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Glaisdale Beck Realignment DRAFT PAPER

Journal Priorities

1. Human Ecology 10,000
2. Environment and Planning D [max 10,000]
3. Society and Natural Resources [7,300 words]
4. Land Use Policy

SE - to make the paper garner broad appeal [and search hits] perhaps instead of talking about persuasion in the title maybe better to emphasise 'framing' 'restoration' 'naturalness', small-scale, everyday rhetorics,

SE – is it possible to make the whole thing anonymous, without being specific at all about the precise location??

SE - go through and make consistent what it is that we are talking about - i.e. is it a truncation, a realignment, a cut-off. And is it a meander or a bend (Jeff seemed to suggest it should be correctly referred to as a bend not meander)

Is the title still:

Evidence and Persuasion in an Upland Channel Realignment Project: The Case of the River Esk, North Yorkshire.

Could change it to something like:

Evidence and persuasion in environmental management: the case of bend removal in the River Esk, North Yorkshire.

1. Abstract

2. Introduction [400 words]

In this paper we present interdisciplinary findings from a small-scale upland channel realignment modification [SE need to be consistent with what we call it -cutoff, truncation, realignment etc.] project in the North Yorkshire Moors, England. The case represents an interesting example, in that it was on such a small scale that it only required basic planning permission and works in rivers consent [check] [Water Resources Act 1991, Section 109], rather than any greater level of scrutiny or public engagement through Environmental Impact Assessment or participatory management approaches. Moreover, the individuals responsible for granting consent also had a particular interest in the project in that it formed part of a broader freshwater pearl mussel conservation project that they were involved in [to what extent is this true? [I need to qualify this relationship because it is very important]]. The case study, and our approach, ~~then,~~ is unique in combining a social anthropological and geomorphological approach and in applying it to a small-scale management intervention, the

Comment [SBE1]: To LB/MP - I'm thinking this isnt possible with the geomorph data??

Comment [SBE2]: LB/MP - what do you suggest?

Comment [LJB3]: I'd go for bend removal throughout – simple meaning for everyone to pick up.

Formatted: Font: Not Bold

Comment [LJB4]: If we went for this it has a general meaning which may help with consistency and to convey what we mean to as wide an audience as possible?

Comment [LJB5]: Yes, better check. Is this the case because of scale or that this was how it worked out in this location?

Comment [LJB6]: May be that NPA just managed its way around this!!

Comment [LJB7]: Yes, very true, if it wasn't for the pearl mussel project I doubt they would have got as excited about it, nor followed through decisions and action in the same way.

type of which that often ~~passes off~~ occurs -without further scrutiny and involves only a very small number of individuals with responsibility for the decision.

Theoretically, the paper follows a rhetoric-culture ~~[and framing?]~~ approach (refs) in examining the culturally situated means of persuasion and rhetorical strategies employed in justifying the project from a range of perspectives. Methodologically, the social scientific analysis is based on participant observation (including attendance at meetings and other informal engagement) and active interviewing (refs) amongst members of the River Esk Pearl Mussel and Salmon Recovery Project (EPMSRP) steering group, a local angler and a geomorphologist, all involved in the realignment project.¹ This was undertaken as part of a wider ethnographic analysis amongst farmers in the River Esk catchment between 2007 and 2010 (Emery, 2010). **ADD COUPLE OF SENTENCES ON GEOMORPH METHODOLOGY – without too much elaboration, but give references to where further details of the methodology and associated research can be found etc.**

Comment [LJB8]: May complicate it by adding this?

Comment [SBE9]: for LB/MP

~~In m~~ Many large-scale natural resource management case studies ~~that~~ have been examined through a lens of contested perspectives, persuasion and rhetoric (REFS REFS REFS (e.g. harrison & Burgess; Meadow et al, Whatmore & Boucher) The Eden Paper – Faking it – is a good example here), ~~+~~ The emphasis is often on the means through which the decision-makers and institutions or government agencies justify the scheme and their objectives to a wider audience through public engagement, the media, and formal Environmental Impact Assessment. Such studies may also combine the different rhetorical strategies and means of persuasion employed by a diverse group of stakeholders with a range of different interests (REFS). Fewer studies, however, have looked at the minutia of decision-making group dynamics for relatively small-scale interventions which, nevertheless, regularly take place without recourse to wider public consultation, nor the need to justify a decision to a broader polity. The paper argues that in the absence of this wider level of scrutiny the means of persuasion and argumentative strategies employed are largely confined to the particular group of decision makers. Moreover, in the face of uncertainty, and ethical dilemmas about the morality of interfering with river systems, it is shown that, with a pressing need to ‘do something’, or ‘get something done’, it is as much self-persuasion, as the persuasion of others that becomes important for the analysis. ~~The current paper, then,~~ examines how those people responsible for the decision persuaded each other, and themselves, to go ahead with the project using a variety of outward strategies and internal means of justification. The lack of external scrutiny, then, places additional moral burdens on the individuals involved in the realignment, since it is they that have sole responsibility for if, and how, the management intervention should proceed.

Comment [LJB10]: I'd move this bit to the conclusion.

Comment [SBE11]: This could be cut out and moved to a conclusion section instead, or just cut down here and expanded in conclusion

Comment [LJB12]: Conclusion too?

Two sentences on the structure of the paper: lit review – two parts, rhetoric, persuasion, self-persuasion; channel realignment projects and env discourse type project; Intro to the case study – pm and the beck; intro to the characters; chronology; discussion – reflecting on the social science, the means of persuasion AND reflecting on the success of the scheme; conclusions.

Comment [LJB13]: Yes

¹ All authors, have in some way been involved in the EPMSRP, providing the steering group with geomorphological and social scientific analysis of the physical and human contexts of the River Esk catchment.

3. Lit/Background/Theory—Rhetoric, restoration, and channel realignment etc. [1,300 words]

Many recent river management interventions have been presented under the rubric, strategy, or philosophy of ‘restoration’. As such, the concept of river restoration has received significant academic attention from both the natural and social sciences (for instance REF REF REF REF).—Eden , 2002; McDonald et al, 2004; Newson and Large, 2006; Wharton et al, 2006; Hobbs and Cramer, 2008). In the case study that is presented used in this paper it is not entirely clear whether the management steering group class the particular intervention as ‘restoration’, although the broader pearl mussel conservation project, with which it is closely associated certainly has been referred to as a restoration project (Ref to web page or other project literature?). This apparent conflict, and the lack of clarity on just what the project is to be understood as, lies at the heart of the issues addressed in this paper as restoration and associated concepts of naturalness and the ethics of anthropogenic intervention cause a disjuncture between competing imperatives for conservation and the maintenance of a ‘natural’ system. The fuzziness and interpretability of the concept of restoration, then, means that it can be applied or withheld, by different individuals, to a range of different actions that may, nevertheless, constitute part of the same broader process. Before examining the case study and introducing the literature on rhetoric and discourse, therefore, it is necessary to briefly examine restoration and its peculiarities as it has been dealt with in the literature.

Comment [SBE14]: to MP/LB I think I can find these but suggestions off the top of your heads would be good

3.1 Sub-Heading River Restoration[?]

There is a vast literature on ecological restoration and a rapidly growing literature focused on river restoration. What is apparent from this literature is that it is hard to generalize about restoration because its consequences and value are highly contingent in practice (Eden et al., 1999). This is underlined by the diversity of restoration projects being undertaken at a range of scales and complexity in different environments throughout the world, with different levels of technology, all engaging with a different extent of damage to local eco/river systems. According to Wheaton et al. (2008) the underlying motives for restoration are equally diverse and principally include:

- ecosystem restoration
- habitat restoration
- flood control/defence
- floodplain reconnection
- property and infrastructure protection
- sediment management
- water quality
- aesthetic and recreational (Wheaton et al., 2008: 28)

Given this diversity it is understandable that throughout the literature much attention has been given to the semantics of and differences between definitions of restoration. In general, restoration is thought to be the process of recovery of damaged, degraded or destroyed ecosystems/ivers (e.g. Hobbs and Cramer, 2008; Wheaton et al. 2006 [SE – is it 2006 or 2008, am I using same paper as LB?]), but the most favoured definition in the river restoration literature seems to be the narrow definition proposed by Cairns of ‘complete structural and functional return to a pre-disturbance state’ (1991, p187) (Shields et al., 2003; Wheaton et al.,

Comment [SBE15]: Need to add reference(s) from human ecology here

Comment [LJB16]: The one I used is definitely 2006 – Area.

2006). This supports the purist (traditional) view that restoration is about re-establishing an ecosystem's 'natural' appearance and functions and returning it to some past, historical state, often prior to disturbance or damage (possibly pre-human) (Aronson et al., 1993; Jordan, 2003). Hence the restored system should be indistinguishable from the pre-disturbed ecosystem to all but the expert (Eden, 2002). However there is extensive debate in the literature about the ideals of this type of restoration. Some see this philosophy of intervention in the landscape as fraud rather than restoration (Elliot, 1997) and argue that restoration of any form of nature is anthropocentric conceit because the process results in an artefact produced through modernist assertions of human dominance and technological control (Katz, 1992).

