

# An ethological definition of animal welfare with special emphasis on pig behaviour

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## **1. Introduction.**

In 1973 I formulated a definition of animal welfare because at that time we needed to know what we were talking about. The definition was in Dutch (van Putten, 1973) and reads in translation:

"Animal well-being is understood as living in reasonable harmony with the environment, physically as well as psychologically, meaning that the environment must be of such quality that it is within the adaptability of the animal involved".

Had I known the definition of Lorz of the same year, I would have required that the harmony should not only exist between that animal and its environment but also within the animal itself (Lorz, 1973). Both authors mention animal health and a species-specific behaviour as the most important parameters.

At that time we recognised animals as sentient beings. My view was - and still happens to be - that we are responsible for the quality of the environment, which should allow the domesticated animal to adapt. I am well aware that nature does not offer ideal situations for animals, and I do know that nature also causes a lot of suffering. However, since we decided to take over from nature and started to domesticate animals for our own benefit, we also took over the responsibility for their welfare within an environment dictated by us.

Modern people are not always aware of the excessive changes in the phenotype of the animals involved and of the husbandry systems imposed on them. The dramatic changes in the outer appearance of farm animals in general and of swine in particular make me look upon modern pigs as "swine in disguise". This prompts me firstly to present to you the "pig itself", as we should recognise it. Secondly, I intend to react to some of the points laid down in the "Council Regulations of the European Union on organic farming" (EC, 1999), emphasising animal welfare, where these regulations apply to breeding, housing and husbandry of pigs. Thirdly, some important points on the welfare of pigs, missing in the EC Regulations, are dealt with.

## **2. Presentation of the "real pig".**

By nature, a pig is an agile sturdy animal with two activity periods and consequently with two resting periods per 24 hrs. Pigs are omnivorous and we should take this very literally. They feed on herbs, roots, mushrooms, carrion and live animals. They do enjoy hunting. Pigs operate in small groups of about ten mature females with their offspring and they do develop strong social bonds. They are quite lively animals, foraging in social groups for 7 hours or more per day. During foraging expeditions, they can trot up to 50 kilometres in one night. Their maximum speed is about 65 kmph. Once food is found, the whole group will start eating. Social hierarchy in the life of pigs does not dictate that all pigs have to wait until the strongest one of the group has finished.

Since pigs are well equipped for marshy areas (they are excellent swimmers) as well as for foraging in thick undergrowth, where visibility is restricted, they developed a considerable vocal information system for keeping close contact within the groups (Grauvogl, 1958). Their "language" contains about 40 different expressions for passing on information. For pigs exploratory behaviour is a very essential part of life, even in situations where we might consider it redundant.

Pigs have good vision and they also have good colour perception (van Putten G. and Elshof W.J., 1984). Their hearing is excellent and their sense of smell is fabulous. Their tactile facilities are mainly concentrated in the rooting disc, where Adrian (1943) counted as many tactile organs as humans have on the palms of both hands. Other special areas with a special tactile function are located along the upper lips and on the edges of the ears. These can be recognised by the long hairs in those areas, increasing sensitivity because they function as levers.

For dealing with excessive heat, pigs have developed several systems. Via the skin, they can lose heat by radiation, by evaporation of water from wallowing and by direct contact with cool surfaces, e.g. moist soil. Another, and, in principle, very effective cooling system, is located in the pharynx, where water from the blood stream is evaporated (Ingram and Legge, 1970, 1972).

Pigs are sound sleepers, packed tightly together like spoons in a canteen of cutlery. However, this seems of less importance during the rest in the early afternoon than during the one in the night. There are obvious reasons for this behaviour. It does keep all members of the group warm in cold days, and it offers more protection from predators than sleeping apart. Nevertheless pigs try to find a resting-place with protection from the rear and - even more important - with a good view of the area in front. I am elaborating on this because, for our pigs, these priorities have not really changed since they were domesticated.

Pigs will avoid urinating or defecating in the resting nest of their group. During the long rest in the night pigs will interrupt their sleep once or twice and leave the nest to urinate and to have a drink of water. After a few minutes, they will return to their resting nest. This is another reason why the resting area should allow all pigs to lie in one row,

allowing pigs to leave the nest and to come back in without having to climb over their penmates. For defecation, an area will be chosen at some distance from the resting area. If there is a boar pen in a group housing system of sows, defecating in front of the boar pen is favoured for some reason. Because sows squat during eliminative behaviour, they look for a non-slippery floor area that is well clear from passages. The reason is that whilst squatting they could easily slip if pushed. Slipping on a wet concrete floor is a painful experience.

