compare the relative speed of growth across 'batches', yielding a sense of rhythm.

Most of the Vietnamese case-study participants deployed more extensive, outdoor systems. They also marketed live poultry directly to consumers. This had implications for sensing good poultry care, as plumage, skin colour and the taste of the chicken meat were important for consumer understanding of good poultry production.

## Developing normative expectations of the good poultry farmer

In the Bourdieusian-based good farmer literature, identity as a 'good farmer' is grounded in symbolic practices. Farmers observe other farmers' practices while driving by: 'roadsidefarming' (Burton et al., 2021), and reinforce their impressions through casual conversations. Most poultry in the case studies addressed here is confined to housing units that are scrupulously protected from disease incursion—other poultry farmers in particular are not welcome to visit. In addition, the intensive farming practices of contemporary poultry production differ substantially from those of two decades ago: Family socialisation processes from childhood are less relevant. This raises the question of how—or whether—cultural capital is accrued in poultry production.

Interviewees in all three case studies indicated that they readily speak to their peers about the technicalities of managing their production systems. Most farmers in the study described how they are in contact with each other concerning animal health, that they ask other farmers for advice and if health problems have also occurred in their flocks (health problems can sometimes be traced to, e.g., specific feed sources or breeding stock). Provision of a successful production environment is understood as a technological achievement in which farmers in all three sites take pride. Farmers mobilise their social capital—networks of other producers—to learn how to effectively express cultural capital (pride in skilled role performance). Perhaps owing to the novelty of intensive poultry production, there was no indication amongst farmers that there was

a stigma associated with asking for advice; this would not be the case in studies of good farmers that have focused on other species.

Thus, although farmers cannot physically see each other's practices, as 'players' in the poultry production 'field', they have the opportunity to demonstrate skilled role performance in their conversations with each other. The success of the enterprise (e.g., the ability to invest in and maintain buildings and farm vehicles) serves as proxies, giving farmers credibility. In the words of Farmer 17, 'They will change and develop themselves when they see that someone is successful in business'. In Vietnam, 15 of the 18 farms raise their poultry outdoors, where it is visible to other farmers, but they did not comment on this visual appraisal. Instead, the success of other farmers is perceived to be related to their own success as expressed by Farmer 0 in Vietnam, 'But if I just take care of my farm, it's not good because if the next farm has sick chickens, it will affect mine just by wind. (…) So, I want every neighbour to do well, if it is, I can feel fine'. The less restrictive regulations in Vietnam mean that poultry flocks can cross-infect more readily, leading to a more direct impact on neighbouring flocks, and a sense of moral responsibility amongst Vietnamese farmers.

In addition, farmers speak to veterinarians and technicians—who do have direct experience of multiple flocks. Shortall et al. (2018) described how veterinarians can promote specific practices as characteristic of good farmers. This knowledge is developed iteratively—whereby farmers in some cases learn from technicians, others demonstrate their best practices to technicians 'Because when I breed with this method, they see that diseases are less' (Farmer 11, Vietnam). In Vietnam, drug sellers (input suppliers) are also important sources of information.

In Sweden, poultry producers also had access to benchmarking analysis through an industry-organisation-funded programme. Reports from the programme form a type of league table of poultry producers, where the speed of production, use of inputs and death rates become evident:

> You compare, you know you are spurred and you rapidly get to know if you had a bad or good result. Both economic and technical results. (Farmer 1, Sweden)

Farmers can assess how their performance compares to those of anonymised peers, which in the case above, spurs the farmer on to improve practices. The attainments of other farmers are concrete, rather than symbolic, but retain some normative influence.

Standards of performance are also instilled formally. Industry organisations (Sweden, Vietnam) and integrators (France, Vietnam) organise meetings and educational opportunities where farmers meet and discuss.