In practice restorers acknowledge that restoration to a 'natural' state is rarely possible and that there are many other related interventions that seek to repair the environment but not necessarily return ecology/streams to a historical or pristine state (Eden, 2002; Hobbs and Cramer, 2008). Wheaton et al (2006) found that during a survey of river restorers the most commonly held view was that restoration was used as a 'catch all' term for river management activities (46% of respondents). Differences in definitions of intervention into the environment result from the distinctive legislative, cultural and social frameworks within which restoration is practiced (Wheaton et al., 2006). Restorers seem to have little concern for the differences in definitions, but they can be important because the consensus view gathers power in scientific literature and standard definitions provide a legally defensible, constituent and transparent basis from which decision makers work (Wheaton et al., 2006). Moreover, decisions about intervention are often made quickly and without a complete understanding of complex, dynamic, evolving natural processes, especially since many scientists would never subscribe to a complete understanding of any natural system. ~~This can lead to restoration being more of a value-based and subjective art than a science, emphasises templates for restoration and creates reliance on experienced practitioners for guidance (Davis & Slobodkin, 2004; Van Diggelen et al., 2001).~~

Comment [LJB17]: Yes

Comment [LJB18]: yes

Comment [LJB19]: yes

Comment [SBE20]: Could delete here

3.2 Sub-Heading—Rhetoric and Justification of Natural Environment Management Interventions

The fuzziness, yet broadly accepted nature of the term restoration combine to enhance its rhetorical efficacy in strategies of persuasion. In particular, it may be used rhetorically to justify a whole variety of management interventions to a broader public provided that there is wider appeal to the worthiness and legitimacy of restoration as a guiding, albeit very general, principle. It is not simply the case that restoration remains effective *despite* its fuzziness. Rather, it is the case that restoration remains effective *because* of its fuzziness. Without focussing on a single term however, the literature has dealt broadly with the means by which decision-makers have employed discourse and rhetoric to effectively 'market' a natural environment management intervention to a broader public. ~~This has can lead to restoration being considered to be more of a value-based and subjective art than a science, emphasising templates for restoration and creates reliance on experienced practitioners for guidance (Davis & Slobodkin, 2004; Van Diggelen et al., 2001)~~

The environment, and environmental discourse in particular, are particularly appropriate on which to base our analysis because, as Mühlhäusler & Peace (2006: 471) point out, the uncertainty and complexity of natural environmental systems gives rise to a greater use of narrative and rhetorical forms than in many other discourse genres. "The environment" has gained global rhetorical appeal, and emerged as a meta-narrative, by virtue of its ability to

transcend cultural boundaries (Milton, 1995; Harper, 2001). At the same time, however, the appeal of the global environmental narrative is heightened by the fact that it is always capable of being translated at the local level according to the particular interests and exigencies of those employing it (Tsing, 1997). In other words, the rhetorical effectiveness of "the environment" as a narrative is borne out of its transcendental importance combined, like restoration, with its fertile interpretability. It follows, therefore, that rhetorical attempts to justify anthropogenic interventions in the natural environment centre on the supposition that those interventions are not only *of* the environment, but also *for* the environment. In other words, the medium of intervention (environment as material and 'out there') is at one and the same time the medium of persuasion (environment as ideology).

The underlying complexity of environmental systems, combined with uncertain scientific knowledge means that environmental interventions are often characterised by issues of morality (Peterson et al., 2002). Moreover, those issues of morality are rarely universal amongst different stakeholders which presents a policy problem that has been referred to as "wicked" (Nie, 2003; McBeth & Shanahan, 2005; Gritten et al., 2009). The nature of wicked problems means that they are unlikely to be resolved by technical, scientific or economic solutions (McBeth & Shanahan, 2005), and has given rise to what has been termed Post Normal science (Funtowicz & Ravets, 1990, 1993 [\[LB-ref?\]](#)) and the increased advocacy of participatory approaches to decision-making ([refs?](#)). In theory, including a broader range of stakeholders in decision-making should increase the quality and legitimacy of such decisions ([Nowotny et al., 2001; Eden et al., 2006; Collins and Weinel, 2011](#)). At the same time, however, for those with a stake or an interest in the decision, it can be viewed as a broadening of the field across which persuasion is required. In other words, the increased openness of decision-making may not necessarily increase legitimacy *per se*. Instead, it may increase the number of stakeholders *from which* legitimacy must be sought. Rhetorical persuasion figures prominently in such quests for legitimisation of management intervention decisions. Harrison & Burgess (1994: 291), for instance, examined how "particular representations of nature [were] used to legitimate specific institutional policies and practices" in their study of [\[what was going on?\]](#) at Rainham Marshes in Essex. Moreover, they show how opposing sides in the dispute played off one another rhetorically in their efforts to widen the public appeal of their own particular causes (Harrison & Burgess, 1994: 307).

Wheaton et al. ([2006?](#)) suggest five groups of stakeholders typically involved in an increasingly participatory model of river restoration projects: i) advocates who are possibly supporters, but have no direct involvement; ii) managers involved with planning, permission, evaluation, and decision making; iii) practitioners involved in planning, design, construction and monitoring; iv) scientists taking part in research, developing tools for restoration, making recommendations; and v) stakeholders such as local communities, land owners, interest groups. Each group will have different perspectives and biases on which to base restoration (Wilcock, 1999; McDonald et al., 2004). Problems arise in negotiating the different perspectives between stakeholders involved in a restoration project. Debate over nature can become a barrier to an 'efficient' project; for instance ecosystems scientists can be accused of advocating the reintroduction of hazardous natural processes in rivers (e.g. flooding and erosion) whereas the attraction of 'assisted natural recovery' may be critiqued as lacking in ambition (Newson and Large, 2006). Restoration can be used to obscure or justify environmentally damaging practices, i.e. environmental losses may be traded off against restored gains under the rhetoric of the overall 'stock' of natural capital for the next generation (Colwell, 1997; Eden et al, 1999). Indeed, Eden (2002) illustrates the plasticity of environmental restoration for Twyford Down and demonstrates how the project provided a

Comment [LJB21]: Yes

space for contestation and a political and cultural resource on which different interest groups could draw depending on how they engaged with, and portrayed different rhetorics (environmental, historical, social, and economic).

Different interpretations of environmental decisions and conflicts have been examined extensively through recourse to framing (Peuhkuri, 2002; Davis & Lewicki, 2003; Gray & Putnam, 2003; Lewicki et al., 2003; Nie, 2003; Putnam et al., 2003; Persson, 2006; Shmueli & Ben-Gal, 2003; Vraneski & Richter, 2003; Gray, 2004; McBeth & Shanahan, 2004; Harrison, 2006; Kyllonen et al., 2006; Yasmi et al., 2006; Brummans et al., 2008; Shmueli 2008, Shriver & Peaden, 2009; [Oughton and Bracken, 2009](#); Fischer & Marshall, 2010). Framing allows for an understanding of the fact that the same event, intervention, or whatever it may be can be framed differently by different people, and is therefore understood differently by different people. For instance, some may frame a particular intervention as 'natural', whereas others may frame it as 'unnatural'. This framing, in turn, dictates (but is also dictated *by*) positions with regard to the particular intervention. Moreover, those frames can be understood as persuasive as they get used rhetorically to try and influence other people to ascribe to one's own interpretation of an intervention (Gray, 2003: 13; [Oughton and Bracken, 2009](#)) [[Gray, 2003 – Making Sense of Intractable Environmental Conflicts](#)]. This, indeed, is the approach taken to framing when considering the 'marketing' of schemes by a decision-making group to a broader group of stakeholders and a wider public. This is the rhetoric of 'political language' (Parkin, 1984). However, there is also a much more personal interpretation of framing to be considered, and one which is particularly relevant for this paper. Davis & Lewicki define framing more broadly as:

Focusing, shaping, and organizing the world around us. It is about making sense of a set of undifferentiated events and defining them in terms that are meaningful to us. It is about defining the reality around us by selecting some elements as central and essential and others as peripheral or "background" (Davis & Lewicki, 2003: 200).

In this sense, framing is about understanding. It is about interpreting something in a way that is consistent with our prior assumptions, in terms that are familiar and agreeable. For, as Rapport remarked "to find in new situations echoes and reflections of old is to have one's prior assumptions and evaluations vindicated, and to reaffirm that the world around one is governed by principles which are consistent, and amenable to one's reason and comprehension" (Rapport, 1993: 153-154; Emery, 2010).

The second point of relevance to our paper is that frames are not fixed. Indeed conflict management and arriving at decision-consensus is often achieved through a process of *re-framing* or *frame broadening*, in which interpretations become shared (Davis & Lewicki, 2003; Gray & Putnam, 2003; Gray, 2004; Kyllönen et al., 2006). In our study, however, we will demonstrate how consensus was not reached by each individual with decision-making responsibility arriving at a common management frame. Instead, each individual reframed the intervention in ways amenable to their own prior assumptions. The net result was consensus and the go-ahead of the project, but it was a *consensus of action* rather than a *consensus of motive*. [To understand this from a rhetorical perspective it is necessary to understand rhetoric not just as strategic persuasion, but as a much more pervasive and omnipresent feature of human life and interaction.](#)

Comment [SBE22]: Cut out or down and put in discussion?? Maybe nice to keep something of a hint here of what is to come

[3.3 SUB-HEAD—Rhetoric-Culture??](#)

Unlike the five groups of stakeholders listed by Wheaton et al. (20086) for a post-normal or participatory model of intervention, the river management intervention described in this paper principally involved only stakeholders from the second category of stakeholders (managers involved in decision-making) with limited input from the fourth category (scientists conducting analysis and making recommendations). Does this suggest, therefore, that below the level of interest of the media, or beyond the gaze of a broader inquisitive public, or – even – beyond the prescriptive formalities and stringencies of EIA, that there is a lesser role for rhetorical persuasion in order to achieve legitimacy for a chosen decision? On the contrary, a broader view of rhetoric as omnipresent and mediated through everyday interaction requires a consideration of the means employed by that small group of decision-makers to legitimate a particular course of action to each other and themselves. For it would be wrong to assume, of course, that those decision-makers involved in the intervention are merely rationally trained professionals that are free from the influences of their own value judgements, moralities and world views. Moreover, when decisions rest in the hands of so few it becomes particularly important to examine the means by which persuasion works at the everyday level, within a pressing context of ‘needing to do something’ about a perceived problem [could add ref here to the found paper].