A sow will avoid soiling her farrowing nest if possible. If she is not allowed to leave the nest, she may stop defecating for a number of days, which does her no good.

The farrowing nest of pregnant sows is painstakingly chosen after checking the safety of the wider environment (the farrowing house) and the direct environment (the farrowing pen) over and over again, taking five to eight hours. After this check, the farrowing nest is built and prepared at a site with a fairly high protection at the back, with lower protections on the sides (preventing intrusion from other sows or from predators) and with a relatively small opening in front, from which the farrowing sow can survey the environment, and which allows her to defend the nest if necessary. Pigs are the farm animals with the most elaborate nesting behaviour. They use nesting material (straw) in abundance, and sows work hard for about five hours to build their farrowing nests. Having gone through all preparations, the pre-parturient sow stretches in her nest on her side and undergoes the pains of labour during the opening contractions of the womb.

During their first week of life, piglets are either nursing or sleeping. In their second week, we can observe a lot of playing: running and stopping in mid run, jumping in the air and setting off in another direction (like hares do), pushing other piglets (e.g. nose to nose), or wrestling with other piglets. At the age of one week, the piglets are "house-trained" and urinate and defecate only at the edges of the farrowing nest. As soon as piglets get stuck in a situation, they scream loudly for their sow, who will come over and try to help.

### **3 Applying EC Regulation No 1804/99 to pigs.**

*"3.1...in the choice of breeds account must be taken of their capacity to adapt to local conditions."*

Our pink and nearly hairless pigs are prone to sunburn, because they are not aware of their nakedness. Thus in organic farming with pigs in the open air or even on pasture, we should use breeds with a coloured skin or with a fair amount of hair to protect their sensitive skin from sunburn, which can cause considerable pain and discomfort.

Unaware of the consequences, we did modern pigs an ill service. Our selection programmes resulted in pigs with considerably reduced means to get rid of surplus heat, making it difficult for them to maintain an optimal body temperature. It is well known that small balls have a larger surface area per cm<sup>3</sup> than large balls. The same is true for

small cylinders in comparison with large cylinders. In that same way, smaller pigs have more skin per kg body weight than our large, modern, roundish pigs. The content of a cylinder is  $\pi r^2 h$ . Increasing  $r$  (radius) from 10 cm to 15 cm increases the content with a factor of 4. However, the surface of that cylinder, being  $2\pi r h$ , is only increased with a factor of 1.5, causing a relative reduction of the surface area by a factor of 2.5! Thus in summer and in the southern part of Europe, pigs have a real problem getting rid of excess heat, even if we allow them to bathe or to wallow. As a matter of fact, this regulation requires the use of smaller breeds in organic farming.

In many countries and especially in the United Kingdom, pigs were selected for short snouts. This kind of selection is well known in domesticated animals (e.g. dogs and cats). Psychologists explain the rationale behind this by the pleasing effect of the look of a young animal with a short facial part of the head and a relatively steep forehead. No matter whether this is the real explanation, by selecting towards a breed with a short snout we consequently selected for pigs with a reduced pharynx, and thus with a reduced radiator for heat exchange by evaporating water on the surface of the pharynx (Dutch Society for the Protection of Animals, 1996). The research of Ingram and Legge (1970, 1972) taught us that the difference in temperature between the A carotis and the V jugularis can be as much as 3 °C. Since these are the efferent and the afferent blood vessels of the snout and throat area this research allows an insight into the cooling system of pigs. If the snout, containing the pharynx, is reduced by factor 2, the mucous membranes covering its inner surface are reduced by factor 4. Consequently, organic farming should turn to breeds with genuine, big snouts.

This simple EC regulation lets us realise that modern pink and roundish breeds of pigs have a problem getting rid of surplus heat increased by factor 5 in comparison with wild pigs. This reality should lead us on the way to using small coloured breeds with large snouts. As a matter of fact, we still have these breeds in Europe. They are used in the Estramadura, the border area between Spain and Portugal, and also in the border regions of Bulgaria and Serbia. However, these breeds do have a very slow growth and rather a low rate of food conversion. Thus improvement of these breeds would be necessary, without losing the positive characteristics they were chosen for.

