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Demystifying Dairy

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Abstract

In this paper, I examine the dairy cow, her body and disposition, with a specific focus on the way we humans have designed her for our purposes, through the use of selective breeding and reproductive technology. I will also examine the consequences of this design for the health and welfare of the dairy cow and her calf. I will conduct this examination through the concept of 'naturalistic mystification', which I will use to challenge the dominant, hegemonic message, which presents the cow as natural, and milk as a nonharm product. Rather, I will demonstrate that the cow and her milk are the creation of human intention, effort and the application of technology with a view to using the animal for gain, and that while these technologies have greatly increased the milk yields of dairy herds, it has come at a high cost to the dairy cow and her calf. This design project is now embedded in a variety of social, legal, political and economic institutions, which work to mystify the materiality of human interference and the exploitation of the animal. Its scope and impact will be demonstrated through an examination of the historical changes wrought on the body of the dairy cow over many centuries.

Keywords

mystification, dairy cow, Marx capitalism

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Introduction

The dairy industry has largely been successful in presenting itself as trustworthy and milk as a non-harm, ‘natural’ product. Images and messages from industry bodies and marketing campaigns have traditionally presented the dairy cow as a contented creature, living a natural life and willingly providing us with her excess milk. Some images go further to suggest that the cow actually enjoys the process (fig. 1).¹ In this paper I use the Marxist concept of ‘naturalistic mystification’ to deconstruct this image through a comprehensive examination of the way that we humans have intentionally designed her, for our own purposes and to her detriment, through the use of selective breeding and reproductive technology. My aim is to challenge the ‘common-sense’ knowledge that presents both the dairy cow herself and her product, milk, as both natural and good. The dairy industry as a capitalist enterprise deals in ‘commodities’ and has as its primary motivation profits and growth. In Australia, it is supported by large government subsidies, much of which ends up as profits for processors and large companies. As a result, the modern dairy cow and her milk, rather than being seen as ‘natural’, should be seen as the creation of human intention, effort and the application of technology, for the purpose of designing an animal for exploitation and profit.



Fig. 1: ‘The Laughing Cow’. Le Groupe Bel.
<https://www.pinterest.com.au/pin/452259987559305451/>

My analysis is sourced in the historical changes wrought on the body and disposition of the dairy cow over time in order to enhance certain characteristics, in particular, high volume milk production. It entails an examination of selective breeding, artificial insemination, genomics, embryo transfer, splitting and gene editing. As I demonstrate, these changes have had severe health and welfare consequences for the dairy cow and her calf – a process advanced by a combination of social, legal, political and economic institutions, which work to *mystify* the materiality of human interference and the exploitation of the animal. In doing so, these institutions protect and defend the political and economic interests of their stakeholders, rendering invisible their interconnections and conflicts of interest. In this context, mystification works through the presentation of an idealised and incomplete picture and selective view of reality in dairy advertising and promotion, including the educational packages provided to schoolchildren. Such messages, images and health advice regarding the ‘goodness’ and health benefits of milk present it as a virtuous product while ignoring the serious welfare problems for the supplier of the milk – the dairy cow.

In order to begin the task of demystifying the life of the dairy cow, it is necessary to understand the concept and process of mystification, where it comes from and how it works. This concept will then be put to use to illustrate the way that the reality of the life of the dairy cow has been hidden, idealised and distorted, with a focus on the supposedly natural processes of reproduction and lactation.

What is mystification and how does it work?

Mystification is a complex and many-sided process. It has been depicted by Michael Burrowoy as ‘*the social process that produces the gap between experience and reality for all who enter a specific set of social relations*’ (191, original italics). This approach highlights the centrality of social relations between people and institutions in the gap between appearance and reality. For Marx, the mechanism of mystification consists in the collapsing of social facts and relationships into natural ones (Geras 295). The foundational social relations are the capitalist relations of production, whereby workers are alienated from their product, which then becomes a commodity through which surplus value is extracted as profit (286). More particularly, it emerges from Marx’s

break with Hegelian idealism and his subsequent development of the theory of commodity fetishism. This is a complex element of Marxist theory, which can be summarised in Marx's own words as 'a definite social relation between men [which] assumes, in their eyes, the fantastic form of a relation between things' (*Capital*, 43). In other words, things are not what they seem.² In capitalist society the phenomenon of fetishism imposes itself as both mystification and domination, which are interrelated inasmuch as no one is able to control or resist social relations that they do not properly understand. This concept was put to work by Barbara Noske who used it to explain the five different ways that animals become alienated through domestication and factory farming (18-20). It is certainly true of the dairy cow who becomes alienated from both her milk and her calf.

