

Why cavilling worked:

*Exploring an evolved economic mechanism
used in the Durham coalfield communities*

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1 Sharing earning power in the community: The Cavil

There are many third-world communities which have producer cooperatives organised around common resources like fishing. How access is determined to these resources can be problematic, when some parts of the ‘common-wealth’ are more productive than others. Members of the cooperative allocated to the best fishing grounds stand to make the best living. A widespread practice, as reported in Lobe & Berkes (2004) is that the grounds are shared out by means of a lottery. This is called the *padu* in the case of fisheries in Kerala, South India. I had intended to use the example of the *padu* to illustrate how communities share valuable resources with the help of random distribution: It is contemporary, widespread and has been used for a long time. However, it is remote, and many cultural differences might intrude; it would also be quite difficult to do any follow-up research. Instead, I have chosen a very well-documented local example of random distribution from the past. In what amounted to a workers’ cooperative, this was how coalminers were allocated to workplaces in the Durham mines during Victorian and later times:

Example: Durham Miners and the Cavil

The cavil was an arrangement to allocate miners to specific workplaces which was used in the Durham coalfield in Victorian and later times. Work assignments were made by a quarterly lottery, known as ‘the cavil’. On cavilling day, hewers' names would be drawn out of the foreman's hat, the order of draw determining the place at which each pair of hewers would extract coal for the next three months. For the miners, the result of the cavil was far from trivial. Geological conditions varied in the mines, so that some places were easier to hew than others. Pay was by piecework, so the luck of the cavil could move earnings potential up or down by 30% or more for the next quarter. Cavilling was still in use towards the middle of the 20th century, although with mechanisation and later with the closures of the mines, this aspect of life in the Durham coalfield no longer survives. However there is a wealth of accessible documentation concerning the coalmines, the miners, their social setting, and specifically how the cavil was used.

Allocating workers to workplaces would seem to be a clear-cut case of a principal-agent problem, not a mutual arrangement between partners in a community. But the Durham mining situation had many community-like features. The miners lived in isolated villages, bound together by religion (Primitive Methodism). Allocation was made, not to individuals, but to pairs of workers (*marras*) who had self-selected. There was a powerful and effective trade union. There were paternalistic employers who respected ‘customs’. The spread-out nature of the work underground gave miners considerable autonomy. Taken together, there was a *de facto* common interest amongst the mining community, which justifies calling the *cavil* a means of sharing out common wealth.

Sources used: Beynon & Austrin (1994), Daunton (1981), Emery (1992), Rowe (1923), Treble (1995, 2001, 2002) and Treble & Vicary (1993)

2 The Cavil as an evolved institution

Where cavilling came from: The origin of the practice of cavilling is obscure. Rowe (1923) suggests that ‘..the custom of cavilling probably dates back long before the idea of ‘consideration,’ (an ad-hoc wage adjustment system which pre-dated the Minimum Wage Act of 1912) and was a rough-and-ready but broadly effective method of doing justice’ (p147). Beynon & Austrin (1994) draw attention to the peculiar situation between feudal aristocratic land- and mine-owners on the one hand, and the emerging trade union organisation allied to resurgent primitive Methodism on the other, in a rural village setting: The ‘Durham system’ as they call it, created ‘the spatial and political arrangements, which kept the coal miners separate from the rest of society.’(p368). But ‘the village as community (which) became a vital aspect of their identitiesrequired solidarity that had to be built’ (p364), because community also means *distrust*, and solidarity is not a natural thing. ‘Methodist trade unionism provided a framework in which *aspects of the old culture (cavilling in the mine, drinking in clubs etcetera)* could expand and develop.’ (p365 my emphasis added). The cavil, it would seem, survived into the industrial age in the particular semi-rural isolated village communities in Durham. Once established in a new setting, its use was perpetuated because it continued to perform a useful function.

Cavilling in wide and continuous use: There is evidence that the use of the cavil was widespread and persistent throughout the Northumberland and Durham coalfield, at least during Victorian times, during the first half of the 20th Century, and in some places up to the 1960s. According to Rowe (1923)(p58) the cavil was peculiar to this coalfield, though it was found in a few isolated cases elsewhere. Daunton (1981) implies that cavilling was used in almost all the pits in the Durham coalfield. In his description of variations on the cavil he refers (p10) to dozens of pits which used this practice. The sole contentious issue between miners’ unions and the pit-owners was whether the cavil should be based on several pits, a single pit or a single seam within a pit. Rowe notes (p147) ‘Hallowed by custom, there is apparently no strong desire on either side in the northern coalfield to end the system (of the cavil)’.

