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ETHOLOGICAL FARM PROGRAMS AND THE “MARKET” FOR ANIMAL WELFARE

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ABSTRACT. Ethological farm programs as they exist in Switzerland are compared with environmental farm programs in respect of demand and supply. Because animal welfare is not a public good but rather a relation that causes psychological externalities, the demand for animal welfare has a different standing in economic theory than the demand for a clean environment. The supply of animal welfare by farmers, however, largely follows the patterns known from the delivery of environmental goods. Farm size, age and education, and also family size and capital intensity are influencing variables. The paper concludes that the design of ethological farm programs should be based on broad public discussions as described by deliberation theorists rather than willingness-to-pay studies.

KEY WORDS: Animal welfare, deliberation, participation, public goods

1. INTRODUCTION

Animal welfare has become one of the core bricks of the multifunctional model of agriculture that has gained ground in Europe in recent years (Moynagh, 2000). Numerous parallels exist with the protection of natural resources that are also at the center of the agricultural multifunctionality concept: the public has a high interest in both animal and environmental protection in farming, both are seen by a majority of citizens in industrialized countries as morally superior to the bare production of food, and farmers are challenged by both in their traditional self-perception as food producers.

In the last few years, another parallel to emerge for Swiss Agricultural Policy between animal and environmental protection is that farmers are offered extra payments for services over and above their basic obligation. After the Eighties saw the first agri-environmental schemes, two ethological farm programs were introduced in Switzerland in 1993 and 1996 (Anwander and Badertscher, 2003), paying farmers for a controlled pasturage program (called RAUS) and for keeping animals in particularly animal-friendly housing (called BTS).

This article argues that despite the obvious similarities between environmental and animal protection, the theoretical foundations of demand for animal welfare are rather different from those of environmental protection, while the patterns of supply by farmers can be readily compared. The aim of this paper is two-fold. First, we argue in Section 2 that the market for animal welfare differs considerably from the market for natural resources on theoretical grounds. If this can be proven, it is likely that the instrument of ethological farm programs has a different role to play than that assigned by economists to agri-environmental schemes. In Section 3, we then test the hypothesis that, in spite of a rather different theoretical basis for ethological farm programs, the socio-economic determinants for participation are similar to the well-known determinants for farmers to take part in agri-environmental schemes. Section 4 concludes with respect to obtaining an equilibrium in society for animal welfare.

2. THE DEMAND FOR FARM ANIMAL WELFARE

2.1. *Economic Theory*

Many scholars have put forward useful and diverse ethical arguments as to why farm animals should be protected (Feinberg, 1974; Weikard, 1992; Appleby, 1999; Musschenga, 2002). Far fewer, however, have attempted to answer the question about proper forms of institutionalizing the demand for farm animal welfare if we consider animal welfare as something demanded by humans rather than as an unquestionable right that animals have. We will start to approach this question by defining animal welfare from a public economics point of view. While there is hardly any doubt that the state should intervene into farm animal welfare issues under certain circumstances, it should be considered whether economic theory would support such claims.

Farm animal welfare describes the way farmers keep their animals. It describes a relation between humans and beasts. Philosophically (given the grade of consciousness of the involved subjects) one may coarsely group farm animal welfare in between the relation between adults and their kids and the relation between a gardener and his garden. Kids, animals, and gardens may be kept in an appropriate way that enables their optimal development, and they may be neglected to the point of decay.

Relations and goods are two distinct categories, even in economic theory. Recently, Frey and Stutzer (2003) have attempted to redefine relations as “interaction goods,” and yet it is not clear how useful such a redefinition is. Following them, farm animal welfare (as raising kids or cultivating gardens) might be labeled as a private interaction good, describing the

relations between a farmer and his animals. It would be rather a private and not a public good, because non-excludability is a core criterion for being a public good. But relations are excludable. Even one farmer may pamper one cow and torture another.

In any case, although some authors have come to the conclusion that animal welfare is a public good (Bennett, 1995; Badertscher Fawaz, 1997), it is quite clearly not so. Relations between the farmer and his farm animals are most probably no “good” at all but, if any, a private good. However, defining farm animal welfare as a public good has been the key justification for demanding governmental intervention, be it for subsidies or for animal protection laws. Only public goods (such as national security or clean air) should be provided by the state.