Through the concept of mystification, Marxist theory provides us with an understanding of the distortions of social life and provides an insight into the ways that realities can remain 'hidden' while in plain sight. In addition, it contains theoretical concepts and methodological techniques, which enable answers to questions such as: who has the power to shape ideas and knowledge, what are the common and conflicting interests in a particular historical situation, and whose interests are being served? Specifically for our analysis, what are the economic interests of dairy farmers, and more significantly processors and dairy companies, and how are they expressed in the political and cultural realm? Marx's theory gives us something close to an integrated theory, a theory which explains the origins of mystification and which also provides the tools to illuminate the hidden economic connections between different interests in particular historical epochs. With this approach, it becomes possible to uncover mechanisms of animal exploitation by incorporating an analysis of the political economy of the dairy industry, both nationally and internationally, into the concept of mystification. This is an aspect I will address more fully elsewhere.³

In the case of dairy, the application of the concept of mystification goes well beyond the frequently discussed conflict between the dairy farmer, the processors and supermarkets, which determine the farm gate price of the farmer's milk, to reveal the underlying consensus among all these groups to exploit the cow and to do so in such a way that this exploitation does not become public knowledge. This is achieved by remaining silent on the poor health and welfare consequences for cows and their calves and by the use of marketing images and educational resources, which present an idealised and incomplete picture of the realities of dairy farming.

It is true, for example, that there may well exist dairy cows grazing in lush, green fields at any given time and place. This picture is not necessarily false in itself, especially in Australia, where the majority of dairy cows are still grazed outdoors. It is, as I will demonstrate, an idealised part of a much more complex picture. Yet it is the picture endlessly presented in countless advertisements for milk, cheese and baby formula. Such images of cows grazing in green fields (sometimes with their calves beside them, usually with trusted farmers) are also prominent in public relations exercises involving milk or dairy (fig. 2). They represent a visual shorthand, which serves to reassure the consumer that the product is natural, good, and, unlike meat, is a ‘non-harm’ product. Unless specifically sought out, the dairy consumer is never exposed to the harsh realities of milk production. It is a clear example of the mystification of an historical and social process and hence a false view of reality.

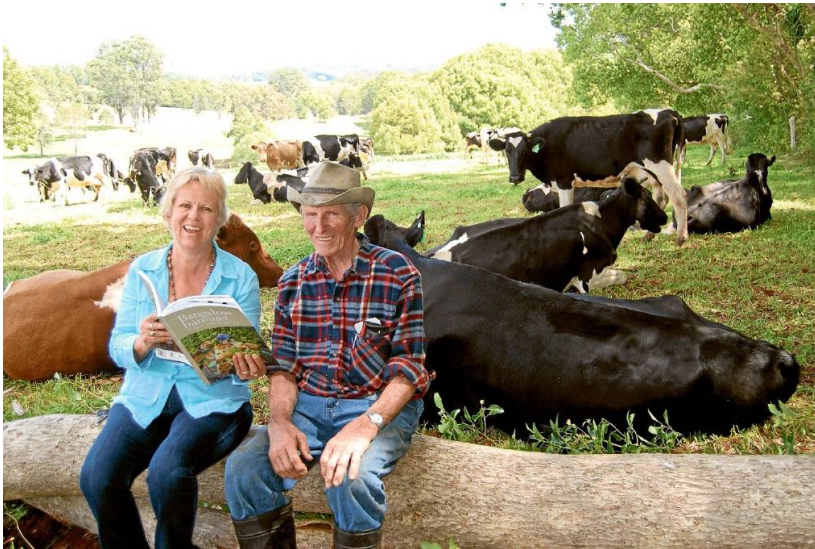


Fig 2. Dairy Farmers. Dairy Australia ‘Legendairy’ Campaign.

‘Naturalistic mystification’

For this analysis, I will employ a specific pattern of mystification termed ‘naturalistic mystification’, which is the viewing of social phenomena as if they were natural events, undetermined by human actions. Marx speaks of the ‘conditions of existence’ of individuals,

which are ‘independent of the individuals and, although created by society, appear as if they were *natural conditions*, not controllable by individuals’ (*Grundrisse*, 164). Building on Marx’s theory, C. Wright Mills made the point that naturalistic mystification conceptually excises – or at least minimises – the role of human causality in shaping central features of society: ‘Nature will then appear to be responsible for what are really the consequences of *people’s* decisions and actions’ (478). Mills goes further when he states that for defenders of the status quo, naturalistic mystification plays the same role that in feudal times would have been assigned to God. In this way, ‘historical variables are frozen into natural constants’ (482).

The operational content of mystification becomes evident in the case of milk, which appears as a most ‘natural’ and ‘normal’ part of human life and development. Mills points out that, ‘The difficult task facing historical materialists is to show – in defiance of appearance – that this world is largely a human creation, and that in the same way that it has been made by, so it can be unmade by, human labour’ (483). Here Mills reminds us that even the most intractable problem is open to change and reversal. Demystification is a crucial and necessary part of this process.

While there are many important contributions to the field of animal studies using Marxist concepts to elucidate and demystify the treatment of animals (Noske; Nibert; Torres), this is not to say that Marxist theory provides the only possible tool of analysis, or that it is without its own problems and contradictions. We need to acknowledge that the entire corpus of Marxist theory is based on a continuum of thought from Aquinas to Descartes to post-Enlightenment humanism which encompasses the ontological division of the world into human and non-human and an essentialist dualism between ‘nature’ and ‘culture’. Wadiwel points out that Marx takes the primary exploitation of animals as given. This is expressed in the way he treats the non-human animal as a resource for consumption and conversion in the labour process. The exploitation, violence and death of other species are ignored, denied and forgotten within the Marxist theory of exploitation of human labour (Wadiwel 160).