Nevertheless, some mine-owners tried (unsuccessfully) to mitigate some of the losses due to the cavil: As Beynon & Austrin quote: ‘Colliery custom is one of the

strongest pleas...and managers cannot be too careful to prevent undesirable practices becoming established. Even while such custom is opposed to county practice and agreement, it is difficult to effect an alteration and in no case can, once established, be altered except by agreement or by application to the Committee. In one such case during the year the owners asked that the practice of the colliery, which was to be idle on cavilling Monday should be brought into accordance with county practice. The application was strongly resisted by the workmens' representatives, and was referred by the Committee to the two Associations, who eventually agreed that it should not be pressed.' (p151).

Other evidence for the widespread use of the cavil, and its extension to uses beyond workplace allocation include: In 1927 the cavil was being proposed (Emery, 1992 p136)) at Ryhope colliery as a means of choosing who should be re-employed following the 1926 General Strike. When special housing was developed in 1906 for aged miners, it was natural that they be allocated by ballot—the cavilling system in operation again (Beynon and Austrin (1992) (p190). There are references to the cavil being used to decide layoffs and the sack (Beynon and Austrin (1994) (p150). As late as 1943 cavilling rules were being established for the Silksworth colliery, and were published in small booklets. (Beynon and Austrin, 1994) (p152).

A very telling piece of primary evidence can be found in Beynon and Austrin (1994) (p150) showing a reproduction of the front cover of *Rules of Cavilling* for Boldon Colliery, and *Cavilling Rules, Agreements, and Awards* for Easington Colliery. That this second rulebook was published in 1927 by the Durham Miners Association (the Trade Union) and not by the mine-owners or their association tells us a lot about the collective power of the Durham miners' trade union.

An evolutionary economic approach would suggest that such a tried-and-tested method as the cavil had to confer significant benefits, which were recognised by the participants of this process of distribution. Witt (1991) suggests (p133) that evolutionary selection operates on performance outcomes, rather than intentions and purposes. I will deal with the possible intention to deliver equity or some form of inter-personal justice in a later section. Here I am examining the dynamics of evolution of the institution of cavilling. As Nelson (1981) explains, if a particular

institution evolves, it must have emerged from a crop of alternatives. If there is pressure to change then better institutions should prevail, so long as alternatives exist.

Were there alternative institutionalised methods of payment available? Both the owners of the pits in Durham and the miners through their Association must have been well aware of payment methods used in other coalfields. A particular form of pooling of knowledge of pit payment practices came out of the Parliamentary Commissions of Enquiry related to coalmining, such as that in 1917 on industrial unrest (referred to by Daunton, 1981).

Alternatives to cavilling might have included:

Day rates: Cavilling was a method of circumventing the inequalities of the piecework system, caused by the inherent geological variability of the coal seams. But not all activities at the pit were rewarded directly by the ton produced. Clearing-up activity was paid by time spent—‘day rates’, so potentially payment per hour rather than per ton could have been utilised.

Labour-only sub-contracting: Daunton (1981) describes the ‘butty’ system, which had existed in earlier times, based on a contracted payment to a sub-contract gang, which sounds similar to the technique prevalent in the construction industry today.

Two hypothetical alternatives to cavilling are described and rejected by Treble & Vicary (1993). These are:

Auction: An auction could have discovered the workers’ valuations of the different seams available for working. An auction is impractical because of the potential for manipulation, especially because of the tightly-knit community from which the workforce is drawn.

Managerial directive: which allocated workers to seams by *diktat*. This is rejected because in practice it would devolve into an auction (of bribery), or be a point of contention due to favouritism. Nevertheless, this was the system used in the other major UK coalfield in South Wales.

Collective piece-work could have been based on the output of the pit, not individual miners. Such a scheme, which would be akin to the Christmas bonus system in contemporary organisations, did not seem to figure in the Victorian mining industry.