> I mean it is fed to us, it is hammered in, this with hygiene, hygiene, hygiene. Do not let something inside, clean, wash and this, I mean, we see it ourselves, if we cheat you get, what is it called, bacteria and such things, the chicken does not grow. No, no. The chicken is not well. I mean, I as an animal breeder, if I can have chicken who feel well, grow perfectly, environment and everything, then I feel good […] I mean it is so obvious. (Farmer 2, Sweden)

This knowledge—a form of cultural capital—is then transformed into moral capital. This farmer identifies both a set of rules and associated morality to her activities—she considers it to be 'cheating' to disobeying these 'rules of the game', which are reinforced not only through training but in the health of her flocks. Training instils a clear cause and effect. 'Cheating' by not maintaining good hygiene leads directly to bacteria and slow growth or death of her chickens. 'Feeling good' comes from this skilled role performance and associated moral capital and that she has cared for

her flock. Successful production is directly linked to 'feeling good', reflecting the 'taste of necessity' identified by Bourdieu (1984) in his capitals' framework (see also Sutherland, 2013). Farmers learn to appreciate and value the symbols that reflect successful production. When caring for livestock, this takes on an added dimension of moral capital.

## Application to AMU

Although management practices were largely similar across the three cases—emphasis on cleanliness; attention to consumption rates, temperature, movement and for intensive producers; and the use of data—there were clear differences in AMU. In broad terms, there are two approaches to AMU: as a preventative or as a treatment measure. Prevention reduces illness in the flock, leading to faster growth. Proactive AMU leads to uniform production—birds do not get ill, fewer die and the resultant 'batch' is of similar size and weight. Crucially, it also reduces the number of dead poultry that farmers or their employees are required to remove from the flock and the number they are required to cull. This 'preventative' use acts as a growth promotant, which has been banned by government legislation in all three case-study countries. AMU as a treatment involves recognising illness and treating it. Poultry treated with antimicrobials are more likely to survive but will have lost some days of growth. The result is uneven 'batches' of poultry, which either need to be sorted before sale or are more difficult to sell or slaughter efficiently.

In all cases, promoting health (rather than seeking to reduce AMU), was farmers' priority. AMU—or not—was embedded in a broader set of practices, rather than specific decisions to administer antimicrobials to an individual animal, as would be more likely with larger species. The differences reflect the differing 'rules of the game' for AMU in the study sites.

In the Swedish case, only three of the 10 study participants interviewed had ever administered antimicrobials. Producing in such a manner so as to need to use antimicrobials was seen as morally wrong, evidence of poor role performance:

> Should we use, should we breed animals in such a bad environment that we need to use antimicrobials in order to produce them? Then something is fatally wrong. (Farmer 2, Sweden)

Swedish respondents indicated that there was a stigma associated with AMU—it is seen as a failure to maintain healthy birds. Under correct environmental conditions, AMU is seen as unnecessary. Culling holds no appeal for farmers—dead birds are an unpleasant part of the job, and represent financial loss, but are accepted as part of this disease control strategy. The farmer respondents construct this practice as requiring strength of character. To do otherwise is to take the easy way out:

> There will always be problematic flocks, everyone gets that sometimes, but then you just have to cull, cull, cull, instead of taking the easy way you take the hard way instead and go there a lot and sort of…but I do believe that a lot, such that we cull, then they treat [farmers abroad] instead of doing the job. (Farmer 3, Sweden)

The farmer expressed how Swedish farmers see their performance as superior to that of farmers in other countries, where AMU is more common. The act of culling is both practical and symbolic of a good farmer identity. Several Swedish farmers expressed this 'disease nationalism'—a pride in

their country's approach to disease management and AMU, and overt critique of farming practices elsewhere in the European Union.

In the French case study, the emphasis was also on prevention, with farmers stating, for example, that *'the goal is that he doesn't get sick'*. This is considered evidence of good care provision. However, when poultry appears to be becoming ill, there were two broad approaches described. The largest subset of the farmers preferred to administer antimicrobials early. This allows for better control of the spread of the disease, and thus less economic losses (avoiding high mortality, high impact on the growth curve or later resurgence during the rearing period). Indeed, they described this practice as having less impact on AMR, because of the lower volume of AMU, and the lower risk of needing to treat again later. In the words of Farmer 9: 'From my point of view, I think it is better to treat 3 days at the start than five times during the rearing period'.

The second French cohort described practices that were more in line with the Swedish case—they delay AMU, seeing it as a form of *'failure'* (Farmer 4). This cohort appears to be successful with this approach (i.e., their incidence of disease is lower). However, culling was not specifically identified as required to achieve high levels of health. This group were also critical of the practices of earlier generations, who used it 'preventatively' (i.e., including antimicrobials as a feed additive).