In addition to providing public goods, economists believe that the state should also internalize externalities (Musso, 1998; Hyman, 2002). Externalities are costs or benefits of market transactions not reflected in prices. Traditionally, externalities are categorized into technological and pecuniary externalities. Technological externalities are physical, e.g., odor from pig keepings, whereas pecuniary externalities describe financial losses through increased competition. As Vermersch (1996) shows, the state should ignore pecuniary externalities and only take account of technological ones. Technological externalities ought to be “internalized,” which means, for example, that the state should integrate them into the market through taxes or subsidies. There are technological externalities connected with animal keeping, but there are no technological externalities connected with animal welfare. If a farmer leaves his animals without sunlight, it does not physically affect me.

At this point, we come to the fringe of current economic theory. As it is, we would have to conclude that, since no technological externalities exist, everything can be organized via the market. But it is likely that, besides technological and pecuniary externalities, a third kind of externalities exist: psychological externalities. Psychological externalities are psychological effects connected with a transaction that make me feel bad or good but do not affect the price, usually because I am not physically involved in the transaction.

Although Holcombe and Sobel (2000) do not use the term “psychological externalities,” they approach them when focusing on externalities connected with consumption. And taking an intuitively plausible example, they suggest to ignore them like pecuniary externalities: if I suffer because a foreigner has moved next door and I dislike foreigners, it would be unreasonable, even unethical to internalize this psychological externality, for example by demanding payment of extra rent.

Externalities can be internalized either by negotiations or, if the negotiating partners’ transaction costs would be too high, by public interventions

like taxes. But consider that almost everybody's action has some degree of psychological externalities. It would be a strange world in which all psychological externalities were evened out through financial transfers. People's homosexuality would be taxed, as would every abortion. If other people have positive psychological externalities seeing me attending church with them, they should pay me for that. We have too many and probably too unstable psychological externalities, positive and negative, to internalize them financially. Any attempt to do so would probably lead to a great mess that nobody desires.

Are psychological externalities, therefore, merely irrelevant? In the case of animal welfare, any vegan would loudly protest, even a non-believer in the existence of animal rights. He, the vegan, forbears from using animal products because he does not want animals to suffer. But he still is deeply unhappy if he knows that other animals are kept under inappropriate conditions. And worst of all: he cannot change anything through his buying behavior, because he does not participate in the market at all. From a utilitarian point of view, it is well possible that the vegan suffers more than I gain if I buy lower-priced meat from inappropriate keeping conditions.

There are reasons to assume that psychological externalities should be treated in a specific manner. If one disregards them, we would probably do an injustice to the vegans and other groups who suffer if any animals are kept inappropriately, both from a deontological and from a utilitarian viewpoint. On the other hand, if we just treat them as a usual externality like Kok et al. (2002), this would incur prohibitively high transaction costs and would certainly cause problems in the trade-off between minorities that would claim excessive psychological externalities on some issues and personal liberty.

This is a good argument for neither ignoring psychological externalities nor treating them as standard externalities. It is, thus, also a good argument for dismissing willingness-to-pay studies in the animal welfare field (Bennett and Larson, 1996; Bennett et al., 2002) for two reasons. The first is that psychological externalities are not to be treated as standard externalities. "Informed majority positions" (Gesang, 2003) are a more important criterion than aggregated willingness to pay. The second is that institutionalizing animal welfare through public subsidies is not the only option. That means that any realistic statement in a contingent valuation survey, the established methodology how to collect the willingness to pay from respondents, would have to be formulated as follows: "I would be willing to pay a market price premium for measure X of 6 \$/lb meat, to pay an extra tax of 24 \$/a for subsidies and to bear extra costs arising through a law imposing measure X of up to 3 \$/lb meat." More complicated issues would arise about the question of whether the different willingnesses to pay were cumulative or alternative and, for example, if the willingness to pay for subsidies already

takes into account the consequential decrease in the price of meat. I hope that even the staunchest supporters of contingent valuation would step back from a survey under such unfavorable circumstances.