So the cavil seems to have emerged from a pre-industrial age. Its use was widespread throughout the Durham coalfield, and persisted well into the 20th Century. Throughout this time there were alternative methods of allocation and payment available, both actual and hypothetical, but the system of cavilling remained in place. It seems reasonable to conclude that cavil was suited to its purpose, that its cost was justified by the benefits it brought, and that switching to one of the readily available alternatives was rejected as unprofitable.

6.3 The costs and benefits of the Cavil

Compared to simple management allocation systems, the cavil created costs both to the mine-owners and the miners themselves. The costs were substantial, and must have been offset elsewhere by significant benefits to both parties.

Loss for the owners of coal output due to the cavil:

Descriptions of the disruption to the workings of the pit caused by the cavil are given by Rowe (1923): ‘at the beginning of every quarter the pit is in confusion for several days, while the workmen inspect their ‘luck’, air their satisfaction or their woes, and move their tools, etc., etc., while at the end of every quarter the less scrupulous will not keep their working places in proper condition, since they know that there is very little chance that they will draw the same place twice running’ (p58). Daunton (1981) too, comments on the losses caused by the cavilling process: ‘for the owners it (the cavil) involved a periodic disruption of output as men shifted about the pit. Cavilling usually took place on a Saturday, which might lead to an early stop; while the actual moving of tools might be left until ‘Cavilling Monday’ the day on which

new places were claimed, and which led to further disruption. Furthermore, the men needed to learn the characteristics of their new places.’

Analysis of the effect of the cavil was developed by Treble (2001) using data from a single mine (Garsefield Bute). Plotting the output per fortnightly period clearly shows the loss of output due to the cavil. Interpreting the results of time-series show that the loss due to the cavil was similar to the effect of Christmas and over the year amounts to about six days lost output per year.

It is reasonable to assume that the mine-owners were profit maximisers, so the loss of managerial control implicit in cavilling needs some explanation. Its repeated use caused loss of output, and imposed additional costs because it required a larger workforce. The owners might be able to bear the losses caused by cavilling, using stockpiles to tide over anticipatable shortfalls. In some ways the cavil may have been a benefit to the owners, enabling them to boost their earnings by retaining workers willing to operate on less productive seams, thus enhancing the total return on their investment (a point made by Treble & Vicary, 1993). On balance, cavilling may have been profit-neutral as far as the mine-owners were concerned.

Losses for the miners and their families due to cavilling:

Loss of pay: The quarterly disruption caused by cavilling led directly to loss of pay. Because of the piecework system, loss of output for the owners translated into loss of pay for the miners, equivalent to about six days pay per year (based on Treble, 2001).

The anxiety: There was a psychological cost to the miners and their families, waiting for the results of the cavil, as Beynon & Austrin (1994) quote: ‘By and large, the larger proportion of those concerned faced the day with a certain amount of apprehension. If they were in a cavil which gave them the average or above average wage—they had a natural fear for the worst, while the minority in below average wage cavils looked hopefully to the future with full knowledge that things couldn't get much worse. In the main, with few exceptions, men awaited the outcome of the ballot in a

calm and rational manner and expressed their disgust if the result meant reduced pay with the expression 'Just my Bloody Luck' if he liked his beer. His Methodist counterpart would substitute 'Blooming' for 'Bloody', in the expression. On the other hand, if a favourable draw was their lot, many would declare that it was not before time as they were entitled to a break' (p151, quote from Fairbridge)

Uncertainty about future income: The cavil posed a financial risk to the miners: From figures produced by Treble & Vicary (1993) it is possible to identify variations of more than 30% in earnings up and down, from different workplaces. There were schemes to alleviate the worst differences due to conditions, and some of the variation would be due to worker's effort, or worker's skill. But these did not compensate fully, and each miner faced an uncertain prospect, along with his family each quarter.

Better workers lose out: In a more rational allocation scheme, the more adept workers (those with greater skills, and a disposition to make more effort) could have consistently made more money than their weaker brethren, whatever their pitch. This benefit would have been even greater if they got exclusive access to the easiest seams. Yet despite this potential earnings boost, the better workers denied themselves potential earnings and shared out the opportunities with less adept workers.

