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Introduction

Food is vitally important for human subsistence. Moreover, the nature of socio-environmental conditions, spatial linkages and labour practices (Harvey, 2010) is particularly intricate in the process of food production. This intricacy begs the question 'who is producing what kind of food, for whose benefit, and to whose disadvantage' (Moragues-Faus & Marsden, 2017, p. 281).

I pose the question whether food production-focused research can also become the lens that helps to open up new lines of inquiry about what is 'European' about European white-collar crime. Even though both isolated deviancy and systemic harm feature in the fabric of modern food systems, criminological engagement with intersections of food, crime and harm has not been prolific (Croall, 2012; Hongming, 2011; Walters, 2007). Once the concept of food crime was introduced by Croall in 2007, avenues for research included food fraud, food poisoning (Tombs & Whyte, 2010), food mislabelling (Croall, 2012), trade practices and environmental law (Walters, 2006), food pricing, exploitation in food production (Tombs & Whyte, 2007), and cruelty to animals (Agnew, 1998; Yates, 2007).

The intersection of food and criminological research in the European context can be observed in the 2015 *Routledge Handbook of White-Collar and Corporate Crime in Europe*, which invokes the topic of food crime in relation to food adulteration and hygiene regulation. Since then, European criminologists have developed a better understanding of the criminal acts embedded in the food chain through the analysis of food fraud (Flores Elizondo, Lord, & Spencer, 2018; Lord, Flores Elizondo, & Spencer, 2017; Ruth, Luning, Silvis, Yang, & Huisman, 2018) and harmful labour practices (Davies, 2018). Nevertheless, only 12 out of 42 contributors to the most recent 2018 *Handbook of Food Crime* edited by Gray and Hinch come from European countries, with the majority of authors being North American and Australian researchers. It is evident that the European research on food crime needs to be problematised further. Moreover, the specificities of the European context might facilitate this task and provide additional opportunities for the academic inquiry, thus advancing both the food crime and the European white-collar crime research.

Echoing critical traditions in criminology, I suggest that focusing solely on food crime creates boundaries that do not allow to venture beyond the rigid criminal / lawful binary. Food production may involve serious harms that lie beyond traditional definitions of crime (Gray & Hinch, 2015), on the spectrum that White (2016) calls 'lawful but awful'. Therefore, in line with the socio-legal approach in green criminology, this paper attempts to challenge the existing epistemology of food crime by discussing routine practices that govern meat production in the European context. The paper highlights the manner in which meat production governance safeguards the interests of the powerful actors, despite the detrimental impacts of those interests on ecological systems and society.

The paper utilises a case study of farming industrialisation in Northern Ireland and discusses some of the findings related specifically to the European context. Criminology scholars stress the importance of opening industrial farming for criminological exploration (Sollund, 2015). While industrial farming results in social and environmental grievances (Nikos Passas, 2005), the agri-food actors benefitting from it are highly resistant to regulation (Croall, 2012) and guarantee that the legal frameworks continue to protect their vested interests (Boekhout van Solinge, 2010). The topic of industrial farming thus intersects with the research on the crimes of the powerful, including white-collar crime. While the latter occasionally considers the role of high-profile actors and organisations in pillaging of the environment, some authors nevertheless suggest that more 'greening' of the crimes of the powerful research should take place (Bradshaw, 2014, p. 166). Consequently, I identify the trajectories for the future white-collar crime research in relation to food production governance by revealing how European economic and regulatory contexts safeguard the interests of the powerful in the processes of meat production. I suggest that more criminological attention should be directed to analysing existing regimes of power in the European food production governance and discussing European-specific circumstances that reinforce them.

First, an elaboration is needed to clarify what is meant by Europe in this paper. Europe is a contested concept, laden with cultural and symbolic meanings. Yet, I limit the concept of Europe solely to the European Union (EU) political project. While this approach has its limitations, it nevertheless allows to explore how a non-local, largely unelected, imperfectly accountable (Reisman, 2017) body that attempts to harmonise private business interests with public regulation and authority, structures food production and potentially foments opportunities for harm in the routine processes of food production. Another caveat is that it is beyond the scope of this work to review the implications of Brexit on food production in the EU. The empirical basis of this paper is Northern Ireland and, considering the current

climate of uncertainty pertaining to Brexit, for the purposes of this paper the UK is perceived as a member of the EU. The rationale behind it is that thus far the EU has, to a significant extent, governed the processes of food production in the UK and the legislative change around that has not yet occurred. Finally, the empirical study behind this paper focused on pig farming industrialisation, and therefore, the future discussion is mostly concerned with meat production in the European context.