> I remember, it was systematic, the colistin in the drink water before we saw the colour of the chicks! The list [of treatments] was made before we saw the chicks! After several years, we forgot how it was. Now, when I remember these practices, I say 'ah yeah anyway, we did that!', then I am not surprised that there is resistance and all that… (Farmer 4, France)

This suggests that farmers have learned—in part through regulatory changes—that prophylactic treatment of poultry is not acceptable. It was the normal practice of their farms in the past, but the change was now normalised. Over time, the previous practices were forgotten. This is consistent with good farmer literature (Sutherland & Darnhofer, 2012) that demonstrates that standards of good farming change over time in response to changing 'rules of the game' but that these changes take time to embed in farming systems.

In the Vietnamese case, most farmers knew that they should limit their AMU and that this was related to AMR in humans. There is promotion in the media about reducing AMU and new regulations have been enforced recently. Farmers identified a responsibility to other farmers with harmful practices (i.e., residues). However, state regulations were considered to be too a high standard but nevertheless linked to notions of the 'good farmer':

> I think a good farmer is a person who has not ever done anything to affect others. Secondly, they should follow 70%–80% of the State's regulations. It's hard to follow 100%, there is no one who can do 100%. (Farmer 16, Vietnam)

State-mandated practices were understood as a best practice guideline rather than a requirement. The most effective driver of change for integrated farmers, however, were the testing regimes implemented by their buyers:

> Because Vietnam's current standards for testing antibiotic residues in food before releasing it to the market for consumers to use are very strict. If it is found that the food is not good quality, it will affect the company's reputation […] they extremely

> care about the treatment of antibiotic residues in chickens before supplying to customers. (Farmer 2, Vietnam)

For the three Vietnamese farmers with major supply contracts, limiting AMU was actively enforced. The size of the corporations to which farmers are contracted, and associated loss of international markets, means that these companies are scrupulous in testing. The potential loss of contracts is a strong motivator for farmers—but they were free to use antimicrobials for the first 20 days. Antimicrobials were also widely used in the prevention for chicks or in stressful situations (vaccination, change of temperature). Moreover, antimicrobials are inexpensive and still freely available—and most small-scale farmer production is not tested for antimicrobial residues. When animals did become ill, AMU was identified as the caring solution.

Farmers are also aware of others who are less scrupulous about their AMU:

> Some households even though their chickens have just been injected for 1–2 days, they still sell them to the dealer [...] if the middleman knows how to check on the flock, he will find that the injected area will always be brutally bruised. Those chickens are mostly abandoned after the sale because no one can eat chicken meat when antibiotics are still there. (Farmer 6, Vietnam)

Some independent farmers are also experimenting with local handmade probiotics (organic) treatments with successful results in AMU reduction. This solution is localised and related to participation in a breeder cooperative of the study's area. For most producers, in the first few weeks of the chicken's lives, AMU is the cheap and effective form of preventing disease.

## DISCUSSION

This article has advanced the literature on the 'good farmer' by integrating concepts of care, moral capital and more-than-representational thinking to evidence how the 'good farmer' identity is formed by poultry keepers. It also highlights the methodological challenges of deploying the 'good farmer' question outside of English-speaking locales and demonstrates the importance of differentiating between the symbolic performances of the 'good farmer' and normative practices of 'good farming'. These advances will be addressed in turn.

### The good poultry farmer

As anticipated, the material characteristics of chickens as a species were directly reflected in farming practices. Farmers described assessing the condition of whole flocks rather than individual animals. 'Skilled role performance' thus included observation of how the flock moved, consumed (feed and water) and smelled, as well as more recognised 'good farming' practices of tidiness, hard work and efficient production (Haggerty et al., 2009; Shortall et al., 2018). The specific characteristics of poultry bodies brought out the sensory elements of farmer assessments, including descriptions of smell. Speed of farmer response was linked to the rapid growth of poultry bodies and their susceptibility to illness. From a 'more-than-representation' perspective, poultry taught farmers how to care for them effectively, co-developing the practices that led to rapid growth. Data on the consumption of feed and water were important for both flagging potential health

issues and confirming farmer observations. As such, farmers performed care for their animals in line with Comi's (2020) 'distributed farmer', whereby technology has become an extension of human senses, embodied in farming practices.