Taken together, the earnings loss due to the cavilling process, the worry that it brought about future earnings and the deliberate choice by the more adept miners to opt for less than the maximum available earnings amounted to a major sacrifice. The miners may have been well paid compared to other Victorian workers, but they were still poor by today's standards. Any addition to their pay would be of significant marginal benefit. That Durham miners wished to earn more money was demonstrated in a paper by Treble (2002), who showed that improved piece rates encouraged greater effort. All the workers had a strong incentive to earn more. In the light of this, the cavil seems an unlikely arrangement for the workers to accept. It suggests that some powerful motives lay behind the positive acceptance of cavilling by the workers.

To choose something as costly to one or both parties as the cavil suggests that it conferred significant benefits compared to alternative cheaper, simpler workplace allocation procedures. It is claimed that the intention of the cavil was *justice*: For instance Rowe claims (p146) that: ‘The practice of cavilling is supported *prima facie* by principles of justice. It is argued that if one workman is in a very easy place, and makes big earnings without undue effort, while another equally skilled man is in a difficult or ‘abnormal’ place, and unable to make as much as the other however hard he works, then it is only fair that they should change places at stated intervals.’

Daunton (1981) makes a more concrete claim that: ‘As far as the men were concerned, the virtues of the system were that the chances of a poor or ‘abnormal’ place were equalised’. Beynon & Austrin (1994) are quite specific in defining why the cavil worked: ‘Through cavilling then, men (and women) obtained a sort of fairness for each other within a hard and blatantly unjust world. It brought a rough sort of democracy to the village where men—no matter how big or powerful—were all equal before the laws of chance.’ (p151-2)

Treble & Vicary (1993) use the concept of the Rawlsian Veil of Ignorance to explain the use of the cavil. Drawing lots is non-manipulable, and the quarterly ceremony of drawing names from the foreman’s hat demonstrates that it is fair. Insurance is another possible explanation for the use of cavilling. This is implied by the title of Treble & Vicary’s 1993 paper ‘Equity, efficiency and insurance: Explaining the structure of miners’ wage payments in Victorian Co Durham’. Although ‘Insurance’ can be found in the title, it is not used in the text, but if cavilling is to be seen as a form of insurance, it is a rather odd one: Normal insurance requires regular small payments up-front against an unforeseeable episode of bad luck. The cavil, on the other hand, is an intermittent episode of unpredictable luck, but which has the effect of providing a fairly regular income. As Treble & Vicary point out, significant variations between the earnings of workers (or more accurately marra pairs) remained, *despite* the cavil. Characterising the cavil as a form of insurance seems inappropriate.

Calling in aid generalised philosophical concepts of fairness, justice or equity can be defended on grounds of reasonableness, but fall short of being a proper explanation. In what way is the cavil fair? Is there something about the particular social situation in the Durham coalfield that created a demand for more equitable treatment between the workers? Why might the owners be concerned about treating their workers fairly? Drawing on the newer insights of experimental economics will, I believe, explain what these benefits were, and why they proved so valuable.

One recognisable benefit may have been industrial harmony (compared to other coalfields). No British coalfield was without its major industrial disputes, but one particularly striking difference identified by the 1917 Commission was the low level of industrial unrest in the north-east, compared to the South Wales coalfields. This was elaborated in some detail by Daunton's 1981 paper. Perhaps the cavil was one of the specific factors which had an influence in creating such better industrial relations.

4. Theory to explaining the success of the Cavil: Inter-personal comparison

Economic understanding of the motivations of reciprocity and inter-personal comparison have been greatly enhanced in recent years with the results from experimental economics. To understand why a distributional mechanism like the cavil had been in such widespread and continuous use in the Durham coalfield, I will draw on these recent psychological insights of experimental economics, in particular from the summative publications of Frank (2004) and Fehr & Schmidt (1999 and 2001).

Frank (2004) offers evolutionary models as a way forward in understanding situations which involve more than self-interest. He suggests that having a need to acquire the resources to survive and reproduce might help explain how a 'taste for co-operation', perhaps manifested in a mechanism like the cavil, might arise. Although the owners may have incurred some losses due to the cavil, they also had some compensating financial gains. It was the workers and their families who bore the main cost of the cavil, without overall financial gain. Without some powerful additional motivation, such sacrifices seem inexplicable. To resolve this conundrum, it is to the interpretations of experimental economics in relation to reciprocity and inter-personal

comparison that I now turn. But before making use of these non-mainstream economics ideas, it is first necessary, I feel, to briefly establish their provenance.