Another aspect missing from a Marxist approach concerns our understanding of the relationship between consumers of dairy products and their acceptance (indeed embracing) of the distorted reality presented to them by the dairy industry. This relationship is not and has never been straightforward. Torres points out that it can take time to become aware of an

injustice, especially if we are raised to see that injustice as normal or even desirable (19). It can become even more difficult if we enjoy the benefits of the oppression, or it is so deeply woven into our daily lives that it is practically invisible (19). Most of us grew up pouring milk onto our breakfast cereal and drinking the free bottle of milk at school, all the while being told how good it was for us (fig. 3). This is because consumers regularly purchase dairy products and are encouraged to believe they are consuming a ‘non-harm’ product, despite the fact that by doing so they are supporting an industry, which relies on the systematic exploitation and mistreatment of the animal making the product. It has been suggested that this conflict is partially resolved through a process of individual and social denial, a process whereby ‘an undesirable situation (event, condition, phenomenon) is unrecognised, ignored, or made to seem normal’ (Cohen 51). This additional element to mystification is beyond the scope of this paper, and has been explored elsewhere (Wicks 188).

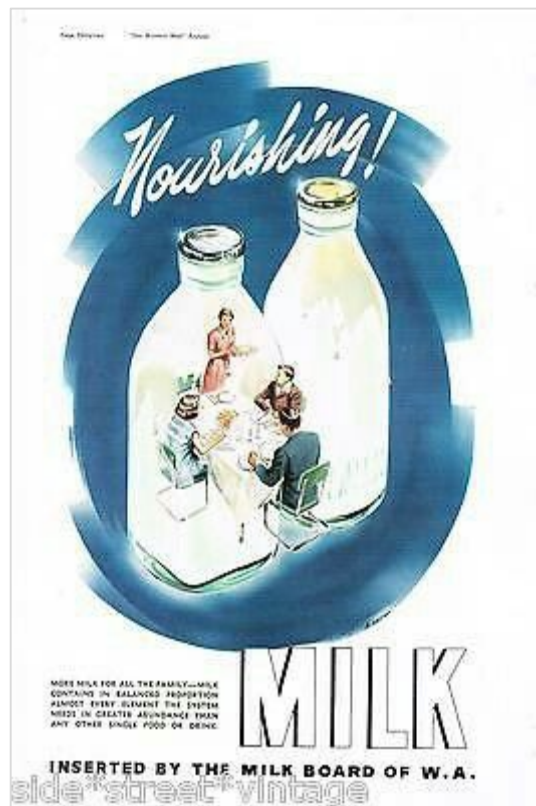


Fig. 3: 1950s Milk Ad. Milk Board of Western Australia. <https://pin.it/xrz364u7y5xvc4>.

Notwithstanding these criticisms, a Marxist approach of naturalistic mystification is analytically powerful in providing an entry point for demystifying the changes wrought by humans on the body of the dairy cow over time rather than through natural selection. In addition, it provides a theory and methodology for uncovering the economic interests and influence of farmers, dairy industry bodies and associated biotech companies in the dairy industry.

Dairy is big business

The global dairy industry is huge and growing. The US industry alone is anticipated to reach a turnover amounting to more than USD 442 billion in 2019 (Reportbuyer.com). Worldwide, substantial quantities of milk, cheese and other dairy products are traded between countries. The US is the world's largest dairy exporter and in 2017 alone exported over USD 45 billion of dairy products (Statista). While for Australia, dairy is a relatively small player, we are still among the world's six major exporters (Dairy Australia, *Situation and Outlook 17*). Moreover, Australia exports nearly 40 per cent of its total dairy production. Infant formula exports to China have been particularly strong, earning AUD 334 million in 2016/17 (17). Meanwhile, there is a global trend to impoverishment of debt-laden small farms and their takeover by large, sometimes multinational companies. This is the trend that has also engulfed dairy processors in Australia, the most notable being the takeover of Murray Goulburn by the Canada-based dairy giant Saputo, which is now Australia's biggest processor. Saputo reported revenues of USD 11.5 billion for 2018, paying around 10 per cent tax on its earnings (Saputo).

At the same time, the Australian government provides large annual subsidies to the industry. A prominent example is Dairy Australia, which since 2003/04 has received AUD 277 million in public subsidies, with an additional AUD 57 million allocated to 2020/21 (Australian Government). Dairy Australia is an industry-owned research and development organisation charging a levy to members, which is then matched dollar for dollar by the government. These levies then become a further cost to the government, as members are entitled to claim tax exemption. Nor does this exhaust public funding support for the dairy industry as there is an array of additional programs, such as the Dairy Support Package, as well as various State level

bodies and schemes. Dairy Australia's current strategic plan has a focus on increasing farm productivity, maintaining and developing value-added high-margin markets, channels and products, and, significantly, promoting the 'unique benefits' of Australian dairy (PwC).