Comment [SBE23]: Would this be better placed in a more general introduction to the paper?

Comment [LJB24]: I quite like the depth here, which may be too much earlier on.

Fernandez (1986) argues that encounters with the *inchoate* are a constant feature of human life. He describes the inchoate as a ‘gnawing sense of uncertainty (ref) or as the ‘not yet formed’ (ref), which represents the changeability and unexpectedness of the situations in which we find ourselves. Rhetoric is presented as the everyday and omnipresent means of dealing with the inchoate through mediated acts of what Carrithers (Ref) calls *agency-cum-patience* – meaning the doing-and-being-done-to (Ref) in interactions with other people in ways appropriate to the changeability of the situations in which the encounters occur. Bitzer (Ref) first proposed the idea of the ‘rhetorical situation’ and argued that if it is to be effective rhetoric must be tailored to the particular situation in which it is applied. If the situations are not constant, but amorphous and ever-changing, however, we can begin to understand how the constant emergence of new, but not quite familiar situations requires of us and others ‘constant rhetorical ordering/adjustment’ (Ref Carrithers or me?). Much of the rhetorical adjustment that takes place is closely associated with identity or concepts of personhood (Burke, 1969; Carrithers REF REF REF, Emery?) as in the process of responding to new situations, in the company of others (each with their own interests to pursue or defend) we are constantly negotiating ourselves and others in relation to one another (be that through association or differentiation) as well as in relation to the circumstances encountered at a particular moment. Those rhetorical adjustments could be considered as a type of re-framing as new situations are rendered comprehensible and amenable to our prior assumptions by applying and creating new definitions. This view of rhetoric as interactively achieved, however, views rhetoric not just as a creative vehicle for making new situations amenable to our prior assumptions and values. It also allows that through processes of interaction, as people persuade one another, what is amenable to a person, for their sense of personhood, is also negotiated. In other words, rhetoric *can* be used to reframe something to make it appear consistent with one’s prior assumptions. In the process of doing so, however, those rhetorical interactions with others may also modify what one’s prior assumptions subsequently become.

Comment [LJB25]: Why not both?

Comment [SBE26]: cut down

Comment [LJB27]: May be shorten and make sure the link with paper is explicit. We could also link to role of intermediaries from STS literature here? I can summarise this for you if need be?!

In our case study, presented below, the inchoate emerges as the group of decision makers are faced with a proposal to modify the course of an upland channel in pursuit of a number of specific objectives. Such a proposal, to most of the decision-makers, challenged their prior values and beliefs about the appropriate means of intervening in ‘natural’ systems and therefore required of them a certain degree of rhetorical adjustment within and amongst

themselves to agree, as they eventually did, to go ahead with the work. The proposal, and their involvement with it had the potential to challenge not only their ideas about appropriate intervention, but also their ideas about themselves. How **and why** that agreement was reached, in spite of the initial challenges it posed, is the subject of the remainder of the paper.

4. Introduce the The case study, location, species and actors background and characters [800 words]

Comment [SBE28]: This whole section could be at least halved in length – but its important to keep the main thrust of it as it is more than merely contextual for our analysis – it is a significant element of the rhetorical situation ...

The River Esk and its catchment have been subject to a concerted conservation management effort since 1990 when an action committee was established by a group of riparian land owners and anglers. The North York Moors National Park Authority (NYMNPA) and the Environment Agency (EA) then became partners and eventual organisers of the subsequent conservation efforts from 1997 onwards. Over the twenty years that management has been taking place, however, the focus of conservation efforts has ~~not remained the same~~ varied. The reasons for the change in emphasis may be considered as twofold: i) changes in knowledge, evidence, perception or particular issues of concern, and ii) changes in the source of funding for conservation efforts.

Comment [LJB29]: And iii) changing regulation?

The initial committee established in 1990 aimed to improve the River Esk for its fishery and other wildlife. In particular, the river's population of Atlantic salmon (*Salmo salar*) and brown trout (*Salmo trutta*) were believed to have been in decline since the 1960s as a result of drier summers, declining water quality and habitat loss (NYMNPA, 2001 [thesis ref]). The particular interest in the fishery was maintained and reinforced beyond 1997 following the involvement of the NYMNPA and the EA. The interest in the fishery was reinforced by the fact that the funding for the conservation effort was secured through the EU's objective 5b fund (for rural development in economically deprived areas) with the stated objective to “protect, conserve, and enhance the River Esk habitats for fish and other wildlife so as to *increase the economic value* of the river to the local community” (NYMNPA, 2001: 6, emphasis added). Enhancing the fishery, therefore, was clearly linked to the requisite economic objectives of the funding stream which ran until 2001.

Comment [LJB30]: Do we need to include committee name?

From the mid to late 1990s awareness also rose of the existence, importance and vulnerability of a population of freshwater pearl mussels (*Margaritifera margaritifera*) in the River Esk which was identified as being too small to sustain itself and in terminal decline (Oliver & Killeen, 1996; Killeen, 1999). Pearl mussels were formerly widespread in Europe and abundant in England but recent surveys have revealed most former populations to be virtually extinct with little active recruitment (Chesney & Oliver, 1998; Skinner et al., 2003). They are therefore listed as a UK Biodiversity Action Plan (UKBAP) priority species and are afforded coordinated conservation attention at the national level. With the end of objective 5b funding in 2001 and the increasing recognition of the threatened nature of the pearl mussel, then, conservation efforts have turned increasingly toward the protection and enhancement of the pearl mussel over the last decade. This has also coincided with a change in funding priorities away from rural development to a more specific focus on habitat and species conservation. The efforts of the management team to secure further funding, therefore, emphasised the plight of the pearl mussel over and above other concerns. Rory

Lane², farm conservation manager with the National Park, said that the management interventions required for pearl mussel achieved the same general benefits to the river habitat as fisheries management schemes, but it was the pearl mussels that the funders were now interested in. The pearl mussel was seen to 'push the right buttons' and 'tick all the right boxes' in terms of what the funders were looking for and the use of the word 'extinction' in relation to the local - genetically distinct - population of Esk mussels was said to 'really make them [the funders] sit up and listen' (Rory Lane, Penny Ringsell). This suggests that the motives for pursuing funding through recourse to the pearl mussel are, in part at least, rhetorical. The conservation efforts shifted from a focus on fish to pearl mussels, therefore, due to an increased awareness of the pearl mussel as well as a change in emphasis from the funding bodies. The result was the establishment of the Esk Pearl Mussel and Salmon Recovery Project (EPMSRP) in 2006 ([Bracken and Oughton sub](#)). This remained a joint venture, principally between the NYMNP and the EA, with match funding provided by the Heritage Lottery Fund and the local Regional Development Agency (Yorventure). Despite the shift in emphasis towards the pearl mussel and away from fish, the project retains salmon conservation as one of its primary objectives. This is not primarily because of the importance of salmon *per se*, but because the salmon plays an important role in the life cycle of the pearl mussel: acting as a host for the pearl mussel in its parasitic juvenile stage ([Hastie et al. 2000](#); [Skinner et al. 2003](#)). ~~[Reference?]~~. The principal aims of the project are to improve the river habitat, restore the pearl mussel population, increase populations of salmon and trout and promote good land management within the catchment (Hirst, 2008). These aims are being implemented through a combination of "river restoration work" and a "captive breeding programme" for pearl mussels which will be re-introduced into the Esk once they have matured (Project Website: <http://www.northyorkmoors.org.uk/pearl-mussel-and-salmon-recovery-project/>, 2011, emphasis added). It is interesting to note that the terms 'river restoration' and 'habitat restoration' are used interchangeably by the project and the implications of this semantic blurring will be reconsidered in [Section XX](#). The principal 'restoration' activities have thus far included bank side fencing, the creation of vegetated buffer strips along the watercourses and the installation of alternative cattle watering and crossing facilities (to reduce the impact of erosion caused by poaching from cattle on the banks of the river).

Comment [LJB31]: Trying hard to get this paper published but just sent in a revised version so we'll see what happens...