2.2. *The Role of Ethological Farm Programs*

In the last section, we have drawn an important distinction between agri-environmental programs and ethological programs. With agri-environmental programs, farmers are paid for delivering public goods, that is entirely within the frame of mainstream economic thinking. It has often been shown that leaving environmental protection to the market leads to suboptimal results. On the other hand, environmental limits and restrictions also tend to cause inefficiencies. Therefore, public economists tend to recommend market-based solutions like subsidies, taxes, or negotiations as the way to maximize overall utility.

For ethological farm programs, things are different. “There is a consensus in society (...) that people should not be allowed to do certain things to animals.” (Appleby, 1999: p. 22). In these cases, our psychological externalities seem too strong to allow a valuation of animal suffering. On the other hand, there may be issues connected with animal welfare that we happily leave to the private market. A majority may consider it as going too far if the state subsidizes or decrees animals lying on straw rather than on concrete floors, but is happy with label programs where consumers pay for this privilege with respect to the animals they eat.

Ethological farm programs will, as the Swiss experience shows, not substitute for label markets but strengthen them. This second peculiarity

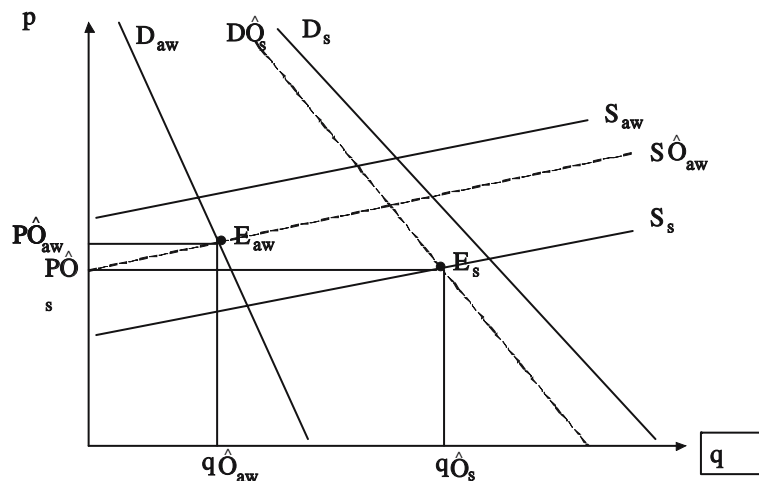


Figure 1. The effect of an ethological farm program on the market for meat.

of ethological programs compared to environmental programs is depicted in Figure 1. Consider a bifurcated market for meat, one part defined by the demand and supply functions for standard meat D_s and S_s , simply complying with legal requirements, the other part being a label market characterized by particularly stringent animal welfare requirements. The demand and supply functions of this part D_{aw} and S_{aw} lead to a market equilibrium with higher prices and lower quantities than on the standard market.

A subsidy paid to farmers participating in the label program will decrease their marginal cost curve and therefore shift S_{aw} to the right (S'_{aw}). As the market equilibrium shifts to E_{aw} , the amount of meat produced under label conditions increases. It is likely, however, that the substitution effect for meat from standard conditions is strong. Many who now buy more label meat will therefore reduce their consumption of standard meat. This, in turn, shifts the demand function for standard meat to the left, leaving standard meat with a lower turnover.

It shows that ethological farm programs increase the average well-being of farm animals while leaving a large degree of market freedom. Obviously, there is a trade-off between animal welfare and market freedom. The value of animal welfare for human utility has been examined in the sections above, but the value of market freedom has not. While Peter (2004) has correctly argued that market transactions are not legitimated “automatically,” the regulatory mechanism of the market has two advantages that attach a value to it.

One, the market considers not only the benefits of animal welfare, but also its costs. While excluding the market leaves the possibility of ignoring the costs of animal welfare, the market interplay always has to take costs into account. If one agrees that the utility of a measure can be derived from the difference between costs and benefits, letting the market play does, in general, increase efficiency and utility.

Two, the freedom to make choices has an intrinsic value. This is because the act of choosing is character-developing and improves the ability to make choices (Dworkin, 1982; Sen, 1988), and because having the right to choose gives people a feeling of being in control (Gahagan, 1991).