Here we begin to see the connections – economic, political and social – between the cow, the farmer, the government and ourselves as taxpayers and consumers of dairy products. These connections are not immediately visible to consumers reaching for milk in the supermarket, but the approach employed here renders transparent the relationship between these economic interests and dominant representations of the world, especially through marketing and advertising, an aspect well documented by Marion Nestle. In 2018/19 Dairy Australia's Industry and Community marketing spend will be AUD 3.47 million. The wealth and influence of the dairy industry is also apparent at the political level where the power of agricultural lobby groups has resulted in massive financial support for farmers and industry bodies such as Dairy Australia. It also works through the role of the National Party, formerly known as the Country Party, which uses its political leverage to protect grants, subsidies and other financial benefits.

These institutions constitute Burawoy's 'specific set of social relations' that produce mystification and include powerful institutions in Australia in addition to Dairy Australia, such as the Australian Dairy Industry Council, Australian Dairy Farmers, Australian Dairy Products Federation and the Australian government itself. The latter also facilitates trade and export arrangements, such as the Trans-Pacific Partnership,⁴ and provides preferential support for dairy processors, retail outlets, policy-makers, advertising agencies, biotechnology companies, schools and farmers.

And what of the dairy cow, her original body and the way that her body and conditions of life have changed historically through human intervention? It needs to be clarified at the outset that there is almost nothing in the shape, size, nature, behaviour, fertility and ability to produce milk in the modern dairy cow that has not been altered by humans for their own interests and convenience. In order to appreciate the scope and the depth of these changes, I will briefly discuss the ancient cow, the 'Aurochs', from whom all modern cows derive.

Construction of the modern dairy cow

The first evidence of human contact with Aurochs (*Bos primigenius*, the original wild ox, fig. 4) can be seen in European cave paintings (Leroi-Gouran 8). In the Lascaux caves in south-west France (decorated in about 17,000 BC), Aurochs are the most frequently depicted animal. The Aurochs was a large, squarely built animal with large, heavy horns, which grew up to two metres long (fig. 5). The body was dark in colour, solid and sturdy as well as being fierce fighters and 'swift footed' (Velten 16). They continued to survive in Europe, Asia and the Middle East and we have evidence from a DNA study which suggests that all domesticated cattle originated from about 80 wild Aurochs who lived in Iran 10,500 years ago (Bollongino et al.). The last recorded live Aurochs, a female, died in 1627 in the Jaktorow Forest in Poland. The causes of extinction were widespread, unrestricted hunting, loss of habitat, and diseases transmitted by domestic cattle (van Vuure). The Aurochs gained the dubious honour of being the first documented case of extinction (the second being the dodo).



Fig. 4: Aurochs model based on the Sassenberg specimen. Danial Foidl.
<http://breedingback.blogspot.com/2014/05/>



*Fig. 5: Modern Aurochs. TaurOs Programme.
<https://www.alamy.com/stock-photo/aurochsen.html>*



*Fig 6. Ideal Holstein Cow by Bonnie Mohr. Progressive Dairyman. 'New "Ideal Holstein Cow and Bull"
Models to be Unveiled at National Holstein Convention.' 23 June 2016.
<https://www.progressivedairy.com/images/stories/2016/06/22/062216-2012-ideal-holstein-cow.jpg>*

By comparison with the Aurochs, the first thing to note about the modern dairy cow is her black and white colour, characteristic of the Holstein or Friesian-Holstein breed. This is a relatively recent development. In Australia in the 1950s the most common dairy cow was the Jersey, which produced high fat, rich milk but could not compete in volume with the Friesian. Breeds like the Jersey, Guernsey and Ayrshire soon lost favour and herds were replaced with the high volume Friesians and more recently the Holsteins. Next you notice the very large udder and compare it with the much smaller organ of the wild cow or the cow raised for beef. And finally we notice the body shape and type. There is very little muscle, often with bones showing, and the cow can appear to be undernourished. Most of these characteristics are visible in the illustration above, an ‘idealised’ picture of the Holstein cow (fig. 6). The cow can appear unwieldy, bony, and walk awkwardly because of the huge udder hanging low between her back legs (fig.7).



Fig. 7: Modern Dairy Cow. Alan Harman, 'New Zealand Clamps Down on Dairy Cow Ownership', Farmers Weekly, 10 May 2018. <https://www.farmersweekly.co.za/agri-news/world/new-zealand-clamps-dairy-cow-ownership/>

These changes have not occurred through natural selection, as the modern dairy cow is not a ‘natural’ animal. Changes have occurred through intentional human intervention in order

to breed cows designed for human purposes – higher milk yields, lower food consumption, and higher profits. The process of fine-tuning the design of the dairy cow is now a precise science-based field, which has resulted in successful reproductive technologies, many of which have become available to humans. Of course, the difference is in the fact that humans make a choice about the use of these technologies, many of which are highly invasive.