~~Pearl mussels were formerly widespread and abundant in England but recent surveys have revealed most former populations to be virtually extinct with little active recruitment (Chesney & Oliver, 1998; Skinner et al., 2003). They are therefore listed as a UK Biodiversity Action Plan (UKBAP) priority species and are afforded coordinated conservation attention at the national level. The pearl mussel has been shown to be very sensitive to a range of environmental factors including pH, eutrophication, BOD, calcium and phosphate levels, nitrate, water depth and flow velocity, channel structure and management and host fish stocks (Skinner et al., 2003; Killeen, 2006). In the Esk, however, it was fine sediment pollution that was identified as the most significant cause for the decline of the pearl mussel and has been prioritised for management attention. High levels of fine sediment, carried in suspension in the river, are known to clog the interstices in gravel beds which provide the habitat for the pearl mussel; thus restricting the supply of oxygen and leading to eventual suffocation (Skinner et al., 2003; Adams and Beschta, 1980; Carling 1984; Chapman 1988; Altmüller and Dettermer, 2000 [those in Blue are Bracken Refs ... are they appropriate to include here?]).~~

Comment [SBE32]: Cut down

Comment [LJB33]: If we move the first few lines I'm not sure we need the rest?

² All personal names are pseudonyms.

Despite a lack of historic data on pearl mussel populations and on fine sediment within the watercourses of the catchment a link between mussel survival and sediment was made [my representatives from the EA](#) on the basis of [a consultant's report](#), anecdotal evidence of increased turbidity, ~~and~~ the River's perceived cleanliness in terms of other pollutants ~~and their own expertise~~. An additional survey of sediment impacts on river gravels was carried out in 2006 and concluded that due to depleted oxygen levels in river gravels (as a result of sediment blocking) the Esk is totally unsuitable for mussel recruitment. However, it also suggested that not only sediment but nitrate, phosphate and BOD levels were also higher than required by the pearl mussel for successful recruitment (Killeen, 2006). Work by Durham University has been undertaken to better understand the spatial sediment flux within the catchment (Bracken & Warburton, 2005; Mills, 2006; Bracken, 2007) and to relate this to salmon breeding success and pearl mussel habitat. Of particular relevance for our current analysis, this monitoring work identified that Glaisdale Beck - on which the [bend remove meander realignment project](#) took place - contributed a relatively high quantity of fine sediment to the Esk system in relation to the size of its sub-catchment. This is one of the reasons, therefore, that a rapidly eroding meander on Glaisdale Beck became a focus of attention for management intervention. The specific details of the case study ~~will be~~ [are](#) introduced in the following section. Prior to that, it is necessary to introduce the main characters involved in the intervention, their job titles, their rhetorical roles in relation to one another, and their prior views on river channel realignment before the project went ahead (Table 1).

Table 1: Main characters involved in the Glaisdale Beck realignment project

Name ¹	Job role	Principal interests	View on bend removal channel realignment prior to the project going ahead ²	Rhetorical role adopted in subsequent negotiations
Dave Parry	Local angler and river officer	Improving angling in the River Esk	The amount of sediment entering the beck at the meader is “thoroughly bad news” and “we want to be doing this” [straightening the beck by cutting off the meander removing the bend]	The Assertor or Protagonist
Penny Ringsell*	National Park ecologist	Protecting pearl mussels	It is “ridiculous” and “just absurd” to be interfering with “one of the few natural rivers left”	The Persuaded
Chris Lawson*	Environment Agency ecologist	Protecting pearl mussels	“It doesn’t sit comfortably with me” ... “Its not something I feel we should be doing as routine” ... “I would not advocate that” as a means of “reducing sediment input”	The Antagonist
Rory Lane*	National Park farm conservation manager	Improving the environment of the whole Esk catchment	“Its pretty much a no-no actually, its something you shouldn’t want to be doing”	The Broker
Jerry Montrose	Geomorphologist	Geomorphological research	“My first reaction was ... this is a daft idea” ... “there’s literally hundreds of those bends in the uplands so ... if you do one why not do ‘em all?”	The “Voice of Reason” or Legitimator

Notes:

1. All names are pseudonyms
2. Note that these views were elicited retrospectively - after the work had gone ahead.
3. * = Members of EPMSRP.

Table 1 presents the key ~~people characters~~ [can we use a better word than characters?]~~?~~ involved in the ~~bend removal~~**channel realignment** project, their job roles and their principal relevant interests. The key point to draw out at this stage is that, with the exception of Dave Parry, all of the characters involved in the project looked upon ~~the proposed intervention~~ **channel realignment** negatively, ranging from the moral absurdity of interfering with a natural river, through to a sense of personal discomfort and a questioning of the logical merits of tackling a single bend. ~~As mentioned previously, it is the purpose of the subsequent discussion to look at the means of persuasion that the characters employed on themselves and each other, which led to the eventual go-ahead of the project.~~ The rhetorical role assigned to each of the characters in this process is presented in the rightmost column of Table 1 and will be elucidated further in the following section.

An additional character not included in Table 1 is the landowner. The landowner is a farmer and was not formally interviewed as part of the research. However, according to the other interviewees the farmer’s principal interest in the project was the threat that the erosion of the meander, and subsequent land-slippage that was occurring, could pose a risk to his farm house, which is located approximately 400 metres from the beck.

5. Events and arguments Chronology of Events, Arguments and Sediment Fluxes—2000 words approx

5.1 *The bend*

Start this section with a brief paragraph or two on the geographical and geomorphological context of the meander [LB/MP to provide]. Can also say something about surrounding land use – permanent pasture etc used for grazing livestock/silage making etc., mention trees along beck? Sinuosity of beck etc etc. SE – it would be useful to stress that it is a relatively ‘natural/undisturbed’ beck in terms of its structure and form [but only if this is true]

Formatted: Font: Italic

Comment [SBE34]: Something to pluck from your thesis MP?

5.2 ~~The Early Stages~~

Comment [SBE35]: Cut down

The earliest details about the issues at the ~~bend meander~~ on Glaisdale Beck are somewhat sketchy and were provided by Rory Lane. ~~Rory is farm conservation manager with the National Park and also works part time on his family farm, which is located just outside the Esk catchment.~~

Comment [LJB36]: Partly repetitive

According to Rory, the erosion of the ~~meander bend~~ had been repeatedly raised by the landowner as an issue during Rory’s visits to the farm over the past eleven years that he had worked at the National Park. Rory had been unsure of the best course of action, however, and had referred it to his colleague at the (then) River Esk Action Committee (REAC). No action was taken ~~by he or his colleague, though~~, since they both saw it as “always too difficult”. He admitted that they would never have “got round to doing it” had it not being for the involvement of Dave Parry, ~~a proactive local angler~~ who had met up with the landowner and took the intervention idea of a realignment forward.

Comment [LJB37]: In table 1

Rory, farm conservation manager and part time local farmer, is both pragmatic and enthusiastic about the local environment. ~~As such h~~He is well-respected by the local farming community and his work colleagues alike. His pragmatism and, in particular, the mutual respect he is afforded means that he often acts as a middleman, or “broker” in negotiations between land managers and conservation practitioners. He admits to not having known very much about pearl mussels before their plight was publicised and suggests that he was brought in to the EPMSRP because he was seen amongst colleagues as “quite [a] useful person to get something happening”. ~~Rory was seen as useful to the project not just as a broker, but because of his local farm contacts, the respect he was afforded and his pragmatic approach to getting things done. Rory’s contacts~~ This would be particularly important for a project that would require the buy-in of local farmers in order to implement management intervention across the catchment. Unlike his ecological colleagues, then, Rory was not emotionally motivated by the plight of the pearl mussel. ~~This is not to say that he was not motivated by their plight.~~, but ~~instead~~ instead, he saw the plight of the pearl mussel as part of the broader environmental condition of the Esk catchment, which he was committed to improving. Equally, although stating that channel realignment was considered a bit of a “no-no”, Rory indicated less moral conviction with regards to altering ‘natural’ river processes than other members of the EPMSRP. Chris Lawson, his colleague from the Environment Agency, for instance, had a much stronger personal interest in physical environmental processes. Rory, on the other hand, did not have an academic background in conservation or environmental processes and retained a relatively pragmatic view by virtue of his experiences of farming in

Comment [LJB38]: Delete - repetitive

the local area. ~~Despite showing a certain indifference to the issue in the first place, and despite being less embroiled in the rights and wrongs of intervention it appears that~~ Rory played an important 'brokering' role in the decision-making process. In fact, it is not only *despite* not being involved in the moral arguments about the rights and wrongs of intervention that he played such a role, it is precisely *because* he was perceived to be less partisan and acting on moral conviction that he was respected as a broker.

[CUT THE ABOVE SECTION DOWN]

5.23 *The Applications*

After liaison between Dave Parry and the landowner, and a mutual desire to do something about the perceived problem at the meander, the process of applying to the relevant authorities to truncate the ~~meander~~ bend and thus cut-off the area of rapidly eroding bank began. ~~As previously mentioned,~~†The landowner's principal concern was the potential risk posed to his property as a result of land slippage and subsidence, whereas Dave Parry's principal concern was the impact of the eroding sediment on the salmon and sea trout fishery in the River Esk.

The first application, submitted in March 2006, was to the [Environment Agency EA](#) for a consent for works affecting watercourses under the Water Resources Act 1991 (Section 109). The application, like all subsequent applications, was made by the landowner with Dave Parry acting as his agent. The application described the proposed work as the re-routing of the beck away "from [a] very boggy [sic] silty area 400 meters [sic] long across [sic] a narrow spit of firm land" with the intention of "stopping the siltation of the beck and main river and in due course improv[ing] water quality and spawning areas" for sea trout and salmon. The application not only suggested that the work would be beneficial for salmon and sea trout but "for all stream life". Little evidence was provided in support of the application with the exception of a rudimentary site map and a general statement that the meander "deposits many tons of silt" into the beck. No potentially negative consequences of the work were identified.