*"§.4.11. Roughage, fresh or dried fodder, or silage must be added to the daily ration for pigs and poultry."*

Especially for pigs, a daily ration of (chopped) maize silage improves the condition of hair and skin. The linoleic acid in this roughage is thought to cause the effect of the shiny skin and hair. Maybe pigs only *look* better if they are fed additionally with chopped maize silage. However, a dull skin and coat are regarded as signals of impaired well being. So, why should we not try to feed sows their daily ration of maize silage? Apart from looking better, most pigs like this roughage, and it does not add more dust to the pig house.

*"§ 5.1. Disease prevention in organic livestock production shall be based on the following principles:*

*...(b) the application of animal husbandry practices appropriate to the requirements of each species, encouraging strong resistance to disease and the prevention of infections;"*

In cold (and windy) winters, farmers must pay attention to the ears of sows. The large ears of many modern breeds of our domestic sows have poor blood supply. In cold weather, frostbite or even the freezing of large areas of the ears can cause long-lasting wounds and considerable pain, because the ears are very sensitive.

In the cold period of the year, pigs need plenty of straw for making warm and comfortable bedding. By huddling together in a warm sleeping nest, the ambient temperature in the house can be low and still allow for plenty of ventilation. Of course, drinkers must be protected from freezing, but for that purpose very simple heating wire does the trick.

It is important for pregnant sows to have a partially concrete area for abrading their hooves. On deep litter and on pasture, hooves need regular trimming. However, cutting hooves back to normal is not an easy job in pigs, because they do not allow one leg to be lifted as cattle and goats do. Especially, the hooves of (teaser) boars are in danger of being neglected. These boars are often kept in limited space without a real opportunity to walk. For cutting their hoofs a general anaesthetic cannot always be avoided, meaning a veterinarian is needed for this procedure.

Also, in more general terms, (teaser) boars suffer from problems with their hind legs. This is the main reason for culling. However, some farmers have solved the problem – mainly caused by lack of locomotion - by letting the boars run with the (group housed) pregnant sows. Generally, boars fit quite well into the social constellation of these sows, merely because of their size.

On many farms, piglets suffer from arthritis in their knees and hocks. Generally, these infections are treated with antibiotics. However, the piglets are infected via wounds. If tails are not docked, teeth are not clipped and castration is not carried out at a very young age, the typical entry ports of these infections are the abraded knees of very young piglets with skin that is still very tender. Because struggling for the udder (or for a teat) causes these wounds, farmers must pay attention to providing a sufficiently thick and soft layer of (barley) straw in the nursing area.

*§ 6.1.2 "...tail-docking must not be carried out systematically in organic farming..."*

In ethological terminology, tail biting is matter of redirected exploratory behaviour. If, for any reason, circumstances are less favourable for the animals, an inborn mechanism induces them to explore the environment in order to discover better circumstances. However, if pigs are kept in a 'pig-proof' environment, mainly consisting of steel and concrete, no possibilities are offered for exploratory behaviour. If pigs suffer from a cold environment or from parasites or from anything else that makes them feel really uncomfortable, the urge for exploration may become so strong that they no longer look upon their penmates as fellow pigs but merely as a substrate for exploration. Tail biting is an expression of this urge. By allowing tail docking (a normal procedure all over the world), only the indicator of decreased well being is removed and not the reason for this feeling.

Tail biting can get worse and may thus lead to cannibalism. Both tail biting and cannibalism are often mistaken for aggression. However, this interpretation is wrong, since tail biting is an expression of a (redirected) exploratory behaviour and cannibalism has to be regarded as hunting behaviour. Dog owners are aware of the difference between aggression and hunting.

My feelings on this paragraph of the Regulation are that tail-docking as a preventive measure must be forbidden, and that the reasons for tail biting should be removed as quickly as possible.

*§6.1.3 "Physical castration is allowed...but only if carried out at the most appropriate age by qualified personnel and any suffering to the animals must be reduced to a minimum".*

In discussions about the castration of male pigs, generally only the sharp pains of cutting through the spermatic cords are considered. Thus the use of local anaesthetics is sometimes advocated. However, there is little consideration of the painful after-effects, lasting nearly a week (van Putten, 1987). In practice, no local anaesthetic or other painkiller can be used. Therefore, we must accept the truth: as long as the market demands male pigs to be castrated, this will be a painful enterprise. Farmers hate castrating: castrates suffer from pain for a whole week and the carcasses of castrated males tend to be too fat, because castrates do not stop eating as females or entire males do.