The paper is structured around three areas of concern that were mentioned by the Northern Irish agri-food industry actors, farmers and local residents, all of which relate to the EU. First, the implications of the EU common market's meat production goals and opportunities for environmental and social harms are discussed. Second, meat production regulation in the EU and its potential consequences for the environment and society are examined. Third, this paper elaborates on the technological solutions for addressing the impacts of industrial farming in the EU and invites further scrutiny of the contexts in which technology is embedded.

Meat production goals and opportunities in the EU common market

In the agricultural sector, the choices of the Committee for the Common Organisation of the Agricultural Markets (COM) determine the economies of production. COM identifies competitiveness as the key sector of economy (Santonja et al., 2017). Competitiveness on the European market was also identified as one of the motivations for farming industrialisation in Northern Ireland. According to one interviewee, 'there are very different costs of production within the EU and the countries that have high costs of production [like the UK] force their industries to go large to compete' (UFU002). Uneven costs of production in the European Common Market foster an asymmetry. According to Passas (1999, p. 402), asymmetries, conceptualised as structural discrepancies, mismatches and unequal interactions in the realms of the economy, law, politics, and culture, can be criminogenic. Economic asymmetry in this case paves the way for farming industrialisation in Northern Ireland, leading to adverse environmental impacts and threatening health and wellbeing of both non-human and human animals. Second, the goal of competition, essential for the functioning of the European Common Market, shapes the union's individual members' policy choices. State-corporate crime theorists maintain that the greater emphasis on goal attainment might result in socially injurious behaviour (Kauzlarich & Kramer, 1998). Market conditions such as competition are also recognised as enablers of crimes related to profit maximisation (Findlay, 1999). From the interviewee's comment above, it can be assumed that competition is an important factor for the food production sector, and competition might encourage environmentally and socially injurious industrialisation of meat production.

Another important aspect of the economic performance on the COM's radar is efficiency, which is synonymous with the move towards economies of scale and agglomeration or, in other words, larger farms in specialised regions (Santonja et al., 2017). These prescriptions are reflected in the latest data from the EU's 'Farm structure survey'. In the case of pig farms, the data show that half of the sows (female pigs) and three quarters of other pigs are reared by 1.7% of the largest farms. Only ten countries (Belgium, Denmark, Germany, Spain, Italy, Luxembourg, the Netherlands, Finland, Sweden and the United Kingdom), whose production techniques are very specialised, are responsible for three quarters of all EU pork production. By contrast, only 3.8% of other pigs are reared on small farms, which account for 73.3% of all pig farms (Santonja et al., 2017). However, it has been shown that concentration of meat production is associated with harm to the ecological systems and nonhuman animals (Schally, 2017).

It is also vital to discuss the opportunity structure within the EU designed to meet the goals set out on the European level (Michalowski & Kramer, 2006). Consumer demand for animal protein constitutes a part of such opportunity structure as it provides a rationalisation for meat production increases. Yet, this strategy is premised on a controversial idea of a pressing need to increase global food production in light of population growth (Tomlinson, 2013). Meat consumers, while simply reproducing their social practices, continue to support the treadmill of meat production (Curran, 2017). The argument of the primal role of consumption masks the power relations that underpin globalised capitalist political economy (Gould, Pellow, & Schnaiberg, 2003). Ultimately, production takes place before consumption and producers are empowered to construct consumer desires and needs (Gould et al., 2003) since they are empowered to control the decisions around production.

Secondly, a uniquely European mechanism, the EU's Common Agricultural Policy (CAP), can be called into question when discussing the opportunity structure. CAP provides financial support to agriculture and the rural economy. Its focus is currently organised under two pillars: pillar 1 - the Basic Payment Scheme and pillar 2 - Rural Development

Programme. Yet, its direct payments based on the area of land in production have been criticised for their disproportionate favouring of large-scale producers and marginalisation of smallholder farmers (Kay, 2016). Subsidy benefits distribution is particularly uneven in countries such as Romania (where 1.1% of subsidy beneficiaries receive 51.7% of the CAP direct payments) and Bulgaria (where 1.1% of subsidy beneficiaries receive 45.6% of the CAP direct payments) (European Commission, 2015).