The EA consent application was soon followed by a planning application under the [Town and Country Planning Act 19XX](#) in May 2006. The application provided less information than in the EA application and simply reiterated the purpose of the work to "redirect" the beck and "stop" the siltation of the beck and main river. Neither of the applications, at this stage, made reference to the pearl mussel or to the perceived threat to the landowner's property.

These original applications were viewed by the reviewing authorities as 'lacking detail' and as potentially 'misleading' (Jerry Montrose interview). Additional information, therefore, was requested from the applicant and this was submitted in March 2007. In the resubmission a new route for the meander was identified which required a shorter realignment and is justified as losing 'less natural beck' (which, according to the applicant, had been verbally communicated as preferable by the reviewing agencies) and requiring the removal of only two trees. The tree loss is the only anticipated negative environmental impact which is confidently asserted to be 'a small price to pay for such an improvement'. A rudimentary cross-section of the works is included with cursory and unspecific mention of mitigation measures in the form of re-seeding banks, with the addition of 'some rocks ... placed on bends to help'. The justification for the works is based on visual assessment of the 'many tons' of silt and sediment being washed into the catchment from this beck and from this bend in

particular. The work is required to improve spawning gravels for salmon, sea trout and - for the first time - habitat improvement for pearl mussels is also used to justify the works. The rhetorical nature of this inclusion is indicated by the fact that, in a later interview, Dave Parry made clear that he thought fine sediments were not the principal reason for the decline of the pearl mussels in the catchment. Once again, there is no reference to the perceived threat to the landowner's property included in the application.

The vague, yet assured language evident in the planning application is symptomatic of the role played by the protagonist among our ensemble of characters: Dave Parry. Dave describes himself as a 'river officer' and justifies his expertise by virtue of the fact that he has been a fisherman all of his life and has learnt what conditions fish require through the intervention work he undertook on his own stretch of the River Esk which led to significant increases in the salmon catch. As shown in Table 1 he was very certain in his mind that the truncation of the meander was the right and *only* way to solve the fine sediment problem arising from Glaisdale Beck. Moreover, he challenges and derides those with alternative views:

It was the only way of achieving anything, there was no other way that wouldn't cost under half a million pounds perhaps. There was talk of doing piling and all sort of stuff ... huge schemes [chuckling derisively], where for not very much money we could alleviate the matter by cutting through. (Dave Parry interview).

Dave pointed out that he'd had quite a few 'run-ins' with the conservation officers working on the river but could really not 'see where they were coming from' and felt that 'a lot of them don't really know what they're on about' (Dave Parry interview). He said they often question the habitat impacts of his river work and that because 'they've been to university and got their degrees ... they like to think that they know best' (ibid.).

Dave's forthright, confident and assured belief in the moral imperative to go ahead with the work translates through conversation and in the written applications into what Bailey calls assertive rhetoric. Thereby he presents statements as 'so essentially true that they are beyond the need for corroborating evidence', which represents an attempt to 'eliminate all opinions that diverge from one's own' and to ensure that one's own version of the 'truth' 'should command assent' (Bailey, 1983: 125, 131). Moreover, the strategy incorporates the rhetoric of identification or belonging (Burke, 1969) by excluding those who disagree with one's own position by 'ignoring them, ridiculing them, or making them objects of anger and contempt' (Bailey, 1983: 135).

5.43 The Site Meeting

Following the planning submissions a site visit was conducted in July 2007 with the landowner, Dave Parry, Penny Ringsell from the National Park and Jerry Montrose – a geomorphologist employed as a consultant to advise on the proposal (refer to Section 5.45). Penny is a senior ecologist at the National Park and is motivated to 'conserve the natural world' (Penny Ringsell interview). In particular for our case, she is motivated by a moral and emotional imperative to protect the pearl mussel, which she refers to as 'poor souls' (Penny Ringsell interview) (see also Carrithers et al., 2011). She points out that she has a difference of opinion with anglers in terms of what constitutes favourable river management, contending that 'management for fish is not necessarily good for the whole river habitat'. She cited an example whereby woody debris was removed from one of the becks (supported by the predecessor to the EPMSRP) to enhance the passage of fish but this reduced habitat

variability and was thought to have led to an increased mobilisation of previously trapped fine sediments. Based on such experiences, and opposed to interfering with 'natural' river processes, Penny was originally opposed to the idea of truncating the meander (Table 1).

Penny was persuaded otherwise, however, 'once on-site' having talked to 'lots of others' about the issue and was convinced (and shown) that the site presented a particular set of geological circumstances that meant that the favoured approach to restorative work – bank-side fencing – would be ineffective. The deciding factor for Penny, however, was that she had been convinced that this work would be of benefit to fish and the pearl mussel:

And were it not for the fact that there are problems about siltation throughout the river, I would have rather have said okay, there's a bit of silt coming out here, we'll accept it, but if it weren't for, but because of our concerns about salmon and pearl mussel, I felt that overrode the concerns about messing about with the natural river system, I felt that was appropriate and so I was for the deviation in the end. (Penny Ringsell interview).

Penny's persuasion, we may envisage, was conditioned during this encounter by a combination of: i) the moral and unequivocal assertions of Dave Parry; ii) a personal, emotional and moral imperative to protect the pearl mussel; iii) the absence of co-ecologist Chris Lawson, the main dissenting voice and antagonist to Dave Parry; iv) the legitimacy afforded to the proposal by the presence of an expert geomorphologist who identified unique conditions and; v) her involvement in a 'project' that would have to demonstrate to funders what had been achieved as part of the pearl mussel recovery project.

5.45 *The Scientific Consultancy Work*

In response to the lack of detail and rigour included in the planning application an academic geomorphologist (Jerry Montrose) was employed as a consultant on the proposed works. Rather than being a requirement placed on the application, the commissioning of this work was fifty percent funded by the [EA Environment Agency](#) on account of the fact that the results would be of wider interest to the EPMSRP. Whilst this step falls short of endorsement of the proposed work by the EPMSRP, it does tie the interests of the group to the interests of the decision and to the outcomes of the proposed work.

The consultancy was undertaken in July 2007 and included: i) photographic documentation of the key geomorphological features; ii) measurement of channel cross-sections; iii) survey of a cross-valley profile taking in the meander and the associated landslide complex; iv) measurement of channel slopes; v) observations of bank and river-bed material composition, and; vi) review of historical aerial photographs of the site. ~~As stated in the research report,~~ [The purpose was to examine whether the proposed work would alleviate the slumping of soil into the beck, whether it would have adverse scouring or siltation problems downstream, and what modifications to the proposed plans could be made to improve the environmental outcome. The work does not, however, substantiate the nature or scope of the environmental impact associated with fine sediment loading \(although this is partly taken as a given, based on known prior research \[SE re-check this, or check whether reference is made to other sediment impact work\]\), it does not comment on the potential impact of the landslide complex on the landowners' property and nor does it provide quantified estimates of sediment associated with current channel processes or the proposed work. It was, however, submitted in the knowledge that the short and longer-term impact of the proposed work – in](#)

terms of suspended fine sediment loading - would be scientifically monitored as part of PhD research being undertaken in the catchment.

The research report, in contrast to the language employed in the planning application, exudes scientific authority and provides credible and evidence-based support for the assertions made by Dave Parry. This includes monitoring work that shows Glaisdale beck to be contributing significant quantities of fine sediment to the downstream Esk river system ([cite Bracken & Warburton, 2005 – or leave out in the interests of anonymity?](#)) and visual support for the view that the meander in question was the dominant source of sediment within the Glaisdale sub-catchment. However, whilst using more authoritative language, the report does not make the type of unsubstantiated assertions that appear in the planning application. For instance, whilst the planning application asserts that ‘the meander deposits many tons of silt into the beck’, the consultancy report takes a more cautious approach:

The site is eroding rapidly and is *likely* to be contributing a large amount of fine sediment to the downstream river system. Although the significance of this sediment source is not known in quantitative terms, [previous work has] identified Glaisdale Beck as a significant sediment source within the Esk catchment. (Jerry Montrose, consultancy report, emphasis added).

This additional caution is exercised by virtue of Jerry’s awareness of the lack of specific data to substantiate the claims, and the inherent complexity and uncertainty associated with geomorphological systems.

The research report includes four different intervention options: i) alleviate the problem at source through bank protection; ii) cut-off the entire ~~meander~~~~bend~~; iii) re-align the ~~bend~~~~meander~~, and; iv) do nothing. The report eventually favours the third option on account of the fact that the first option would be too expensive and require significant engineering works, the fourth [would not address the problem \[SE, need to check what it actually says here, and the issue of whether or not it is identified as a ‘problem’ at all\]](#) and the second would involve the loss of more of the existing river channel and increase the gradient to a greater extent than the third option. Unlike the planning application, the consultancy report also identifies potential negative consequences of undertaking the work. This is principally the potential for adverse upstream and downstream erosion and sedimentation that would occur as the channel readjusted following an increased gradient caused by the shortening of the length of river channel. To address this, the report includes detailed mitigation and recommends ‘a carefully engineered drop structure or grade control structure ... [to create] an abrupt drop in the channel bed and water surface elevation in a downstream direction’ (Jerry Montrose, consultancy report). The report also stresses that ‘great care’ should be exercised during the excavation work to prevent erosion of the new channel margins, including consideration of the timing of the work and the need for sediment control measures during construction.