The standard explanations in economics start from the assumption that all the actors are motivated solely by self-interest. This has been challenged by experimental evidence. In a lengthy discussion paper, Ernst Fehr & Klaus Schmidt (2001) *Theories of fairness and reciprocity: Evidence and economic applications* draws together the results of two decades of work in experimental economics which has tested how human subjects actually react in different situations. Frank in his 2004 book *What price the moral high ground? Ethical dilemmas in competitive environments* makes a more forceful case for economics beyond self-interest, including inter-personal values of fairness.

Does this apply to Durham miners?: Perhaps the first question that needs to be asked is: Do results from late-20th-Century subjects have any relevance to Victorian miners? (Is basic human psychology conditioned culturally?) Roth and others have conducted a series of identical experiments in four countries—Israel, Japan, Slovenia and the US, and have found little statistically significant differences between cultures. (Fehr & Schmidt, p36). Other evidence from different countries at varying levels of economic development shows that the size of money reward is unrelated to culture, that it is only the effect of relative wealth that matters. From this it seems reasonable to assume that the Durham miners who were subject to the cavil had the same basic value system as the subjects in recent experiments.

Evidence that Inter-personal values matter: arises from the ‘anomalous’ results of many of the experiments reported in economic journals. Perhaps the most telling evidence that humans put a value on reciprocal fairness comes from the Ultimatum Game: A sum of money is to be divided between a Proposer (P) and a Responder (R). If R rejects a proposal then both lose. Logically, R should accept any offer however small: In experiments, offers of less than 20% of the sum available were likely to be rejected on grounds of ‘Unfairness’. Responders are prepared to act against their own self-interest to penalise behaviour they perceive as ‘unfair’. Repeated experiments have found a switch away from ‘fair-minded’ behaviour to the more

rational 'selfish' behaviour predicted by standard economic assumptions, although convergence is slow.

Objections to extending economic theory beyond self-interested behaviour: Is a taste for fairness simply explicable as another aspect of self-interested behaviour? Fehr & Schmidt admits that luminaries such as Roth, Binmore and Samuelson try to explain away the anomalies of the experimental evidence as aspects of learning, and that there is no need to alter the underlying pecuniary preferences. Fehr & Schmidt contests this. Because the standard economics form of selfishness only emerges slowly in repeated games '...it is difficult to believe that they (responders in a game) make systematic mistakes' in the earlier stages, according to Fehr & Schmidt (p10).

Another explanation for seemingly irrational behaviour is that it corresponds to social norms, which come into play during games (Fehr & Schmidt quotes Binmore on this). One problem with this, says Fehr & Schmidt 'is that it cannot explain the huge behavioural variations across one-shot games' (p10) and 'there is compelling evidence that in repeated interactions, subjects do behave very differently compared to one-shot situations' .

Frank (2004) is more blunt in rejecting the rational choice models which only allow that people pursue narrowly selfish goals (p26). Simply introducing tastes for any behaviour which seems irrational leads to untenable conclusions. Frank quotes the memorable example of the man who died from drinking the crankcase oil from his car engine. 'We do not really explain anything by asserting that he had a powerful taste for crankcase oil' (p26).

Fehr & Schmidt concludes that '...an approach that combines bounded rationality with purely selfish preferences does not provide a satisfactory explanation of the facts observed' in experiments involving human economic behaviour. An analytical approach which combines learning and accounts for selfish as well as non-selfish preferences 'is still in its infancy', so is not available as a framework here. Alternatively, 'there has been much progress' in models which retain the assumption of rationality and assume some that economic actors are motivated in part by non-

pecuniary motives. I will now try to apply some of the theories given by Frank and Fehr & Schmidt of fairness and reciprocity.

If 'social preferences' exist as a separate category, what are they? Fehr & Schmidt identifies:

- *Altruism*, a wish to give up something for the benefit of others. Fehr & Schmidt (p13) quotes experimental evidence which suggests only 30% of subjects have truly altruistic motives; 50% behave in a selfish manner.
- *Envy and the effect of relative income* have been identified and understood long ago by Veblen, but no specific evidence is presented.
- *Inequity aversion*, which can either be positive—a wish to raise up some, or negative—a wish to prevent some getting away with too much, a form of spite. Existence of behaviours based on this is evident from experiments, but this is not quantified by Fehr & Schmidt.
- *Intentions* are also examined to develop a theoretical basis for higher (non-selfish) motivations. As well as passively seeking a better outcome for others, players will react to the 'kindness' shown them. Generally, if kindness is shown it will be reciprocated.