The past eighty years have seen rapid developments in reproductive technologies and their application to dairy cows and bulls. Beginning with classical genetics and selective breeding, technologies to accelerate the process now include artificial insemination, semen cryo-preservation, oestrus synchronisation, embryo transfer, ultrasonography, embryo freezing and sexing, in vitro fertilisation, cloning and semen sexing. In addition, farmers now have access to genomics, which has brought an unprecedented level of control over the design of the body of the cow, and the not too distant promise of gene editing and epigenetics (Blondin).

Human intervention through selective breeding

Selective breeding, that is, choosing a particular breeding cow and bull to optimise desired characteristics, is a longstanding albeit slow way of changing the physical and temperament characteristics of a herd or breed over time. In relation to dairy cows, selective breeding, and more recently genetic manipulation, have resulted in the selection and production of cows who produce enormous amounts of milk. In Australia, the average milk yield per cow has doubled over the past three decades (Dairy Australia, *Farm Facts*).

The modern dairy cow can produce between 35-50 (and up to 70) litres of milk a day – about ten times more milk than her calf would need (Animals Australia). In Australia, about a third of the productivity improvements achieved in the last decade have come from refinements in genetics, and most of this from using ‘superior’ bulls (Dairy Australia, *Genetics*). While selective breeding can concentrate and exaggerate desirable qualities in an animal, herd or breed, continuous inbreeding of particular genes runs the risk of losing some of the other genes from the gene pool altogether, which is irreversible.

Selective breeding was further advanced by the development of artificial insemination (AI), which was introduced in Australia in the 1950s, initially in Victoria. Once it arrived, the growth of this technology was rapid. In 1956, 8,000 cows had been artificially inseminated, but by 1961 that number had increased ninefold (Genetics Australia). Now in Australia, as elsewhere, most dairy cows are impregnated through AI. This means that cows and bulls never meet. What was once emblematic of natural life, natural selection and reproduction is now a human engineered social and scientific process. It has been rendered invisible, however, through the lack of information and public discussion and debate regarding the actual process of milk manufacture and the daily life of the dairy cow. In short, the reproductive life of the cow has been mystified. Instead of the mating of a bull and a cow, an operator most commonly using the recto-vaginal method, now impregnates the cow. With this method, a gloved hand in the rectum holds the cervix in place and guides the insemination gun through the cervix (Moore and Haslert 103-106). The bull's semen is collected by enticing him onto a hide-covered frame, which he must mount several times a day (Velten 159).

Recent refinements

The science of selective breeding through the use of AI has accelerated further with the development and application of genomics to dairy cows. At the centre of genomics is new technology that enables scientists to predict the breeding potential of a calf, and an understanding of DNA patterns built from 30 years of Australian herd recording and type classification. Australian dairy farmers are being encouraged to use genomic-tested bulls for their AI, with the expectation of more predictable breeding outcomes.

An example is DataGene, (formerly the Australian Dairy Herd Improvement Scheme or ADHIS), a joint industry and Dairy Australia initiative, which provides data to assist farmers in choosing the best bull semen for their herd (DataGene). Some of the tools available for this purpose include the 'Good Bulls Guide' and the 'Good Bulls app' (DataGene). In the 'Good Bulls app', genetic information for tens of thousands of bulls is available in the database. This allows farmers to choose a bull on the basis of the desired Australian Breeding Values (ABV's) in different combinations. These are clustered into Three Breeding Indices and include traits such

as economic/profit, fertility/mastitis resistance, food saved and body type. There is even an ABV to help breed female cows with the ideal rear teat placement. This is so the milking machine cluster can be more easily positioned on the cow's udder (DataGene). Once a farmer has chosen the desired index, the app automatically sorts the bulls based on the desired index of characteristics. The farmer then sends away for the semen, which most closely matches the desired qualities.

More recently, embryo transfer has been used to enable the multiplication of progeny from 'elite', high performing cows. These cows are given hormones to enable them to produce multiple embryos. These are then 'flushed' from the cow's uterus and 7-12 embryos are consequently removed from the donor cows and transferred into other (inferior) cows that serve as surrogate mothers. This is performed either through surgical or nonsurgical (trans-vaginal) collection procedures, most commonly the latter (fig.8). The 'donor' is constrained in a crush, usually with head-bail restraint and 'usually' with an epidural anaesthetic. This not given for pain relief as a non-surgical technique is seen to be 'non-painful', but is given for 'ease of manipulation of the tract' (NSW Department of Primary Industries).



Fig. 8: Embryo Transfer. Paragon Veterinary Group.

https://www.paragonvet.com/breeding-cattle_breeding#Embryo%20Transfer

A further refinement, a type of cloning, is known as embryo splitting. Here, embryos are split in two and then transferred into recipient cows. Subsequent pregnancy rates are between 100 and 120% of the original number of embryos split (Global Reproduction Solutions). IVF is another variation where embryos are created in a Petri dish after the unfertilised eggs have been flushed from a hormone treated cow. After developing in an incubator for 24 hours, the eggs are then transferred into the selected surrogate mother cows, using the embryo transfer techniques outlined above (Moore and Hasler).