The report explicitly or implicitly provides a number of narrative threads that can be used to construct assurances in favour of the work going ahead. Scientifically, these include: i) that the historical and geomorphological context of the site is understood; ii) that the beck and this particular ~~meander~~~~bend~~ do indeed *appear* to be a significant source of sediment to the river system; iii) that there are (although here unspecified) negative environmental consequences associated with this sediment loading; iv) that the proposed strategy has the potential to alleviate this sediment loading; v) that alternative intervention options have been considered; vi) that potential adverse consequences have been identified with appropriate mitigation strategies recommended, and; vii) detailed monitoring will be undertaken before, during and

Comment [LJB39]: Probably keep in. Still could be either me or Jeff being consultant.

after the work so that adverse impacts can be identified and necessary mitigating adjustments made. In addition to (and perhaps more rhetorically important than) the scientific reassurances provided by the report, it also introduces two, additional persuasive threads. The first is that the site presents a 'unique' or 'special' set of geomorphological circumstances that warrant an intervention of this nature. This thread negates Jerry's initial concern that it was nonsensical to truncate a single bend in a river system with hundreds of similar bends (Table 1) and was picked up, as we saw, by Penny Ringsell during the site visit (Section 5.3). The second is that interventions of this kind are extremely rare and the work, with appropriate monitoring and oversight, therefore provides an 'excellent test-case' or 'land management exercise' for the benefit of potential future similar works. Somewhat contradictorily, the first of these threads relies on the site's specificity, whilst the second relies on its broader comparability. Together, they make a powerful case for the work going ahead by framing it as an exception, and by introducing benefits of the work that are perhaps more readily tangible and predictable than the intended environmental benefits for which the work was commissioned.

5.56 THE AGREEMENT

Following [discussion of the purpose, the geomorphological research and consultancy report](#) all of our characters, one way or another, had come around to the idea of supporting the [bend removal/channel realignment](#). The final person to be convinced, or to consent at least, was [EA Environment Agency](#) ecologist Chris Lawson. Chris is an experienced aquatic biologist who favours a 'natural ecosystems approach' and minimal anthropogenic interference with natural processes. On this basis, he took the most resolutely antagonistic position with regard to the idea of the realignment. Chris argued that sedimentation is a natural part of riverine processes that is not mutually exclusive with aquatic life. He referred to river systems he had seen in Texas that had 'twenty foot eroding cliffs' which 'still had brilliant fisheries in them' (Chris Lawson interview). He also pointed out that there were other protected species - such as Lamprey - that require fine sediment habitat for part of their lifecycle. Seeking to eradicate erosion entirely, therefore, was not in the interests of maintaining a biodiverse natural ecosystem.

Reflecting on the final discussions that took place prior to agreement, Dave Parry recounted an incident with Chris in which he rebuffed Chris's arguments against interfering with a natural process:

I said tsunamis are natural, earthquakes are natural, plagues are natural, but you really try to do something about them if you can. (Dave Parry interview).

As Dave also noted, if the decision had been left entirely to Chris then the work would not have gone ahead. This was also alluded to by Jerry Montrose who pointed out that the [EA Environment Agency](#) tend to be 'quite sticklish for stuff going ahead' and it was only following 'quite a bit of intergo [with] the National Park' that an agreement was reached (Jerry Montrose interview). We might deduce, therefore, that the National Park, who had come to support the alignment, finally convinced Chris to go ahead with the work: with Rory acting as a relatively impartial but respected broker, with Penny expressing emotive moral concern about the pearl mussel, and with both adopting the 'scientific test case' argument (Jerry Montrose interview). However, it was on surprisingly different grounds that Chris explained his eventual consent:

We then looked at it as a group, ourselves, the National Park, and we decided that, well, we had a real sort of open meeting where there was a lot of views shared about natural processes versus truncation and it was not an easy decision to decide to go ahead with this. I personally was against it. Erm at the start, still it doesn't sit comfortably with me, even now, you know its not something I feel we should be doing as a routine. However if the house was gonna go in something needed to be done. (Chris Lawson interview).

Chris consented because of the threat to the farmer's house caused by the landslide-complex associated with the [bendmeander](#). This is despite the fact that this argument was never formally included as a justification for the works in any of the planning applications and nor was it endorsed by the scientific consultancy work. Jerry Montrose did not identify a 'great risk in the short-medium term' to the farmhouse and therefore argued that for the work to go ahead it 'had to be driven by ... what was happening to the stream and the fine sediment problem' (Jerry Montrose, interview). Ironically, then, the person who was most opposed to the realignment eventually agreed to it on the grounds of a tangential argument for which there was the least corroborating evidence. What this ~~(face-saving[?])~~ strategy allowed, however, was for Chris to consent to the work going ahead without having to concede on his principles and to maintain his initial stance (Table 1) that this was not an appropriate strategy for reducing sediment input. [Chris did not concede to the assertions of Dave Parry, therefore, and even introduced his own emotive rhetoric into his new positioning: 'thank goodness his house is protected ... that's the number one thing'](#) (Chris Lawson interview).

Comment [LJB40]: Keep.

5.6 THE CUT-THROUGH [bend removal](#)

On October 10th 2007 the channel was truncated ([Figure X \[photo\(s\) of the work underway\]](#)). Dave Parry oversaw the work and commissioned a single contractor with a [heavy plant digger](#) to do the earth moving. Academic geomorphologists were also present, but were there to record data rather than to advise on the channel modification. The work went ahead with little recourse to the mitigation recommended in the scientific consultancy and represented a combination of what Jerry Montrose referred to as the reviewing agencies having taken 'their eye off the ball' and Dave Parry having perhaps 'bitten off more than he could chew' (Jerry Montrose interview). Jerry had sent additional reading material for the agencies to look through and had suggested that consultation be made with engineers from the [EA Environment Agency](#). Neither of these, ~~however~~, were followed up. On the ground, Jerry felt the work 'fell short' of what was suggested in his reports and, in particular, they did not bring in large rocks to construct the flow control weirs that were necessary to prevent upstream ~~and~~ /downstream erosion. Jerry suggested that Dave had anticipated uncovering suitable rocks for the weirs during excavation but in a later interview with Dave he appeared ignorant of the need for weirs and for their having been included in the report that was commissioned as part of his application: 'I wasn't aware that it was gonna do that [cause upstream erosion] at all' (Dave Parry interview). It appears, therefore, that the recommendations that were so important for securing planning consent were at best overlooked and at worst ignored when it came to going ahead with the truncation.

Comment [SBE41]: Matt do you have a few nice pics?

5.7 ADJUSTMENT AND AFTERMATH

Because of the reduction in the length of the channel, and ~~because of~~ the failure to install ~~check~~-weirs as advised in the consultancy report, the work led to scouring of the river-bed up to 400 metres upstream of the truncation. This left several of the members of the EPMSRP

‘uncomfortable’ as they reflected on how the work had gone (Penny Ringsell interview). Rory Lane felt that the problems had arisen because of an inability to adapt whilst the work was being undertaken, and if the lack of suitable material for construction of weirs had been highlighted at the time, then the agencies might have been able to intervene. As noted in the previous section, however, Dave Parry appears to have undertaken the work without being aware of the need for flow control structures. And whilst he acknowledged that he had learnt things from the process, and would do things differently in the future, Dave remained typically assured about the positive impact his intervention had had. When he was asked shortly after the work how long it would take to determine the success of the project he argued that ‘it’s long enough now ... it’s quite apparent that we’ve got rid of the siltation problem’ (Dave Parry interview). Indeed, the initial monitoring work did suggest some evidence of a reduction in fine sediment, but this was presented tentatively by Jerry Montrose, since it was very short-term and did not account for a range of other catchment variables. And in contrast to Dave’s almost immediate declaration of success, Jerry maintained that it would be 5-10 years before it was realistically possible to determine whether the work had been a success (Jerry Montrose interview). To counteract the upstream erosion of the channel further mitigation works were recommended by Jerry Montrose to reduce the hydraulic gradient [is this the technically correct term?] across the length of the channel and to further stabilise the banks.

Over the longer term [what else happened? I have reports from a meeting in 2009 saying that the beck had scoured down to a layer of clay with potentially negative consequences ... but this is where my evidence runs out]

To LB/MP – Initially I had thought to integrate monitoring data chronologically through all of the preceding sections [i.e monitoring before, during and after] but I think now perhaps that it is better to put all of it in this section to reflect fully on how the work went from the longer term data that you have at your disposal

[From Meeting May 2009] Urgent remedial work is required. Large amounts of gravel have been washed downstream and channel instability is a problem upstream. The channel has eroded down to a layer of clay (potential source of fine sediment to the main river).

Work required to stabilise/re-construct the upstream weir.

[from LB] Continued natural science data shows that increased channel change has occurred in the last year and that no long term reduction in fines in Glaisdale Beck has been secured.

6. Discussion [2000 words]

This research contributes a novel understanding of the antagonisms caused by an ambiguous use and interpretation of the concept of restoration; it sheds new light on how we understand processes of problem-framing and reframing in environmental management; it demonstrates the importance of rhetorical-situational contingency as a determinant of action, and; it offers critical reflection on the processes and practices of upland channel intervention. These issues are now elaborated in turn.

6.1 Competing notions of restoration and naturalness

Comment [SBE42]: MP/LB please step in here. I'm thinking a series of figures and a small amount of text showing the key results over the longer term and comparing them to baseline (if that is possible)

Comment [LJB43]: Yes, would be good. Matt do you have these from final thesis?