In line with Jaye et al. (2021), farmers across the cases identified a moral responsibility embedded in their poultry care practices. Poultry had a value beyond economics, contributing to a sense of identity and skilled role performance. We advance Jaye et al.'s (2021) work by demonstrating how a more complex set of capitals is exchanged. A central tenet of Bourdieu's conceptualisation capitals is that they can be exchanged for each other to varying degrees. For example, in Sutherland and Burton's (2011) work on equipment sharing, the analysis demonstrated how farmers were able to mobilise cultural capital—skill in machinery operation—to access social capital—the willingness of other farmers to lend them equipment. Jaye et al. (2021) posit a simple exchange between the moral capital of the animal, which is transformed into economic capital before the animal is slaughtered, having 'lived a good life'. Although Jaye et al. (2021) describe the importance of reputation—particularly how it can be destroyed if farmers sell sick or infected livestock to other farmers—they did not express this in terms of social or cultural capital. In this article, we demonstrated how the social capital established by discussing production practices with neighbours and colleagues served as a proxy for the cultural capital more characteristic of larger species, which could be observed from the roadside. The article thus makes an initial step in addressing the gap in understanding the social capital associated with good farming in relation to livestock disease management identified by Chan and Enticott (2019).

Moral capital was more evident in farmers' rationales for AMU—or not—and clearly reflected cultural embodiment of the differing 'rules of the games' in the study sites, expressing the 'taste of necessity' (Bourdieu, 1984; Sutherland, 2013). AMU was secondary: moral care of poultry was focused on the comfort of the birds, producing environments in which they would thrive. Farmers did not express empathy for their birds but did express moral requirements to care well for their flocks. What this care comprised differed between countries. Most study participants also expressed familiarity with the importance of limiting AMU, indicating a moral obligation to restrict use for the benefit of human populations. In line with Shortall et al. (2018), farmers also learned from the shared experience of technicians and veterinarians.

Research by Sutherland and Darnhofer (2012) and Sutherland (2013) into the good farmer demonstrated that apparent 'resistance to change' may instead be delayed change, once it becomes clear that the 'rules of the game' have permanently shifted. These findings were further supported by this present research, where it became evident that government regulations in France and Vietnam were influential in informing standards for poultry-keeping practice. French farmers practised 'care-full' farming, adopting practices that would maintain their flocks in good condition. However, these regulations were still not fully implemented in Vietnam and were seen more as guidelines than requirements. Moral capital was more evident in response to social media messaging about AMU. For intensive poultry keepers in Vietnam, change in practice was more strongly influenced by the contracting companies, which required testing of poultry carcasses for drug residues. These companies were also involved in training farmers on how to care effectively for poultry. Engaging with this range of actors to decrease AMU is important for achieving AMU reductions.

The study has demonstrated an option for mobilising cultural capital. In Sweden, farmers themselves initiated the movement away from AMU in the 1980s. Through discussion groups, and change over time, culling instead of treating sick birds has become the norm. Culling has become a symbolic act, but one practised in isolation, rather than a visible public performance. There is a stigma associated with AMU: AMU symbolises failure in hygiene and biosecurity practices,

implying that farmers have 'cheated' or taken shortcuts in their management practices. Benchmarking initiatives led by industry organisations enabled farmers to compare their performance anonymously against those of other farmers. In some cases, this was successful in spurring farmers on to improve their performance. This suggests that enabling farmers to compare their achievements to each other can be an important mechanism for enabling improvements in practice, mobilising social capital to activate cultural capital to improve industry standards. For small-scale farms in Vietnam, changes in practice were also influenced by the farmers' social networks with some success in local initiatives; these types of initiatives also thus be promoted (see also Bâtie et al., 2022).