These two factors justify attaching a value to market freedom and establishing a trade-off as depicted in Figure 2. With a given set of resources, it should be possible to attain all the points on the transformation curve (TC). The state can decide not to intervene, leaving a high degree of market freedom, but only as much animal welfare as the market develops by itself. By offering ethological programs for farmers where they receive additional financial incentives if they fulfill certain conditions as regards animal keeping, the state increases animal welfare, at least for a number of

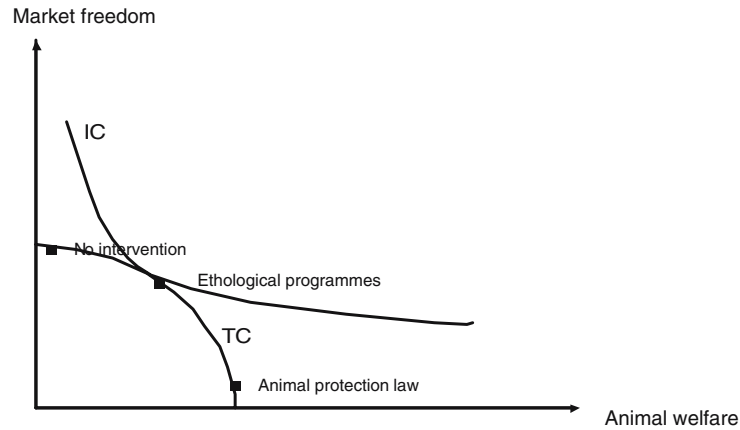


Figure 2. Trade-off between market freedom and animal welfare.

animals. But because additional tax money is needed for that kind of program, market freedom is diminished.

The degree of animal welfare is highest if the state enacts a law in which tough measures in favor of appropriate animal farming are anchored. However, it is obvious that the degree of market freedom is thus minimized. Everybody has to comply with the law. It is difficult to tell how a society that achieves maximum animal welfare would look. Probably, it would not be sufficient to give animals the most appropriate housing conditions humans could imagine. At least, the production of some kind of meat would probably be banned, for example veal. But that line of arguments can easily lead on to what Walton (1992) calls the “slippery slope.” If one defends banning people from eating veal, one could also ban them from eating other kinds of meat. Or indeed from using leather, milk, and other animal products.

It is possible that such a harsh restriction of market freedom would not even be morally false. It is, however, likely that such bans would not sit well with the preferences of the public and would considerably inflate opportunistic behavior. In general, as for most private good combinations, the aggregated indifference curve of society IC will be convex. That means that people will prefer combinations rather than extremes. A bit of market freedom and a bit of animal welfare combined will only be substitutable by either a lot of animal welfare or a very high degree of market freedom.

As Figure 2 with its transformation and indifference curve shows, the example chosen would lead to recommending a policy with a heavy stance on subsidized animal welfare programs. But this is as yet a very theoretical solution. A great deal depends on the concrete measure and the kind of animal welfare aspect to be discussed. The theory of deliberation by

Habermas (1981) may provide the best clue to achieve consensus about how to institutionalize animal welfare. Deliberative processes for all issues among all groups of citizens, as suggested by Fishkin (1995) or Sagoff (1998), will contribute to institutional solutions to a greater extent than willingness-to-pay studies.

3. THE SUPPLY OF ANIMAL WELFARE

The acceptance of ethological programs by farmers is one of the core criteria for their effectiveness, as in the case of agri-environmental programs (Wilson and Hart, 2001). It is, therefore, worthwhile to check which factors influence participation rates and, therefore, the effectiveness of the program. For this purpose, we will introduce the factors from literature known to influence participation in agri-environmental programs in order to compare them with the factors influencing participation in agri-ethological programs. The methodology that we use and the hypotheses to explain participation in the Swiss ethological programs BTS and RAUS are established and the results of the analysis presented.

3.1. *Factors Potentially Influencing Participation*

There is no uniform pattern for who participates in agri-environmental programs and who does not. The difference in scope between programs is considerable and greatly influences the patterns of participation, so that most factors have an influence for only part of the programs examined.

1. Farm size often positively influences willingness to participate (Crabtree et al., 1998; McInerney et al., 2000; Damianos and Giannakopoulos, 2002). The above-average participation by large farms is probably due to economies of scale and to better access to program information. The same effect is observed on comparing part-time to full-time farms (Kazenwadel et al., 1998).
2. The farmer's education is sometimes positively correlated with program uptake (Wilson, 1996).
3. Younger farmers are less reluctant to sign up for schemes than older farmers (Wilson, 1996; Kazenwadel et al., 1998; Lobley and Potter, 1998; Wynn et al., 2001).
4. In less favored areas, opportunity costs seem to be lower, so that farmers participate to a greater extent (Crabtree et al., 1998).
5. In some cases, participants have made larger investments in the past than non-participants (Kazenwadel et al., 1998).