Future technologies

Given that the entire bovine genome has been sequenced, it is now possible to go beyond genomics by gene editing. This is a procedure that allows insertion, deletion or replacement of DNA at specific sites in a genome using tools that have been described as ‘molecular scissors’. The progeny that now expresses the desired characteristic will pass it on to the next generations, as it is now a carrier for this trait (Blondin). While not all dairy farms are involved with the more interventionist techniques, the majority use AI. The other techniques are becoming more common, especially among the larger, more intensive, more profitable dairies. This is one of many factors now making the small, family-run farm non-viable.

In this brief outline of some of the techniques used by humans to artificially engineer the body of the dairy cow, it is possible to see the extent of human intervention in the development and design of the body and temperament of the modern dairy cow. Little has been left to nature, but at the same time milk is presented as a ‘natural’ product. These techniques remain hidden from view, are not mentioned in educational or marketing material and are far removed from the common knowledge of consumers. They are saturated in images and words, which emphasise ‘natural’, healthy, Australian made and a contented animal who gives her milk to us willingly. It is a clear example of ‘naturalistic mystification’ in action (fig. 9 and 10).



Fig. 9: Australia's Own Milk.

<http://australiasownfoods.com.au/products/australias-own-full-cream-dairy-milk/>



Fig. 10: 'Voted Australia's Favourite Milk'.

Norco Cooperative Ltd. <https://norco.com.au/>

Health and welfare consequences

Meanwhile for the dairy cow, the concentration on high volume milk yield has contributed to a loss of fitness and an increased predisposition to numerous, serious health problems which often result in an early death. All of these cause great distress and suffering to cows on a regular, routine basis (Webster 134). The modern dairy cow is not commonly a robust looking muscular animal. In fact, it is likely that the dairy cow will look undernourished, thin and will be carrying very little muscle. This is the cost of the large udder and the requirement to produce large volumes of milk on a regular basis. So much calorific energy is demanded for this that there is often no excess for fat or muscle for the cow herself (fig. 11).



Fig. 11: Modern Dairy Cow. Mika Belle, 'Big Shots Discuss Raw Milk Behind Closed Doors', Boise Weekly, 10 March 2010. <https://www.boiseweekly.com/CityDesk/archives/2010/03/10/big-shots-discuss-raw-milk-behind-closed-doors>

It has even been suggested that cows are under ‘time constraints’ in relation to fitting in their daily activities; in other words, there are simply not enough hours in the day for a cow to be able to eat what she needs to nourish herself while producing more than 35 litres of milk a day (European Food Safety Authority 48). Indeed, the energy expended by the high producing dairy cow has been compared to that of a man who jogs for six hours a day, every day (Webster 22). Expressed more conservatively, Clive Phillips has made a similar point when he states:

Nutritionally the grazing dairy cow may be far from contented, because the intake of grazed pasture is often insufficient for high-yielding cows. High-yielding cows have to spend up to one half of the day grazing, which may cause stress in itself. (76)

The metabolic strain caused by producing large volumes of milk, contributes to the development of a number of health and welfare problems, and an inevitable early death for the cow. The potential, natural lifespan of a cow at good pasture is 20 years or more (Velten, 12). Most dairy cows, however, never reach this age. Most are slaughtered before their seventh or eighth year (Madgwick and Goddard 2624-2632). John Webster explains that: ‘The average lifespan in intensive dairy systems (about five years) is a fraction of the potential of 20-30 years, because of the metabolic strain’ (cited in Voiceless 12 fn). The main reasons for early slaughter are infertility, lameness, and mastitis, diseases that are linked to the stresses of high production and unnatural living conditions (Voiceless 12). In Australia alone, in the twelve months leading to August 2018, 72,834 dairy cows were ‘culled’ or slaughtered (Dairy Australia, *Situation and Outlook*).

Infertility (and early slaughter) has been linked to selective breeding and genomics (Williamson). Generations of cows have been bred to favour high volume milk production, but the more energy that goes into producing milk the less is available to devote to ovulation, implantation and embryo development (Williamson). It has also been discovered that some cows have a section of the bovine genome that simultaneously contributes to higher levels of milk production and lower levels of fertility (Kadri et al., cited in Williamson). Developing herds based on milk production has meant that, inadvertently, as milk output has gone up, fertility has gone down in certain cows, herds and breeds. This understanding doesn’t help the young cow who is loaded onto the truck, bound for the slaughterhouse for her inability to become

pregnant. As well as background susceptibility due to overwork, both the painful conditions of lameness and mastitis have specific causes related to hygiene and living and working conditions.

Mastitis

Mastitis is inflammation of the cow's mammary gland usually caused by bacteria entering the teat and moving to the udder. The two main types are contagious mastitis and environmental mastitis. Contagious mastitis is spread by splashes or sprays of infected milk during stripping, bacteria on milkers' hands or teatcup liners or by cross flow of milk between teatcups on the milking machine (Dairy Australia, *Mastitis*). Environmental mastitis is caused by soil, calving pads and udders exposed to mud and manure. At present, high producing cows have the capability of producing a maximum milk yield of 70kg of milk per day during peak lactation (European Food Safety Authority, 150). This selection for milk yield imposes stress on the udder of the cow. With an average daily milk yield of 28kg of milk, the suspensory ligaments of the udder have to support more than 70kg of tissue and stored milk. As animals age, the support capacity of the ligaments is reduced resulting in pendulous udders. A low hanging udder is another risk factor for mastitis (EFSA 150).