The dynamics of the decline of small farms in Europe are alarming:

Agricultural Holdings <10 ha	1990	2000	2005	2010	2013	1990-2013 Variation
Austria		108,310	86,310	72,970	66,680	-43%
Bulgaria			507,550	336,080	222,330	-65%
France	339,430	243,150	194,270	175,910	148,960	-32%
Germany	316,870	189,510	143,020	73,260	66,310	-79%
Hungary		876,140	617,730	485,340	402,860	-54%
Netherlands	59,310	46,030	10,850	12,140	26,190	-56%
Italy	2,376,440	1,901,570	1,474,600	1,363,180	764,740	-68%
Poland			2,110,420	1,158,370	1,078,560	-40%
Spain	1,194,540	904,310	725,560	644,930	626,630	-48%
United Kingdom	62,050	68,520	96,650	39,370	38,700	-38%

Source: Kay (2016)

Social harms associated with the decline of small farmers include rural unemployment and gradual erosion of rural community life that values local food cultures and traditions. As local markets disappear, food supply chains grow longer and transparency of food provenance is compromised, producers become more dependent on global food markets and have to confront its volatility (Kay, 2016). Finally, small-scale farming is associated with environmental protection and contributes to safeguarding of biodiversity. Subsidies oriented on economic growth tend to side-line natural resource limitations and sustainability concerns¹. Inadequate mechanisms of food production financial support may have adverse environmental and social effects, which echoes Spapens et al' (2018) statement that environmental harm is bound to involve a financial component. Despite this awareness, few criminologists (especially European criminologists) problematise harms associated with financial support for food production. Croall (2012) points out the problematic nature of corporate-governmental collusions in relation to subsidies, and Standing (2015) highlights the criminogenic role of private investment and public subsidies in fuelling illegal fishing. Yet, thus far none of these studies consider the role of subsidies in fuelling industrialisation of farming.

European white-collar crime researchers might benefit from taking a closer look at the harms associated with food production goals and opportunities that exist in the EU common market. Yet, Williams (1996) claims that market-based explanations of environmental and social inequities do not reveal the structural processes behind them. Therefore, European white-collar crime researchers should examine who the main beneficiaries of the common market are, and how institutional assemblages of food production shape the uneven distribution of benefits and burdens. Moreover, the European context provides a unique opportunity to explore a regulated market and its potential for white-collar crime and harm, as opposed to white-collar crime underpinned by forces of deregulation, privatisation and globalisation. The goals governing food production in the EU market are intertwined with the goals of global food production markets where free market opportunities are said to provide a façade for perpetrating systematic forms of injustice (White, 2013). However, it is often emphasised that the European Union provides a regulatory role, creating a context in which market liberalisation and market regulation coexist peacefully, thus leading to a paradoxical state of 'freer markets, more rules' (Egan, 2001). It is, therefore, worth examining how certain components of the EU

¹ Rural development measures have been allocated EUR 14.3 billion of funding in 2018, while direct payments to farmers amounted to EUR 40.1 billion, according to Financing of the CAP. Fact sheets on the European Union <http://www.europarl.europa.eu/factsheets/en/sheet/106/financing-of-the-cap>

regulatory framework and its mechanisms of control are conducive to environmental harm and protection of the interests of the powerful in the processes of meat production governance.

Meat production regulation in the EU

The EU postulates that the impacts of large-scale farming must be regulated in accordance with the Integrated Pollution Prevention and Control (IPPC) Directive. The aim of the Directive is to apply Best Available Techniques (BAT) to prevent, or reduce, emissions to air, land and water from these activities (Environment Agency, 2006). BAT Reference Document (BREF) for Intensive Rearing of Poultry and Pigs is produced by the European IPPC Bureau. Yet, only the farms that house more animals than stated in the BREF are required to apply for a PPC permit that covers all aspects of farm management², from feed delivery to manure spreading. This benchmark regulation does not seem to account for cumulative environmental impact. Yet, according to one interviewee in Northern Ireland, 'sometimes they register a big [pig] breeding centre and give pigs to small farmers [under 2,000 animals] to avoid environmental impact assessments. I think it's an EU thing which is fine in a country like Germany where you don't need to worry about 2,000 pigs. But it's not so fine in a smaller country like Northern Ireland because 2,000 pigs is a big number. And if you have ten [such] farms next to each other, it's 20,000 pigs' (COM002). Cumbers, Leigh and Smallbone (Cumbers et al., 1995) claim that the difficulties in constructing a Single Market in food result from imposing a new set of regulations onto an existing national regulatory regime. The instance of applying this regulation to all contexts across the EU and disregarding regional differences within might result in the adverse environmental impacts that stem from an increased concentration of farms in one place.