Comment [LJB44]: I like the way the physical data is included in and adds to the story. I'd just stop here since there's plenty to discuss as it is.

Although the ~~bed removal truncation~~ was not specifically commissioned by the EPMSRP, they took a keen interest in it and co-funded the scientific consultancy work. The principal reason for their interest was that the ~~truncation-intervention~~ had the potential to affect (either positively or negatively) fine sediment loading and, therefore, to have a bearing on the objectives of the EPMSRP project. We also know that the work was justified, in part at least, on account of salmon and pearl mussels and ~~since~~ members of the EPMSRP ~~had decision-making responsibility, they~~ were ~~also~~ complicit, in part at least, for the work going ahead on these grounds.

We argue that much of the discomfort experienced by members of the EPMSRP in coming to their decision, and much of the disagreement that took place, was on account of conflicting conceptions of 'restoration' and, in particular, between conceptions of 'habitat restoration/improvement' and 'river restoration'. The contradiction reflects the ambiguous definition of restoration (See Section 3.1X) and its ideological usage to relate any number of natural environment interventions to virtuosity. In an ideological sense, restoration acts as what Carrithers (2007) refers to as a 'minimal narrative', in that it is a minute seed of a story that, through virtuous association, has the ability to be persuasive. Moreover, restoration is especially persuasive on account of the fact that it simultaneously imbues the powerful rhetorical force of narratives of both decline and progress (Cronon, 1992). What that means is that it carries particular weight on account of the fact that it denotes the righting of an historical wrong, which is more persuasive than simply doing something good (as may be captured in the equally polysemic and narrative term *improvement* [see Emery, 2010]). However, although more rhetorically persuasive, the dual ability of restoration to move our moral imagination both backwards and forwards, and its ability to be applied across a range of settings, makes it particularly rife for confusion.

Comment [SBE45]: Note that Wheaton et al cited earlier point out that habitat restoration can come under the heading of restoration – so this is a recognised ambiguity within 'river restoration' itself

When we look at the website for the EPMSRP we find that both river restoration and habitat restoration are presented as the principal objectives and methods of the project. However, it appears that those two terms are also used rather loosely and interchangeably:

River Restoration Work

This funding will be used to carry out *habitat restoration* work along the River Esk that will improve conditions for pearl mussels, fish populations and a whole host of other riparian species such as Otters, Dippers, Kingfishers and river invertebrates. So far we have carried out *River restoration* work on a total of 26 farms, in order to help *restore the habitat* of the River Esk. (EPMSRP website, emphases added).³

This description implies, therefore, that the aims of the project are to make both the river, and pearl mussel habitat more 'natural', by rectifying prior negative anthropogenic influences. Habitat restoration refers principally to the improvement of river gravels by reducing fine-sediment loading in the river. Hence, with the ~~bend removal meander truncation~~ promoted as a means of reducing sediment loading it could feasibly also be interpreted as an act of habitat restoration (although, more correctly, it might be considered habitat improvement since it is a 'natural' rather than anthropogenic source).⁴ The contradiction arises, however, when we consider the relationship between the ~~bend removal meander truncation~~ and traditional conceptions of river restoration. River restoration is ~~frequently~~ ~~traditionally~~ associated with

Comment [SBE46]: another word here? often?

³ <http://www.northyorkmoors.org.uk/pearl-mussel-and-salmon-recovery-project/>, viewed August 2011.

⁴ It depends on the interpretation of restoration as to whether or not addressing a 'natural' source of sediment would be considered a restorative action. If the overall objective of restoration is to return the river to a notional 'pre-disturbance' state (which is presumed to be a lower level of suspended fine sediment), then any activity which works toward that end could still be considered restorative.

rectifying the negative anthropogenic influences on river form, structure and flow regime. One of the most common acts of river restoration is to re-meander stretches of river that had previously been channelised or straightened. The truncation of a meander, therefore, stands in direct opposition to these traditional conceptions and is more akin to the original intervention to which river restoration seeks to rectify (Figure X).

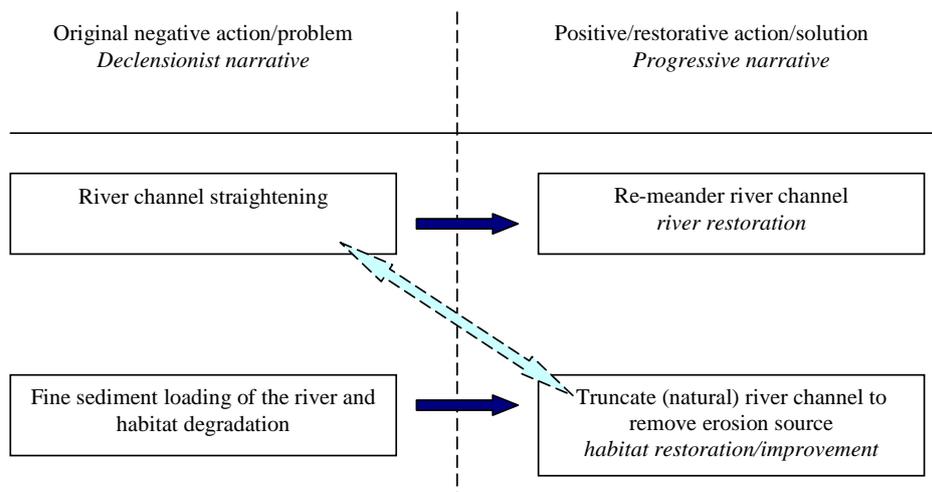


Figure X: Conflicting conceptions of river and habitat restoration.

Comment [LJB47]: Nice figure

Figure X aptly demonstrates the antagonism faced by members of the EPMSRP caused by alternative interpretations of river and habitat restoration/improvement. The antagonism arises when the same action (river straightening/truncation) can be understood at one and the same time as negative/declensionist according to one interpretation and positive/progressive according to another. Hence, when faced with the idea of truncation, the stated aims of the project for both river and habitat restoration/improvement stand diametrically opposed and the questions that arise regarding the interference with 'natural' systems also represent what we might call an interference with the moral compasses of the project team.

On reflection these two competing interpretations were never really reconciled, which left Chris Lawson seeing the project as having both negative and positive consequences:

You know, we get judged on, oh how much have you improved a river channel, and really that [the [bend removal/truncation of the meander](#)] was a sort of a loss of a river channel, but it made some things better.

Narrative, or the creation of a story, forms an important part of our means of making a persuasive moral case for a particular course of action (Cronon, 1992; Carrithers, 2007). The antagonism between these competing conceptions of restoration, however, caused a narrative disjuncture and a problem for justifying the go-ahead of the work. What was required,

therefore, was a range of alternative moral arguments that could be introduced to justify the go-ahead of the project on what we might call narratively safer ground. It is the purpose of the following section to explore how the group framed and reframed the problem in ways amenable to themselves and each other, which led to the eventual consensus for the work going ahead.

Add reference to the Human Ecology Article on restoration [probably wants to go in the intro as well]??

6.2 Reframing and Consensus

Table 1 showed that, with the exception of Dave Parry and his client (the landowner), all of the characters were originally opposed to the idea of truncating the meander. The previous section showed that, in large part, this arose out of a concern about interfering with a 'natural' river system, which caused a moral narrative disjuncture between diametrically opposed conceptions of river and habitat restoration. For the work to go ahead, therefore, a range of alternative moral narrative arguments had to be introduced. These included an over-riding concern to save the pearl mussel from extinction, the achievement of wider benefits within the river system, the altruistic contribution to knowledge achieved by treating the work as a scientific experiment and, an impending threat to the landowner's property. These arguments, combined with a justification for the work on account of its uniqueness, led to an eventual consensus for the work going ahead (Figure X).

Figure X shows the reasons given by each character for eventually agreeing to go ahead with the work. In some instances there is a clear relationship between the arguments made by one character and the subsequent arguments adopted by another. This is indicated on the diagram by an arrow. In other cases, however, we might assume that other arguments had a bearing on a character's decision, even if they did not admit it publicly. This is indicated on the diagram by a dashed arrow.

What we see across Figure X is a process of problem *reframing* to arrive at a consensus for the work going ahead. Unlike other research on processes of reframing in environmental disputes (Davis & Lewicki, 2003; Gray & Putnam, 2003; Gray, 2004; Kyllönen et al., 2006), however, the consensus is not achieved by the different characters arriving at a *common* reframing of the problem. Instead, what we see is each character reframing the problem in ways amenable to their own worldview and to their own understandings of themselves. So, for instance, although they may well have also been influenced by the arguments of others, we saw Penny eventually persuaded by her own strong moral conviction to protect the pearl mussel and Chris, on the other hand, persuaded by an argument that *did not* contravene his own values about interfering with 'natural' river processes on environmental grounds. In other words, he reframed the work as an intervention '*of* the environment' rather than '*for* the environment'. What we ultimately saw, therefore, was a consensus of action and a divergence of opinion. Indeed, the consensus of action was *only* possible on account of the divergence of opinion. This finding makes an important contribution to our understanding of framing and suggests the need for a better understanding of *divergent* reframing as a mechanism of environmental conflict management. It further suggests a need for a greater understanding of the rhetorics of self-persuasion and their relationship with the uses of the passions and reason in processes of identification (Nienkamp, 2001; Bailey, 1983; Burke, 1969).