Theories of reciprocity and inter-personal comparison in relation to the cavil:

Fehr & Schmidt gives some examples how these insights might translate in to a specific situation. To tie these in to the Durham cavil, I will firstly look at how the individual miner might value the cavil. Next when group processes are involved, what the dynamics of valuing fairness and reciprocity might bring. The overall benefits of cavilling to the coalfield, and for the mine-owners will then be assessed.

Individual miner's value on reciprocity

Frank (2004) stresses the effect of personal contact: In experiments where subjects know each other or have time to become acquainted, then greater fairness in behaviour is found. This is reinforced by the quality of personal contact: if pairs meet and get on, they have a greater chance of behaving fairly or altruistically towards one another (p31). In the Durham coalfield, as with all others, there was the usual daily contact with workmates, both at work and in the village. In addition, there was the strong family structures with fathers, sons, brothers and cousins working locally. But

most of all and specific to the cavilled mines was the ‘marra’ (Treble, 1995), where most miners paired off voluntarily to work the same pitch down the mine. Frank notes (p38) that cooperation amongst close acquaintances is dramatically higher than the norm.

Layard (2003) explained this as ‘Reference actors’—the people with whom we compare ourselves. Layard gives the example of the East Germans—happy when they were compared pre-1990 with other communist countries, yet plunged into misery, despite being richer post-unification, when their comparison group became the West Germans. In relation to the cavilled miners, their reference group is obvious—all the other workers employed in the pit, plus others living in the pit villages nearby. The notion of a settled, unchanging community should not be taken too far however: During the two-year period (1890-93) studied by Treble (1995) there was considerable turnover of personnel.

In a close-knit community, working in marra pairs, living in a village close by the pit, with many family members often involved (details of the situation in Treble ‘On Marrows’ (1995)), inter-personal relationships were highly salient. Because of the isolation and semi-rural nature of the villages, the reference actors were narrowly, locally focussed. Thus the opportunity and necessity of being fair to others was an immediate concern. This concern for the well-being of others could thus find expression through the mechanism of the cavil. When new workers were recruited, they would most probably be drawn from the same background. Becoming part of the cavilled group would confer additional ‘membership’ by being subject to exactly the same ordeal as existing members.

Group dynamics and reciprocity

As Beynon & Austrin (1994) explain, the natural state of the pit village and the miners was one of mistrust and envy of the fortune of others. It was organisations such as Primitive Methodists, but especially the Durham Miners’ Association (the trade union) which created the feelings of solidarity. Once solidarity was established, then selfish motivations would be diminished, altruistic behaviour could come to the fore. Fehr & Schmidt explains that, even if the ‘altruists’ were in a minority, their

behaviour in enforcing fairness would be sufficient to deter defectors who might wish to change to a less fair distribution of workplaces, which may explain the survival of the cavil.

When dealing with groups, their overall objectives need to be identified. Two possibilities are: To equalise outcomes for each member, or to maximise output for the groups as a whole. Fehr & Schmidt (p28) presents evidence, that in groups, about twice as many valued an egalitarian outcome over a group-maximising one. This clearly corresponds with the results of the cavil—total mine output could have been increased if the best workers were consistently allocated the easiest seams, but this group-maximising strategy was pre-empted by the cavil. The egalitarian option remained in place.

Also in relation to group motivation, Fehr & Schmidt (p39) draws on experimental evidence for the survival of fairness behaviour: A strongly competitive situation tends to crowd out fairness. Maybe this explains why no cavilling developed outside the Durham coalfield. The standard piecework payment system prevailed in the other coalfields, which created a much more competitive labour market situation. Only the historical accident of a pre-existing ‘fair’ system like the cavil enabled its persistence in the face of pressures to be more ruthless. Once established with the help of the cavil, the weaker preference for fairness could survive.

Frank (p49) draws on experimental work which shows how co-operators and defectors could be identified one from another. Initially neither type can recognise each other, so they have to be wary. As the two types discover which is which, they can respond accordingly. When cooperation predominates, then sanctions against defection can be relaxed. This might explain why the cavil, once established, was able to persist—the co-operators predominated. It might also explain why other coalfields where the individualistic piecework system was already established would have found it hard to switch to the cavil.