This particular regulation also contributes to consolidation of power dynamics in the meat supply chain. In Northern Ireland farms with less than 2,000 pigs are often characterised by vertical integration into meat supply chains, when large producers subcontract different stages of production to smaller farmers. Vertical integration and concentration of production have been subject to criticism – they pose a threat to the survival of small farmers (Grey, 2000) and reinforce the buyer dominance of the retailers (Morgan, Marsden, & Murdoch, 2006), thus contributing to the neoliberalisation of agri-food governance (McMahon and Glatt, 2018). Moreover, small farmers that are vertically integrated are influenced by the ambitious production goals set from the top echelons of the supply chain. Yet, small farmers might not possess the sufficient infrastructural and financial means to achieve those goals. Goals-means discrepancy is reported to fuel deviancy (Merton, 1938), including deviancy in relation to the environment. Vertical integration restricts farmers' choices or dissuades them from a choice they would normally make, 'forcing them into the kinds of decisions that they otherwise would not have chosen for ethical or other reasons' instead (James, 2018). Farmers, thus, respond to the external pressures situated in global markets and the regulatory contexts associated with them (Donnermeyer & DeKeseredy, 2014).

Finally, it is worth exploring the manner in which economic forces of production are embedded in the regulation and how the EU food production regulation protects the interests of the powerful. Critical criminologists have long emphasised that economic interests have a significant clout over the creation of law (Ruggiero, 2013). The EU provides a unique context for dissecting this issue: Egan (2001) suggests that due to a close relationship between public and private interests in the EU context, there exists a significant overlap between the regulators and the regulated – a statement that certainly holds true in the food production case. In some EU member states such as France and Germany, food legislation has often been introduced to protect certain producer groups (Cumbers et al., 1995). Indeed, business has had a favoured position in agenda-setting at the European Institutional level (Coen, 2005) as Corporate Europe Observatory (2017) demonstrates that the corporate agri-food sector has and continues influencing law-making in the EU. The economic privilege of the industry guarantees its influence in environmental and planning decision-making (Smith, 1990). Relationships around regulation, thus, are organised in a manner that creates a favourable regulatory climate for capital accumulation.

This insight into the intricacies of application of the EU regulations of meat production to each country's context has several implications for future research. It demonstrates that further attention needs to be directed towards scrutinising and contextualising the regulatory frameworks that underpin food production governance in Europe, the

² '(a) with more than 40 000 places for poultry; (b) with more than 2 000 places for production of pigs (over 30 kg), or (c) with more than 750 places for sows.' (Santonja et al., 2017, p. xxxi)

potential those frameworks have for changing national food regimes, and how those frameworks come into being as a result of the state-industry collusion. European white-collar food crime scholarship may benefit from using the EU context to understand how food production regulations reproduce dominant class interests, preclude radical change (Pearce, 1976) and are 'geared to the protection of socioeconomic systems that are heavily orientated towards unfettered industrial growth, production and consumption' (Ruggiero, 2015, p. 85).

Technological innovation and meat production in the EU

Environmental damage resulting from industrial meat production is palpable. In addition to contributing to climate change, industrial meat production contributes to air (ammonia) and water (nitrogen) pollution. 94% of ammonia emissions in Europe originated from agriculture in 2015 (European Environment Agency, 2019). The IPCC's Best Available Techniques discussed above strongly encourage innovation in the production processes to address rising environmental toll of industrial meat production. Therefore, it might be of interest for white-collar crime researchers in Europe to discuss the role of the EU context in technological innovation in industrial meat production and the impacts of national-level application of technological innovation.

The implementation of technological solutions to feeding systems, air cleaning systems and adoption of technologies such as anaerobic digestion are perceived to be synonymous with the sustainable development doctrine. Agri-food industry interviewees in Northern Ireland often expressed admiration for the European technologies for agricultural emissions abatement and encouraged their subsequent replication in the Northern Irish context.