However, if slaughter weights are less than 100kg live weight, only a small percentage of entire males have the abhorrent boar taint. The problem is that slaughterhouses have no reliable method of detecting these carcasses, since boar taint really expresses itself after the meat has been heated. Now, there is one solution nobody has tried so far because of expected problems with meat hygiene. If we would be prepared to train dogs or sows to select the carcasses with boar taint right after slaughter, and if these animals would be permitted to do their job in the slaughterhouse, perhaps one hour after slaughter, our problem would be solved. To my knowledge nobody has tried this solution yet, or carried

out experiments in this direction. Instead, we have quarrelled over the unreliability of automatic detectors in the slaughter line and the inadequate effectiveness of painkillers.

Whereas EEC (1991) Regulation No 2092/91(4) requires that "*Housing for all species should satisfy the needs of the animals concerned, as regards light, space and sufficient area for developing the animal's natural social behaviour*", the EC (1999) Regulation No 1804/99 § 8.1.1 only states: "*Housing conditions for livestock must meet livestock's biological and ethological needs (e.g. behavioural needs as regards appropriate freedom of movement and comfort)*". § 8.3.8 adds: "*However sows must be kept in groups, except in the last stages of pregnancy and during the suckling period.*"

This less specific Annex to the '99 Regulations makes me feel uneasy. Natural social behaviour is no longer specifically mentioned, neither is the development of social behaviour.

In my opinion, this is an omission. Instead of the reference to social behaviour, the '99 Regulations refer to the "Five Freedoms of Movement" identified by the Brambell Committee in 1965. This is a statement throwing us back more than 40 years in the history of pleas for farm animal welfare! Although I know that group housing of sows has been specified in § 8.3.8 of the '99 Regulations, this peculiar change of priorities makes me suspicious of the underlying motives of the legislative body. Even more so, because the expression "ethological needs" makes no sense. Ethology is the branch of science occupied largely with the mechanisms and the physiology of behaviour. This branch of science has no particular needs that these EC regulations should take into consideration. I do hope that the "behavioural needs" in the brackets are not restricted to the "Five Freedoms" mentioned, but also embody the views from the '91 regulation regarding social behaviour and its development.

The only thing I can do is to call upon you to safeguard the development and maintenance of species-specific social behaviour in the EC Regulations, because this is the key to farm animal welfare in general and to the welfare of pigs in particular.

Group housing systems for pigs are supposed to allow for social behaviour in a species-specific way. To social animals, this means no less than avoiding unnecessary social stress. According to Zayan & Dantzer (1990), this requires a clear social hierarchy and also a state of social stability. Thus social support (Eppley, 1974) is created by social familiarity (Zayan, 1990) and by adequate physical contact (Brain, 1990). By allowing social behaviour in a group of mammals to be structured in a way that fits their natural ethogram, coping with the environment is facilitated by increasing predictability and controllability in contacts with group members (Overmier et al, 1980).

Van Putten (1992) succeeded in demonstrating that the principles listed above can also be applied to sows. For this purpose, 3 groups of 10 naive sows (sows from individual housing systems) with parities 1–12 were trained during three different periods of time.

The training consisted of learning to operate the E.S.F. (electronic sow feeder), and was repeated 8 times. Thus 9 groups were trained and were kept separated in the service house for 10 days, 9 more groups had that same training and were kept separated for 17 days, and another 9 groups of 10 sows each were separated for 31 days after training. The sows needed, on average, 3.4 days of training. After being trained in the service house the sows were moved as a group to a gestation house with a similar E.S.F. In the gestation house, three other groups were already present. This was regarded as a stressful situation for the newly introduced group. As a result, all sows had forgotten their training. However, retraining groups that had been in the service house for 10 days took 2.3 days on average, whereas it only took 1.5 days to retrain sows from groups that had been separated for 17 or for 31 days. Our conclusion was that, for a group of sows, fighting to establish a social hierarchy is important. However, this only took 24 hrs in our experiments. Obviously, the newly formed groups needed more than 10 days but less than 17 days to obtain social stability. Only a group with sufficient social stability was able to give social support to its members in such a way that moving to the gestation house was less stressful and training results could be retrieved more easily. These results emphasise the importance of social stability within groups.