Despite widespread attempts at prevention and control, mastitis remains a major challenge to the dairy industry. It is difficult to calculate how common it is as there are no figures available regarding the incidence of mastitis in Australian herds, but Dairy Australia calculates that more than \$150 million is lost to Australian dairy farmers each year through poor udder health, of which mastitis is the major component (Dairy Australia, *Mastitis*). It is clear that it continues to be an ongoing problem, with various degrees of severity. Mastitis can vary from severe clinical mastitis where the cow is seriously ill to the point where her udder can become gangrenous, to subclinical mastitis where there are no observable signs though there are changes in milk composition. Research conducted by Fitzpatrick et al. strongly suggests that cows with mastitis have increased sensitivity to pain, even when the mastitis is mild to moderately severe (Fitzpatrick et al. 36-44).

Lameness

Lameness is another painful condition that is a significant issue within the Australian dairy industry and dairy industries worldwide. Lameness can be defined as a structural or functional condition that usually affects a cow's limbs and which inhibits her ability to walk, stand up, lie down or move around (EFSA 137). It is hard to know how common lameness is in Australia, as neither industry nor government routinely collect statistics. In 2008 lameness was estimated to affect 28% of Australian dairy cows (Fisher and Webster, 926). European studies, however, indicate that the problem is widely under reported and under recognised by farmers, especially in large herds (EFSA 136-137). There is extensive research, which shows that lameness-causing lesions of the foot are extremely painful (Webster 143-144). Because of this, the cow will lie down as much as possible, go off her food, lose weight and fertility, not socialise and will lose her status within the herd. Despite this, many cows will continue to produce milk as usual. Chronically lame cows are often expected to struggle on, in pain, until they are culled when they have completed their lactation cycle (Webster 144).

Factors which cause lameness include: poor maintenance and design of walking tracks, farm handlers moving cows too quickly, exposure to excessive moisture, exposure to infectious agents and genetic factors such as breeding for high volume milk at the expense of disease resistance (Voiceless 49). These factors will contribute to foot lesions, which are the main cause of lameness. While there are programs directed at farmers to help reduce lameness (Dairy Australia, *Healthy Hooves*), lameness remains an integral part of high production, modern Australian dairy.

Unwanted calves

Another serious welfare issue that is a consequence of modern dairying is the separation of the cow from her calf and the treatment of unwanted bobby calves. Cows, in common with all mammals, including humans, can only make milk after they have given birth. The milking period then lasts for around six months after which it will begin to decline. This means that to stay in milk, a dairy cow must give birth to a calf every 13 months. This results in a huge

number of calves being born each year in order to keep the herds milking at the desired rate. For the farmer and the industry, these calves, especially the males, are a necessary but largely unwanted by-product of milk production. Most dairy cows are forcibly removed from their mothers shortly after birth, causing distress to both mother and calf (Phillips 136). Behavioural responses indicating stress include restlessness, sniffing, increased vocalisations and activities that would naturally serve to reunite the cow and calf in the wild (Keyserlink and Weary 2).

For days after separation, a mother cow can bellow day and night in search of her calf, often returning to the place where her calf was last seen. There have been instances of mothers escaping and travelling for miles to find their calves on other farms (Joy 61). For the dairy cow, this is repeated over the period of her short lifespan. The dairy cow never gets to raise her calf. It is now common practice to separate the mother from her calf shortly after birth, milk the cow for her colostrum (necessary for the calves immune system) and feed it to the calf via a teat or tubing (an oesophageal tube pushed down into one of the calves forestomachs) (Dairy Australia, *Rearing Healthy Calves* 38-48). Most calves are separated from their mother within 12 hours of birth, many of them transported over long distances to slaughter. Around 25 per cent of farmers use 'blunt force' (hitting on the head) to kill baby calves on farm (Dairy Australia, *Dairy welfare - we care*).

Finally, another reason that calves are given the colostrum artificially is the fact that some calves are unable to suckle from their mother because the udder is now so large and low hanging, the calf cannot follow its instinct and 'find' the teat (Webster 146). In many high yielding dairy cows, the udder is better suited for a milking machine, rather than a calf. Another potential problem can arise, with a lack of maternal bonding in the cow and refusal to allow the calf to suck. Dairy cows are now not bred for strong maternal instinct as it is now longer needed, and one dairy farmer mused that perhaps they were seeing it becoming weaker (Meeting with Dairy Australia). In fact, viewed in the light of the need for early separation, any maternal instinct can be seen as an impediment to the smooth running of the modern dairy. Thus we see the modern dairy cow as a frail, short lived animal, unable to mother her own calves and far removed from the 'sturdy animal' who evolved, more or less intact, into the modern period.