As a result, new technologies are being developed within and beyond the EU to meet the environmental challenges from livestock production (VERA, 2010). A joint initiative of parties from Denmark, the Netherlands and Germany sought 'to develop common test-protocols for test and verification of a number of these environmental technologies for livestock production' (VERA, 2010, p. 3). The report emphasises that ten European manufacturers that currently supply air cleaning systems to livestock producers currently have to deal with various admission and assessment procedures in the different nations. The test protocol is a strategy to overcome this fragmentation, 'saving time and costs in implementing eco-efficient technologies' (VERA, 2010, p. 4) and promote the wider use of these technologies. The initiative developed by Denmark, the Netherlands and Germany opens up opportunities for technology transfers, and close cooperation between the EU agrifood stakeholders is conducive to this process.

Yet, technology transfers are not merely technical but also political processes. The way technology is applied in the local context depends on the strength of domestic institutions and enforcement of environmental policies (Hensengerth, 2018). Moreover, the introduction of a new technology incites social changes in the local environment (Hensengerth, 2018), and it is important to question who the beneficiaries of the transferred technology are. While technology producers may reap the financial benefits of the wider use of the technology, large meat producers will also benefit from technological transfers. It is worth emphasising that technological innovation might lead to structural changes in farm sizes as more efficient measures are only applicable to larger farms (Oenema, Velthof, & Klimont, 2012). Such application of technology will only reinforce the dominance of environmentally disadvantageous industrial meat production, the impacts of which technology is aiming to address.

On a macro level, technological solutions do not stimulate environmental and social reform either: they simply 'green' capitalism, thus diverting any form of ecological critique (Gould et al., 2003). Power interests safeguard the doctrine of sustainable development, with economically efficient use and management of resources at its core but manage to dismiss the inherent contradiction between economic production in capitalism and nature, where capitalism must cause ecological disorganisation by polluting nature (Lynch & Stretesky, 2014). Technological innovation, thus, becomes a condition for continued expansion of capitalism (Harvey, 2010): it might mitigate the harmful impacts of intensive livestock farming but does not challenge or alter the unsustainable nature of the practice.

The uniqueness of the EU context in relation to technological innovation in industrial meat production is underlined by the fact that governments choose to engage private expertise (such as the production of abatement technology) for public purposes thus incorporating market norms into the provision of public goods (Egan, 2001). The EU context also appears to facilitate transfers of technological innovation, as the leading actors in the industry work on making technology more available for others. White (2017) concludes that by examining the relations behind technology, criminologists can get a better understanding of whether technology and its applications serve the interests of social and ecological justice, or whether they reinforce existing regimes of power. Therefore, white-collar crime researchers

in Europe may wish to inspect the relationship between technology and food production closer, drawing on social and political contexts behind technological use and development, and examining how those contexts furnish opportunities for harm.

Conclusion

I posed the question of whether food production-focused research can become a lens that opens up new lines of inquiry about what is 'European' about European white-collar crime and utilised the case of farming industrialisation in Northern Ireland to take a closer look at the European meat production governance. Intensive livestock production is a dominant mode of meat production in the EU. Yet, Bernat and Whyte (2017, p. 77) argue that normal functionings of the broader system of production can produce criminogenic outcomes. The paper shows that the existing frameworks of meat production governance in Europe may reinforce the existing power regimes by safeguarding the interests of the powerful in the common market and regulation. Societal context serves as a vital rationalisation where the industry can absolve itself of the responsibility for intensive meat production and instead transfer the responsibility to the global and national meat consumers to create a semblance of consumer agency. Moreover, regulatory frameworks are informed by the global political economic dynamics of meat production where regimes of permission (Bernat and Whyte, 2017) are established through the relationships between political and economic actors to pursue the goal of capital accumulation in the context of a competitive global market rule ideology.

Existing power regimes are also reinforced by preserving the doctrine of ecological modernisation that impedes any systemic change; it is achieved through promoting solutions rooted in technological innovation (Böhm, Misoczky, & Moog, 2012).

Future research in white-collar crime in Europe may benefit from further problematisation of food production harms in the European context and identification of the structural factors behind them constituted by the European 'regimes of permission' (Whyte, 2014, p. 244) that are not only enabled by particular institutional relationships but originate from power architectures that lie beyond the observable empirical manifestations of power.

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