Table 1. Variables to explain farmers' enrollment in BTS und RAUS.

Var.	Meaning	Minimum	Maximum	Mean
YEAR	1993 = 0, ..., 2002 = 9	0	9	3.99
REG	Valley = 1; Hill = 2; Mountain = 3	1	3	1.80
SIZE	Size of farm land in hectares	0	131	19.6
LU	Size of farm in Livestock Units	0.01	164	27.9
DIV	Number of different animals	1	3	1.53
AGE	Age of the farmer in years	13	79	43.6
EDUC	Level of agricultural education (0-none; 1-basic; 2-master or university degree)	0	2	1.22
FAMSIZ	Number of family members (consumer units)	1	13.4	3.49
CAPLAB	Capital-labor ratio (Fr. Assets/work unit)	32,300	5,440,000	412,000
EQR	Equity ratio (equity/assets)	-170	100	57.8

In addition, Wynn et al. (2001) have observed the speeds of entry into the program. They found large differences between regions, but in general, a high percentage of total area under crops slowed down entry to participation.

We test the influence of independent variables using data from the central accounting data base for Swiss farms. Taking between 2500 and 5000 farms for each year since RAUS was introduced in 1993 (BTS followed in 1996), we have the advantage of a large number of observations. We use participation in BTS and in RAUS as two categorical variables that are to be explained. Our hypotheses regarding participation in the two Swiss programs BTS and RAUS that are to be tested orient themselves to the factors outlined above for agri-environmental programs, but our own presumptions are also added. The variables used are listed in Table 1.

Regarding the timing of participation, we would expect to find the patterns of growing acceptance for ethological programs familiar from environmental programs. We therefore expect the time-variable YEAR to be significantly positive.

While agri-environmental programs are more widely accepted in less-favored regions, we should not assume the same for ethological programs. The opportunity costs of keeping animals appropriately are not necessarily related to the fertility of the land. But in Switzerland, the difference between highland and lowland is very important. For the outdoor

program RAUS, the rate of participation can be assumed to be higher in mountain areas compared to lowland, as pastures are more abundant there. For the housing program BTS, the more modern way of farming in the valley region will probably encourage enrollment. As size variables, both acreage and the number of animals kept were assumed to influence participation in BTS and RAUS positively. As for environmental programs, age was expected to influence participation negatively and the level of farm education positively.

A variable that has not been tested for agri-environmental programs is family size. It can reasonably be assumed that a large family, perhaps with several children, will tend to encourage the farmer to participate, for two reasons. One, the other family members may derive an intrinsic benefit from seeing the animals living under favorable conditions. Two, appropriate housing technologies require considerable investments, particularly BTS, and it is known that farmers with a designated successor will invest more readily (Potter and Lobley, 1996). The latter factor also leads us to assume that the capital-labor ratio will be positive for ethological programs. We therefore also use the equity ratio as a variable to explain participation. In addition, we also suppose that the level of diversification in the animal sector, measured by the number of different animal categories, is positively correlated with participation in BTS and RAUS.

As suggested by Beck (2001) for binary dependent variables explained with time-series-cross-section data, random-effects logit analysis was used. In order to allow for dynamic effects, each variable was tested in respect to its significance if combined with the time variable.

3.2. *Results*

The empirical results of different farm attributes on likeliness to participate in ethological farm programs are reported in Table 2. The time patterns of both programs are particularly interesting if one takes into account that BTS was introduced 3 years after RAUS. The participation curve for RAUS is clearly sigmoid. After a slow start, participation increased exponentially until growth slowed down again. At the time of its creation, BTS could obviously take advantage of the experience farmers had gained with RAUS and could start with rapid growth straight away, which also slowed down when both programs reached a phase of saturation.

The regional distribution of participation is the only other variable for which the signs differ between the two programs. While participation in the pasturage program was encouraged by the high share of grassland in the mountain area, the modern animal housing necessary for BTS participation tended to be built in the valley area.