As opposed to the reality outlined above, Dairy Australia excises the practice of cow/calf separation from their animated explanation for schoolchildren, *Discover Dairy*. In the section, 'Milk Cycle', the explanation of the milk cycle begins with a description of the 'gentle suction' of the milking machine and completely ignores and fails to mention the essential role of the conception, birth and separation of the cow from her calf in the production of milk (Dairy Australia). Similarly, in the related section, 'How Dairy Cows Make Milk', the explanation revolves around a description of the cow's digestion with no reference to the necessity of the birth of a calf. This removes the need to explain the subsequent separation, transportation and slaughter of the baby calves. It is a clear illustration of the way mystification works, in this case through omission and silence, in the presentation of an incomplete and idealised picture.

Demystification challenge

The process of mystification and subsequent high dairy consumption has aided the growth of large multinational corporations with annual turnovers in the tens of billions and allowed large populations to enjoy the consumption of dairy products, whilst believing that they are doing 'no harm'. Indeed, most consumers remain oblivious to the fact that their engagement in industrialised dairy production as consumers is far from harmless but rather a key contributor to serious and severe damage to cows and their offspring. While many consumers are rejecting industrialised dairy products, and finding alternatives from a growing supply of diverse plant based milks, their reasons for doing so are diverse and are a subject for further research (ABC).

There are also increasing signs that the persistent demystifying work of animal protection groups may be having an impact on the 'totalising' messages from the dairy industry. In its Annual Operating Plan for 2017/18, Dairy Australia states: 'The general public is slowly losing trust and confidence in the dairy industry' due to 'lack of transparency' and 'conflicting information' (Dairy Australia). It warns that the industry is at risk of losing its 'social licence', particularly in the areas of health and nutrition, animal welfare and to a lesser degree, sustainability and new technologies. Dairy Australia plans to counter this with a review of target consumer groups by life stage, with the aim of 'building trust' and to 'inspire confidence' in

'dairy people'. This process has already begun with increasing emphasis in marketing material on positive images of dairy farmers and their families (figs. 12-16).



*Fig. 12: Dairy farmer and child. Shan Goodwin, 'Value Add Key to Farm Growth',
The Australian Dairy Farmer, 6 February 2014.
<http://adf.farmonline.com.au/news/magazine/farm-business/general/value-add-key-to-farm-growth/2687066.aspx>*



Fig. 13. Dairy farmers. Dairy Australia 'Legendairy' Campaign.



Fig. 14. Dairy farmer. Dairy Australia 'Legendary' Campaign.

Dairy Australia also aims to increase the proportion of teachers who deliver 'positive dairy messages' to students through their Primary Schools Engagement Plan and to increase the proportion of 'dairy positive messages' heard by consumers from health professionals. There is no mention of marketing to counter unpleasant information regarding the deaths of bobby calves, nor the serious health and welfare issues outlined above, only silence and the presentation of a partial, selective and idealised story. It should also be noted that Dairy Australia's marketing and promotion budget is almost a quarter of its annual grant from the government, supposedly for research and development. The mystification of the dairy industry is an expensive and ongoing business and we are paying for it.

Conclusion

This paper has attempted to demystify the modern dairy cow by an examination of reproductive technologies developed and used in order to design an animal to produce a high volume of milk for human use and profit. It has been demonstrated that neither the modern cow nor her product are 'natural'. Rather they are the result of a long period of historical intervention in the form of selective breeding, which has accelerated over the last sixty years through the development of a range of reproductive technologies. At the same time, this intense and ongoing

human intervention has been hidden through a process of mystification, which has rendered the intervention and its detrimental effects on the cow virtually invisible. This has been achieved by the widespread dissemination of narratives and images, which are essentially partial and incomplete. I have shown this is a process facilitated by powerful institutions and connections, economic and social, between the cow, the farmer, artificial breeding companies, industry associations, the government and ourselves as taxpayers and as consumers of dairy products. Such connections are invisible for most people buying milk who simply see images of cows peacefully grazing in green fields looked after by trusted farmers.

In sum, the paper has identified and traced the process of mystification in the dairy industry to social practices that are human-centred, economically driven and historically contingent. The modern dairy cow is the result of centuries of human intervention, whereby a wild, healthy cow has been turned into a disease-prone milking machine whose welfare is subsumed into the quest for economic advantage. Slowly the imaginary world of ‘harmless’ dairy is being demystified. We humans have ‘made’ this animal, and it is in our power to look clearly at what we have made and ‘unmake’ the damage we have done. The work of demystification is a first and necessary step in that long process.

Notes

¹ ‘The Laughing Cow’ (‘La Vache qui Rit’) is the name of a globally sold French cheese that features a picture of a laughing cow on its packaging and advertising.

² Torres provides a useful explanation of this when he explains: “Instead of thinking of commodities as static, simplistic entities that we buy, we need to begin to think about them as containers for sets social relationships, and as caught in evolving and dynamic processes of domination and contestation” (29)

³ Forthcoming book on Australian Dairy, contracted to Sydney University Press.

⁴ This recently signed agreement (2018) gives Australian dairy farmers improved access to Japan, Australia’s biggest cheese market.

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