As regards the development of social skills (including skilled agnostic behaviour such as threatening and adequate reactions to threatening), it should be noticed that, although frequent mixing of rearing animals results in the same amount of agnostic behaviour, the number of fights can be significantly reduced by regrouping rearing gilts at least three times (van Puttee and Burr, 1997). Practical farmers should be aware of this option and consider introducing this method of husbandry on their own farm.

§ 8.2.2.requires "*...providing them with sufficient space to lie down easily, turn round..., assume all natural postures and make all natural movements...*"

Obviously, legislators are not aware of the needs of farrowing sows. At least, they are not mentioned specifically. After one or two piglets have been born, a sow generally stands up, turns around, inspects her piglets and rearranges the farrowing nest. Subsequently, she will go on her knees in front of the small end of the oval farrowing nest and will slide herself into the nest, meanwhile shoving aside the newborn piglets in order to avoid crushing them. (Van Putten, 1986).

The space to allow a sow to turn around in a farrowing nest requires nearly the length of the sow, almost two metres. To allow a sow to slide into her farrowing nest again, a lot of space is required - at least 1.75 metres ( $\frac{3}{4}$  of a sow's body length). If we take Regulation § 8.2.2 seriously, we are talking about farrowing pens of nearly 2m x 4m, with an additional dunging area.

§ 8.2.2 also requires "*...sufficient space for the animals to groom themselves to ensure the animal's welfare.*"

This is indeed a very important part of an animal's life and of its well being. However, this is not only a matter of space. Having said so, we must again realise that pigs are an exception among domesticated animals, because unlike cattle, goats, fowl, etc. they are unable to reach their entire body for licking and grooming. Normally social grooming, as among the equids, is no issue for pigs. In order to clean their hair and skin and also to get rid of external parasites, pigs take a mud bath, called wallowing. If presented with a pool of fresh clean water and a heap of earth, pigs will work hard to shove the earth into the water, creating a real sticky and muddy substance. Then they go into the pool, lie down on their bellies, and roll over from one side to another. This behaviour is generally set in a social context and has an obviously relaxing effect on the animals involved. After some time – depending on the ambient temperature - the pigs get out of the pool and let the mud dry. Once the mud is dry pigs will rub it off against bushes, trees or rocks. Although this is nice to know, such behaviour causes problems for modern farming practices. It is very difficult to disinfect a mud bath. If not disinfected, it can help spread worm infections, because pigs tend to eat and drink from the muddy water. Therefore we must look for a compromise.

On hot days, we could offer showers to the pigs we are looking after. After warning the pigs with a special sound (buzzer, bell or horn), all pigs wanting to participate will arrive at the showering area. We also should install rubbing brushes, solidly attached to a wall or post, positioned in such a way that the sows or fattening pigs can rub both their sides and their backs. They will really enjoy that, with the consequence that these rubbing brushes have to be replaced three times per year! After all, why do we consider rubbing brushes normal equipment in a cow house and never consider them at all in a sow house?

§ 8.3.6. "*The housing must be provided with a comfortable, clean and dry laying/rest area...Ample dry bedding strewn with litter material must be provided in the rest area. The litter must comprise straw or other suitable natural material.*"

In the case of pigs, we should be aware of the fact that pigs will be rooting in this litter and will eat part of it. Thus the expression "*suitable*" must be narrowed down for pigs. Sawdust or dust of peat cannot be regarded as a suitable material, since this dust is very irritating for pigs if inhaled while sleeping. Sawdust can be very itchy for the skin of pigs. Thus it should be clear that only a very few materials could replace straw in an equivalent way. In my opinion, the word "*equivalent*" should be used instead of "*suitable*", since the latter word might have a different meaning for farmers than for the pigs involved.

#### **4. Some remaining problems.**

### *Farrowing*

If a sow is restricted to her farrowing pen for some weeks around farrowing, she should have a separate dunging area. Awaiting farrowing, plenty of straw should be provided, in order to allow for nest building activity. Only a well-prepared sow can be expected to have a short farrowing. A short farrowing decreases the possibility of the sow picking up infections of the udder and of the uterus. It also helps the piglets to pass quickly through the very long horns of the uterus, as long farrowing often causes "blue piglets" as a result of lack of oxygen during the passage.

If a sow cannot leave the farrowing nest during and after farrowing, she frequently retains urine and faeces, since soiling her farrowing nest is against her nature.