## Language, 'the good farmer' and 'good farming'

Gkartzios and Remoundou (2018) pointed out the English-language bias of much of the rural studies literature. As described in the methods section, the term 'good' has different nuances in Swedish, French and Vietnamese (consistent with Chan and Enticott 2023) and was translated differently in each case study. This raises a question of the utility of the 'good farmer' concept for research in outside of English-speaking locales. In addition, their book on the 'Good Farmer', Burton et al. (2021, p. 8) posit that there is a distinction between the 'good farmer' and 'good farming practice'. 'Good farming' refers specifically to performances of successful good farm management practices, which can be demonstrated in relatively short periods of time. The 'good farmer' has a broader meaning, referring to both the production roles and the wider social and moral roles of the good farmer, which may take a lifetime to demonstrate. When translated into the languages in these case studies, these distinctions were not easily made. None of the respondents discussed the good farmer as a moral citizen of the local community, beyond the duty of care to neighbours to contain livestock disease and to the broader public to avoid AMR. It is difficult to determine whether this is because of the way the questions about the good farmer were translated or because these broader citizenship responsibilities are not recognised as part of farming identity in these cultures.

To consider this question, we assessed how the 'good farmer' is expressed in other literature on livestock care. We found that the distinction is similarly blurred in English-speaking studies. For example, Shortall et al.'s (2018) respondents spontaneously described what it is to be a 'good farmer' in interviews but entirely in relation to livestock management practices. In Naylor et al. (2016), three intersecting identities were described. Consistent with this present study, the 'good stockman' represented the ability to assess and care for livestock. The 'good neighbouring farmer' related to disease management—protecting neighbours from disease incursion. The 'good public-facing identity' referred to protecting the industry from public censure (i.e., disease management practices) rather than contributing to community events and activities as described by Burton et al. (2021). The moral capital described by Jaye et al. (2022) similarly emphasised health and disease management practices rather than broader integrity or social engagement actions by farmers. We therefore question the extent to which the broader notion of the 'good farmer' as a societal position is evident beyond a limited number of case studies. We suggest that the particular value of the 'good farmer' concept is in the symbolic performances it embodies: illuminating how farmers create and nurture value beyond the economics in their practices. Following Sutherland (2021), we also argue that greater care is needed in both English and other language case studies to deploy and critique the use of the good farmer concept.

## CONCLUSION

In this article, we have demonstrated how social norms of 'good poultry care' are formed in relation to poultry bodies, utilising three case studies of AMU. The research demonstrates that AMU is embedded in broader practices of successfully caring for chickens. There is no 'one size fits all' approach for reduction in AMU. Neither is there a single actor or lever, which was universally successful. Instead, the changes to AMU were shared across farming networks, and influenced system-wide, enrolling a range of actors including—but not limited to—farmers and government regulations. In particular, the role of contractors in enforcing the reduction in AMU was evident. However, antimicrobials remain easily available in Vietnam—they are the cheapest and most common option for efficiently producing poultry. There remains a culture in France whereby treating sick birds 'early' is understood as good—and economically effective—practice. In Sweden, where AMU is very restricted, concerns have recently arisen that farmers are using alternative medications which are also problematic.

The case studies also demonstrate that reductions in AMU are being achieved in intensive flocks. Indeed, the poultry industries in the cases studies achieve poultry health through tightening restrictions, and intensifying production, rather than changing production style to be less intensive. This is at odds with the rural sociology narrative of promoting 'repeasantisation' (van der Ploeg, 2010) or the 'eco-economy' (Marsden & Farioli, 2015) to address problems of intensive agricultural production and indeed notions of the 'good farmer' as purveyors of these approaches (e.g., Stock, 2021). This disconnection between the notion of sustainable farming as extensive farming and the health practices and moral capital of intensive farmers is an important subject for further exploration.

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### CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

### DATA AVAILABILITY STATEMENT

The author has provided the required Data Availability Statement, and if applicable, included functional and accurate links to said data therein.

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### ENDNOTES

[1] ROADMAP—ROADMAP Homepage (roadmap-h2020.eu)

[2] Saugeres (2002), in her analysis of Swedish farmers, translated the literal terms emergent from farmers as describing the 'real peasant' rather than the 'good farmer'. This was not relevant to the present study, where the intensive style of production characteristic of poultry keeping in Sweden was not consistent with the notion of 'peasant'.

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