Payoff for the Durham coalfield from the use of the cavil

Positive response to piecework: The use of the cavil may have mitigated some of the negative effects of payment by piece-work. As Frank (p61) points out: ‘Workers are notoriously suspicious of piece-rates. They fear that if they work as hard as they can ..management will .. reduce the rate. The literature describes numerous cases where piece-rates were abandoned... If piece-rate decisions were placed in the hands of someone who had earned the workers’ trust, both owners and workers would gain’. The setting of piece-rates in the coalfield was a complex process, with outside agencies involved, but the most significant on-site decision was allocation to a given pitch or seam. The cavil constituted a ‘someone’(thing) which both parties knew could not cheat, so may have contributed to a more benign result in the Durham coalfield: When a new higher piece-rate was introduced towards the end of 1891 (Treble, 2002) the workers responded by producing more, not adopting the ca’canny approach described by Frank.

Compressed wage differentials: One effect of the cavil is to compress wage differentials. One factor which might strengthen the value placed on wage compression is the extent of what Frank identifies as ‘Co-worker interaction’. (p100). His own researches indicate that when there was a great deal of interaction at work, smaller pay differentials were more usual. Since working down the mines is a good example of co-worker interaction, reinforced by the social interaction in the pit village, the acceptability of the cavil in limiting pay differentials can be understood.. Even if, in the short-term, pay varied considerably due to the luck of the cavil, this could be tolerated. In the longer-term there was the expectation that these variations will even out somewhat. As Frank explains (p114) one reason for the acceptability of this is due to a particularly human (irrational) characteristic of measuring with a non-linear valuation scale. It would be painful if some workers were to consistently earn more. The erratic variations of pay tend to be seen as levelling off earnings, even though at the end of a longer period the better workers who make more effort will finish up with more money.

Frank (2004) specifically links the results from the Ultimatum Game with workers’ preference, on grounds of fairness, for smaller pay differentials. ‘Conspicuous pay differences within groups are said to summon resentment on the part of lesser-paid workers, and a sense of discomfort and embarrassment on the part of those paid the

most' (p94). Under the cavil, any short-term differences in pay arise because of the neutral arbiter 'Luck'; in the longer-term differences will be somewhat levelled out. Thus can the cavil be said to reduce embarrassment, discomfort and resentment.

As mentioned previously there was the low level of industrial unrest in the north-east, compared to the South Welsh coalfields. The manifest fairness embedded in the use of the cavil may have been a specific factor in creating a less hostile attitude amongst the workers.

5 Conclusions

In this paper I have tried to understand the institution of the cavil using two approaches: Taking an evolutionary economics view that the cavil was fit for its purpose, and using results from experimental economics on inter-personal values to show that the cavil produced a desired result, which was worth the financial penalty.

Institutions will evolve whether theoretical validation exists for them or not. In the case of distribution by lot, there is little validation and much condemnation. The Cavil emerged from the distant past, would have been seen by the religious as a vile superstition, and when the cavil was used, left its participants in emotional turmoil. That it survived is testimony to its resilience and usefulness. From their experience the miners of Durham and their masters learned that the cavil was a boon, even if no theological or academic validation could be found for it.

When human motivation is restricted to mere selfishness, problems of economic analysis become tractable. Adding motivations which value a care for the well-being of others do not as yet succumb to acceptable forms of analysis. Yet these higher motives exist, and can be important. Understanding the nature of the interactions within the workforce in a coalmine, who live in an isolated pit village could not be complete if selfish motives are all that are allowed. The conditions of the pit villages and down the coalmines of Durham were not unique, but as with other places, this was where people would place a high value on fairness in an interpersonal setting. Cavilling manifested values of interpersonal regard. The role of the cavil in creating

and consolidating this community feeling, this belief in combining together for the benefit of all in the community should not be overlooked. For many decades while the Durham pits prospered, every three months the workers, their wives and families were brought together under the influence of a collective lottery. The management may have operated the cavil, but it was the workers representatives who laid down the rules. In a very significant aspect of their working lives, the cavil was a wise compromise which blunted some of the worst de-humanising aspects of industrialisation found elsewhere.

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