For piglet protection, the ambient temperature in the farrowing house is often kept very high (between 25 and 30 °C). This is detrimental to the welfare of the sow, because she has no means to get rid of surplus heat. For the piglets, this is not a big advantage either. Normally, the temperature drop stimulates the onset of breathing in neonate piglets. However, if the ambient temperature is too high, other stimuli have to do the job. If the oxygen level in the piglets' blood has been low for some time while passing through the long birth passage, other triggers for starting the breathing have lost part of their power.

### *First week of life*

The first week of life is very important for the piglets and also for the sow. In a group-farrowing house, no sow will enter the individual farrowing nest of another sow, although they show great interest in newborn piglets from other litters. However, after this first week, sows no longer claim their own farrowing nest. Thus other sows may use it for defecating or just for exploration. There is also a remarkable change in the piglets' behaviour. They try to leave the farrowing nest and go through considerable exertion in overcoming thresholds and other hindrances. Their sow encourages this behaviour. Obviously, nature is making a caesura here.

Our problem is that we cannot let eight or ten sows and their piglets leave the farrowing nests, because cross suckling between simultaneous nursing sows causes a considerable number of runts. Maybe we should transfer sows and litters to single pens one week after farrowing and let them join again after some time. This part requires more applied research.

### *Weaning to 10 weeks (30 kg)*

The section of their life from weaning to 30 kg is generally a very traumatic one for piglets. Not only are their sows taken away (and thus their protection and source of food),

but they are also taken out of the pen they have been living in for their whole lives. In the new pen, six to eight litters are grouped together. To a pig, this means they have to fight for a position in the social hierarchy. Now they are on solid food only, distributed by an automatic device. This means that not all pigs can eat at the same time. This situation is not suitable in good pig husbandry. For a pig, eating is simple: if there is food, all pigs eat. Queuing up for food increases aggression. This, typically, is a situation where increased exploratory behaviour can be observed. If there is nothing interesting available for exploring, such as, for instance, plenty of daily, fresh straw, tail biting can be expected. If nothing changes, cannibalism will soon follow.

In practical farming, this category of pigs generally gets little attention. However, farmers should realise that these are not only piglets that will be sold anyway. This is the area where pigs are prepared for later life, even if they are going to be fattening pigs. Not only tail biting begins here, but also lameness and other disorders. If farmers succeed in making pigs comfortable in this period, without having the tails docked as a preventive measure, the whole pig farm is generally all right.

### *Fattening pigs*

Fattening pigs, from 30 to 120 kg live weight, are generally kept in poor environments. They should have a solid lying area. The dunging area often has a slatted floor. Because automatic feeding is installed, with only one or two feeding places, simultaneous feeding is impossible. This also implies that the farmer does not have to feed the pigs twice per day. Thus the dullness is uninterrupted during the whole long day. Not even the lights are switched on, because the caretaker does not need them. Very often, ventilation is poor because farmers want the pigs to be warm. Thus the ventilators are normally controlled by a thermostat.

Fattening pigs do not have brushes for grooming. Because of the high level of dust in the fattening houses and also because of the high concentration of ammonia, fattening pigs are frequently coughing.

The 'best' pigs in a fattening pen suffer especially from leg weakness. There are two reasons for this painful problem: growing too fast for the still-weak juvenile bones and lack of exercise. We often forget that fattening pigs – although big - are still juveniles. They ought to be playing and running around. As a result, many pigs are hardly able to walk at the age of 6 months, when they have to be transported to the slaughterhouse. Since they never left the fattening pen, they have no experience of walking along the corridors. Often fattening pens do not even have an exit door. In that situation, the panicking slaughter pigs have to be dragged out of their pens.

If there is no substrate available for exploratory behaviour, tail biting and cannibalism are normal for this category of pigs. Therefore, all over the world, tail docking is part of the

system of all pig breeders. This reduces tail biting towards an acceptable level. The tail stumps are so sensitive that pigs do not let other pigs chew on them.

### *Rearing gilts*

Rearing gilts, from 30 to 100 kg live weight, suffer from, more or less, the same problems as fattening pigs. However, since they are on a lower energy diet, the leg weakness that afflicts fatteners is uncommon in rearing gilts. Also, the stocking density is lower. Nevertheless, brushes for grooming, space for playing and other commodities are unknown to them.