SE - do I need to add some reference back to the characters character-names - e.g. protagonist, antagonist, rhetor, voice of reason etc.

Comment [LJB48]: I think it works without this, but on the other hand would be a nice link back,

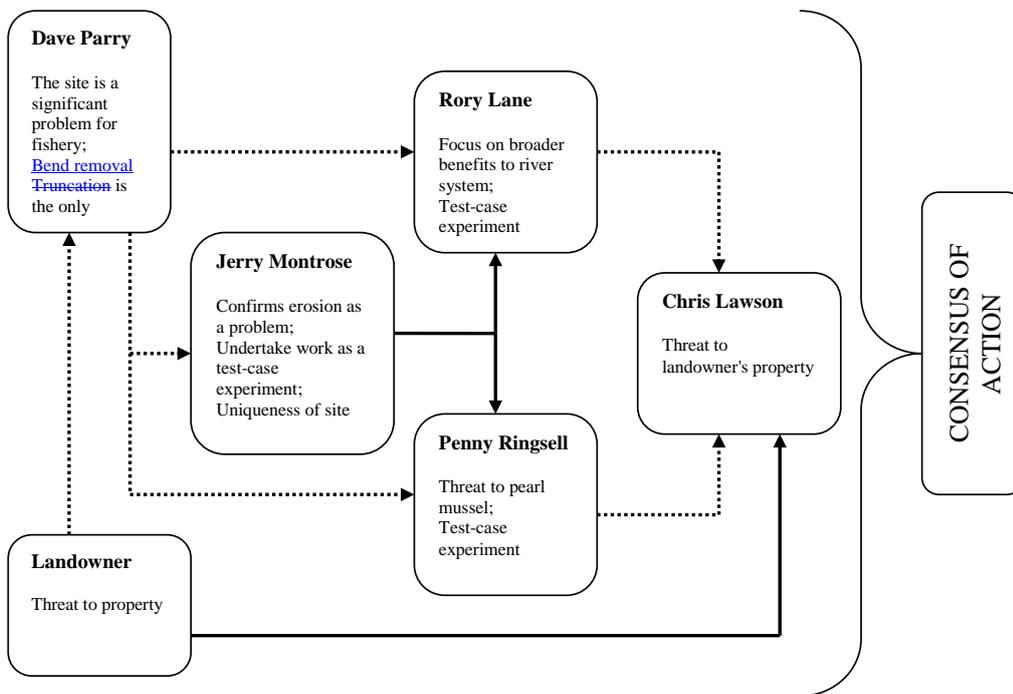


Figure X: The eventual reasons given, or arguments made, for agreeing to go ahead with the work and persuasion pathways.

Comment [LJB49]: Nice figure

6.3 The rhetorical-situational contingency of decision-making

In Section 3 we introduced the concept of the rhetorical situation (Bitzer, XX). That concept maintains that for persuasive arguments to be effective then they must be tailored to their context. Furthermore, we have elsewhere introduced the concept of situationality (Emery, 2010: pp), which recognises that situations and contexts are ever-changing and if rhetoric is to be effective, therefore, it must be adaptive to the situations that host it. What we wish to emphasise here is the *rhetorical-situational contingency* of particular behaviours and actions. This idea stresses that not only are arguments to be understood as working best when tailored to their context, but that the contexts themselves (and their changeability) can be important determinants of the rhetorics employed and the subsequent actions and outcomes that they engender.

This idea points not only to the improvisational nature of the rhetorical to-ings and fro-ings between persons, but to the almost serendipitous nature of outcomes that are contingent upon situationality. This is not to say that the ~~bend removal truncation of the meander~~ was purely a

fluke of happenstance, but that the particular aspects of the rhetorical situation that came together at this moment in time need to be seen as foregrounding rather than simply as inconsequential and background. We might say, therefore, that not only did the work proceed on account of the geomorphological uniqueness of the site, but also on account of the uniqueness of the rhetorical situation. Bitzer (1968) maintained that the rhetorical situation may include any combination of persons, events, objects, and relations and be determined further by motives, exigencies and constraining factors. A particular combination of people, relations and circumstances, therefore, contrived to forebear the truncation of the meander: The work may not have gone ahead, or may have proceeded in an altogether different fashion had it not been for the presence of Dave with his forthright assertions and 'can-do' attitude; had the site meeting not taken place without Chris; had their not been even the tiniest chance of a threat to a property; had Rory not been so respected as a broker; had the EPMSRP not co-funded the scientific consultancy work, and so on.

Perhaps the most important contextual factor for the work going ahead was the existence of the EPMSRP itself and the threat of extinction to the pearl mussel. The threat of extinction was a particularly motivating call to arms in the catchment and, indeed, was pivotal in drawing in funding for restorative work. We showed in [Section 5.4.2](#) how the meander had been identified as an potential problem for many years but that it had always been side-stepped by the environmental authorities as 'always too difficult'. What had perhaps changed, then, was the establishment of the EPMSRP with a stated remit to tackle fine sediment loading of the river. We saw, indeed, how the pearl mussel was introduced as a justification for the work in the later planning application. And whilst Penny was the only member of the group to have explicitly endorsed the work on the grounds of the pearl mussel, there was perhaps another motive for associating the [truncation-intervention](#) with the EPMSRP. That motive relates to the needs of the project to be able to demonstrate tangible outputs as a condition of their funding. This places an imperative on environmental practitioners to be 'seen to do be doing something':

In the broadest context, ecologists mix politics and science, mix a way of doing with a way of knowing. Politics and science do not mix well. Once the political will to act has been mobilized (possibly by ecologists), society expects actions that produce promised outcomes. Whether or not the scientific knowledge to identify and justify appropriate actions exists becomes a secondary consideration. *To be seen to be doing something* may be more important than knowing why, or if, it is the right thing to do. Consequently, most of the resources made available for ecosystem restoration have been provided for action (Minns et al., 2006: 403, emphasis added).

The observations of Minns et al. (2006) strike a chord with the difficulties raised by the project team of undertaking ecological work. When Chris Lawson was asked how the overall success of the EPMSRP would be monitored, he stressed that it would have to be in terms of measurable outputs such as the length of riverbank fencing installed or the number of farmers recruited, rather than in terms of the substantive impact of the project on populations of pearl mussels. He argued that in the short-term and within complex natural systems it is always very difficult to ascertain the effect of interventions independently from natural variations and other factors. He also pointed out that it was standard practice for the Environment Agency to assess success in terms of Key Performance Indicators (KPI's), which equated restoration success with the measures having been put in place, rather than the actual impact of those measures. Hence 5 km of newly fenced river would be ticked off as 5 km of river restored regardless of whether that fencing had delivered any environmental outcomes (for further discussion see Emery, 2010: 174-5, 193-4). Whilst we are keen to stress that this

Comment [LJB50]: Not it's actual remit – but an action to help meet objectives??

remains an inference on our part, we want to suggest that the political-economic context, which prioritises action above seeking explanation, appears to have been an important precondition for the project-team's interest in the work.

6.4 The practice of small-scale channel restoration

Comment [SBE51]: LB/MP Please intervene here as you see appropriate

I was going to have drafted something for this section but haven't due to illness and it in part being dependent on what you two want to add in Section 5.7 - i.e. your reflections on how the work went. The paragraphs below roughly sketch the sort of ideas I was thinking to raise - you will probably have others. LB/MP perhaps you wish to draft something, or suggest other issues that should be raised

Matt – do you have something straight from your PhD?

I'm also not sure of how much we need. I'm mindful of the number of words and needing to keep a coherent argument/story. You've done well to develop and keep on message so far the this section may just add tangential arguments. I think section 5.7 should just present results and summarise Matt's most recent results, suggesting continued erosion/stability as a result and not go into the what should be done about this arguments.

The safety net of the ability to adapt borne out of the close academic monitoring of the sediment ~~flows-transfer~~ at the site meant that the prediction side stuttered. That is not to say that appropriate predictions were not made, since they were in the consultancy work which predicted the impacts of the truncation and proposed appropriate mitigation. The problem arose when the predictions and mitigation were overlooked in the process of consent being granted and the work being undertaken.

Focus on concepts of prediction and adaptation. What we can say is: in the past typical management was Predict > Act on Prediction. But now increasing emphasis on adaptive approach gives us Predict > Act on Prediction > Adapt. And what happened in our case, was that because the ability to adapt was established (i.e. the monitoring was in place), the team 'took their eye off the ball' in terms of acting on the prediction (i.e. they did not ensure that the mitigation measures were implemented). So it is almost as if concept of adaptability gave a false sense of security to the project team.

The lack of public scrutiny for such a small intervention as this places decision-making pressure on a relatively small group of people. Not intention to point finger of blame, or to criticise but to highlight rhetorical contingency of decision-making at this scale and the importance of self-persuasion as much as the persuasion of others. This is not to say that similar processes do not operate in larger decision-making processes with elaborate and expensive environmental impact assessments. Rather, the focus on these issues in a small-scale example provides space for the exploration of these issues, which indeed occur in all processes of decision-making, but may be more readily concealed behind the artifices of 'data' and 'due process'. For rhetoric is everyday and omnipresent feature of our distinctly human form of sociality that renders itself apparent in the minutia of everyday interactions, decision-makings etc.etc.etc.

LB perhaps better able to link to literature?

8. Conclusions [400 words]

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