Table 2. Random-effects Logit analysis – effects on participation in ethological farm programs.

	RAUS ($n = 34\ 661$ farms)	BTS ($n = 20\ 870$ farms)
YEAR	0.943** (10.1)	2.64** (14.1)
Year ²	0.155** (6.35)	-0.140**(-9.48)
Year ³	-0.0161** (-8.12)	
REG	0.474** (6.09)	-0.880** (-8.05)
SIZE	0.0200** (3.40)	0.0374** (4.16)
LU	0.0232** (3.87)	0.0576** (4.81)
LU*Year	0.00407** (3.61)	0.00434* (2.27)
DIV	0.397** (5.24)	0.786** (7.07)
AGE	-0.0316** (-5.22)	-0.0427** (-5.25)
EDUC	1.04** (7.71)	0.790** (5.58)
EDUC*Year	-0.0813** (-3.46)	
FAMSIZ	0.0752* (2.12)	0.0924 [†] (1.81)
logCAPLAB	1.51** (7.16)	3.24** (10.9)
EQR	-0.00824** (-3.95)	-0.0168** (-5.47)

†: $p < 0.10$; *: $p < 0.05$; **: $p < 0.01$; z-values in parentheses.

As for environmental programs, size matters. But while for arable programs it was plausible that acreage was the most influential size variable, it is less plausible for ethological programs. The number of animals hardly seems to influence likeliness to participate in ethological programs, while the amount of land does. Maybe, it is rather a background variable, like the farmer's success and openness, that is correlated with acreage more strongly than with the number of animals that influences the likeliness to enroll. There is, however, a dynamic effect of the livestock variable. Larger holdings tended to enter the program at a later point. Probably, fellow farmers' experience that the program worked was more important for farmers with a large herd because the associated risk was greater. It is also noteworthy that the level of diversification increases the likeliness to participate.

Our hypotheses were also confirmed for the socio-demographic variables. Both age and education influence the decision to participate in ethological programs, and both in the same direction as environmental programs. Younger, skilled farmers are the group with the highest probability of participation. The dynamic learning effect that was connected particularly with the introduction of the first ethological program RAUS is mirrored in the "EDUC*Year" coefficient. While the farmers with the highest level of education started on the program right away, less skilled farmers followed on in subsequent years. Another variable with a social

rather than an economic impact is the size of the family. Our hypothesis that deliberative processes in large families and/or economic factors such as an apparent successor tend to prompt farmers to join ethological programs is apparently confirmed. The first of the two explanations, again, acknowledges the high impact of psychological externalities on ethological farm programs.

The two financial variables in the regressions are also highly significant. Both confirm the high investment that often accompanies participation in the ethological programs, particularly for the buildings program BTS. Farms in this program are more capital intensive and have a lower equity ratio than average farms.

4. CONCLUSIONS

If there were no economic theory, there would not be many differences between ethological and environmental farm programs. Both would meet some societal concern, and both would be adopted by farmers following very similar patterns: large, highly invested farms with young, skilled farmers would be particularly likely to participate in both kinds of programs.

But simply sticking to these conclusions would mean ignoring most of what public economists have achieved in recent decades. They have constructed a classification of public goods and technological externalities that has done an excellent job in classifying which type of public intervention would increase the societal utility and which goods would be more efficiently left to the private market.

Applying the framework at hand to farm animal welfare issues, it shows that animal welfare can be effectively regulated on the free market if we maintain that animals do not have rights. In this case, it is up to the consumer to decide what welfare attributes the animal he consumes deserves. If we assert, on the other hand, that animals do have rights, the law would be the most effective way of guaranteeing the rights of animals.

Only psychological externalities, which are as yet largely undefined by public economists, can provide a theoretical case for ethological farm programs. It is very likely that psychological externalities are not entitled to the same methodology, including willingness-to-pay measures, as technological externalities. But it is also likely that ignoring such psychological externalities would also lead to suboptimal results.

I suggest that deliberative processes among the public should be used in order to find out whether an ethological program should be chosen for a certain issue of animal well-being rather than either leaving the issue to the

market or finding a legal solution. Ethological, agricultural, and legal specialists should then, in a second step, find feasible solutions for the level of payment and other crucial factors that contribute to the success of the program.

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