### *Oestrus*

Farmers' attitudes to gilts or sows coming into heat are most peculiar. Oestrus in pigs is not a matter of yes or no. The oestrus has its onset in the so-called pre-oestrus, starting one or two days before the real oestrus. In gilts, this period may even last longer. During pre-oestrus, sows (and gilts) are more alert than their penmates. While other sows have their usual nap in the afternoon, sows in pre-oestrus can be found standing, listening and exploring. They are trying to look out of the pen, just as if they were on lookout. However, if a boar is introduced they do not yet accept being mounted. Instead, they are very much occupied with other sows. They push other sows in the flanks, in a boar-like way. They try to mount other sows and allow other sows to mount them. In general, they are very active, breaking rules of social hierarchy without caring. Feed is not very interesting any more to sows in pre-oestrus. All these actions of sows in pre-oestrus stimulate synchronisation of the onset of oestrus in other sows in the same pen.

In real oestrus, sows show the so-called standing response. In the presence of a boar, with his heavy odour, with his "Chant de coeur", with his foaming, smacking jaws and with his pushing in the flanks and his attempts to mount, sows in heat lay their ears back to their necks and stand motionless for ten minutes or more (the duration of copulation and ejaculation). In the peak of their heat, the sows tend to react with the standing-response towards other sows and even towards humans. This real oestrus lasts for 12-36 hours.

Even in group-housing systems, farmers tend to lock sows in crates during (pre)-oestrus. They worry about sows hurting themselves or each other. This may well be the case, especially if sows in that period are kept on slatted floors. Therefore it is a mistake to keep sows on slatted floors in the week after the piglets have been weaned, because oestrus can be expected after 5 days after weaning.

Keeping sows in individual crates during pre-oestrus and oestrus is a violation of the stipulation for "assuming all natural postures" in the Brambell report, cited in § 8.2.2 of the EC Regulation of '99.

### *Gestation house*

If only stable groups of sows are introduced into the gestation house, these groups will remain intact for about one month, offering protection to all members of that group (van Putten, G. and van de Burgwal, J.A., 1993). After that month, sows may change and join another group. The reason for joining another group is not the exclusion of weaker (younger) sows or preference for a group near the Electronic Sow Feeder, but only a preference for those locations that offer the best possibility of surveying the gestation house.

Many types of group housing systems for gestating sows are used. Since legislators only suggest group housing of sows, without mentioning the type of group housing system they would prefer, and because some group housing systems are definitely worse than individual housing systems, a workshop was organised to look into this problem. In 1998, an international group of experts came to the conclusion (van Putten, 1999) that group housing systems for very large groups (>100 sows) and for very small groups (< 10 sows) are not a good solution in terms of animal welfare. They also agreed on simultaneous feeding being the best option, and they considered the presence of fresh straw a necessity. The introduction of solely stable groups in houses with more subgroups present was regarded positively for a successful group housing system.

### *Squealing like a pig*

"Squealing like a pig" is an expression used in many languages. Have you ever wondered about the origin of this deafening and seemingly meaningless screaming? Most people have not! In natural circumstances, pigs do not squeal. However, there are three exceptions. One is the screaming and roaring of fighting sows or boars, trying to impress the opponent. One is the screaming of pigs (sows) fixated by means of a nose-sling. The third is the squealing of a piglet who has got stuck and is screaming for her sow, who will invariably come to help if she is around.

We have the phenomenon of fattening pigs or sows screaming at start of feeding, or of slaughter pigs screaming as they are moved from lorries to pens or from one pen to another, or of screaming pigs fixated with a nose-sling. Foraging behaviour is a social activity, with all group members participating in eating as soon as food has been found. One can imagine how pigs feel if they know that some other pigs in the same house are eating, and that they have no chance of leaving their pen and joining in the meal. This situation does not fit into the 'philosophy' or into the ethogram of a pig! When slaughter pigs are forcefully moved them in a direction or towards a place they would not go voluntarily, or sows are fixated by means of a nose-sling, we can also recognise situations in which pigs are stuck and cannot get out the way they want or would have chosen.

It is well known that mammals, including man, in difficult and frustrating situations show behaviour typical of a much earlier stage of life. This is exactly what our squealing pigs do! Unable to move in the way they would want to, they relapse into the behaviour of piglets squealing for their sow. This sort of behaviour is called "regression to a more juvenile behaviour" in ethology, and stands for "conflict behaviour" and for decreased well being.

In my view, and based on my experience, the welfare of domesticated pigs, of whom we have voluntarily taken charge, is not sufficiently considered, as long as we are referring to them as "squealing pigs".

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