

Soft solutions to hard problems

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First Part

Hard Problems

- How do we structure economies to take account of the importance of ecosystem services in a full world?
- How to we optimise land use to secure the output of ecosystem services?
- How can we use the idea of ecosystem services to go beyond GDP?
- How does change in biodiversity impact ES?

(Our) Hard Problems

- How can we ‘embed’ the ecosystems approach in decision making?
- How do we frame the proposition that we should ‘live within environmental limits’?
- How do we ensure that the value of natural resources is ‘taken into account’ in decision making?

Hard Problems

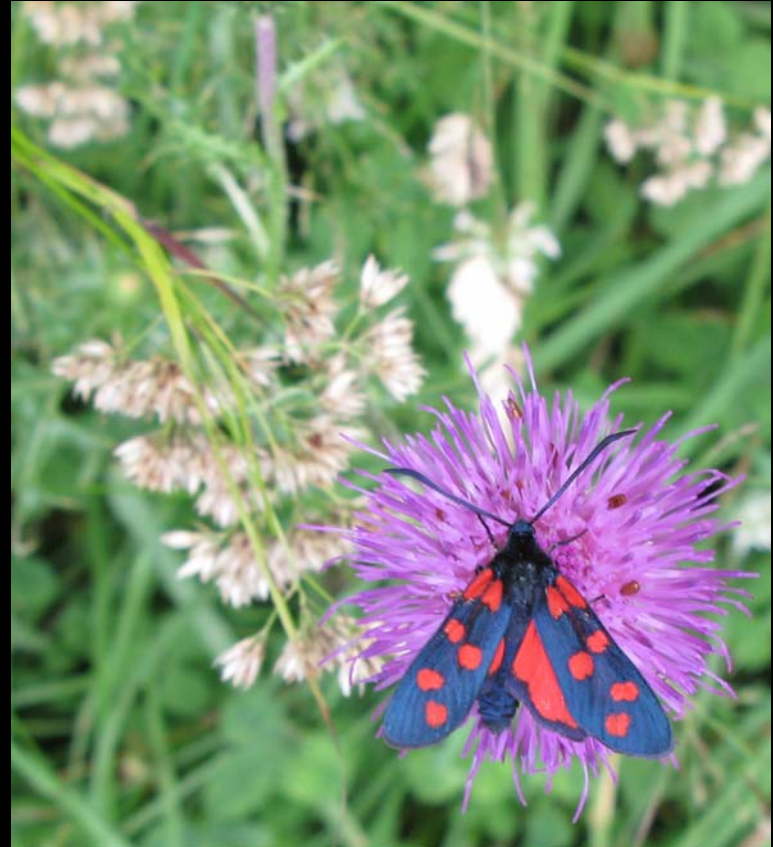
- Why are these sorts of problems so difficult to crack?
- Is it that we don't yet have the concepts fully worked out and the analytical tools and data available yet?
- Or is it something else?

Soft Solutions

- Soft system methodologies were developed as a way of thinking about the kind of ill-defined problem situations that involve human activity....
 - *The way we analyse these soft systems, it is suggested, is quite different from the way we approach the 'hard systems' that characterise the realms of engineering and technology...*

Soft Solutions

- Example of a 'hard system'
 - Technology for turning ordinary people into experts...



Soft Solutions

- Example of a 'soft system'
 - Produce a map of recreation as an ecosystem service in the uplands of England, and tell us patterns might change for a range of plausible futures.....



Soft Solutions

- The boundaries of soft systems, like ecosystems, are difficult to specify.
- The components of soft systems are fuzzy and difficult to define, and probably can be linked up in many equally acceptable ways.
- The outcomes of the analysis are open, uncertain and dependent on a range of assumptions...

Soft Solutions

- How do we deal with these soft systems?
 - In the initial stages of the process build up a *rich picture...*
 - Build *conceptual models* to try to capture the problem situation from the stakeholder (customer) perspective...
 - Refine and revise these models through *iteration*
 - ...learn by doing because problems evolve

Take home message 1

- If you approach these hard (difficult) problems as involving hard (well structured systems) then you are likely to fail in your attempts to understand them.
 - *Think soft...*

The Ecosystem Service Paradigm

- On way of looking at it is in terms of a cascade from ecological structures and processes on the one-hand to the benefits that people enjoy on the other.

Maintenance and restoration costs

Ecosystem service case

Economic and social values (sometimes market values).

Minimum service requirements

Biophysical structure or process
(e.g. woodland habitat or net primary productivity)

Function
(e.g. slow passage of water, or biomass)

Service
(e.g. flood protection, or harvestable products)

Benefit (Value)
(e.g. willingness to pay for woodland protection or for more woodland, or harvestable products)

Limit pressures via policy action?

Σ Pressures

'Intermediate Products'

'Final Products'

Ecosystem service cascade

- A service cannot really exist without a beneficiary – someone who places a value on the output of the system or enjoys a benefit.
- Assessments of the spatial or temporal variations in ecosystem services are important for understanding *minimum service requirements* of beneficiaries.



LIMITS

The Ecosystem Service Paradigm

- *The problems of applying it!*
 - *Using a habitats perspective*
 - *From a service perspective*
 - *... and from a place-based perspective*

End of First Part

Salzau Prize
for the most novel
ecosystem
service....



Second Part

The Ecosystem Service Paradigm

- *The problems of applying it!*
 - *Using a habitats perspective*
 - *From a service perspective*
 - *... and from a place-based perspective*

Taking a habitats perspective

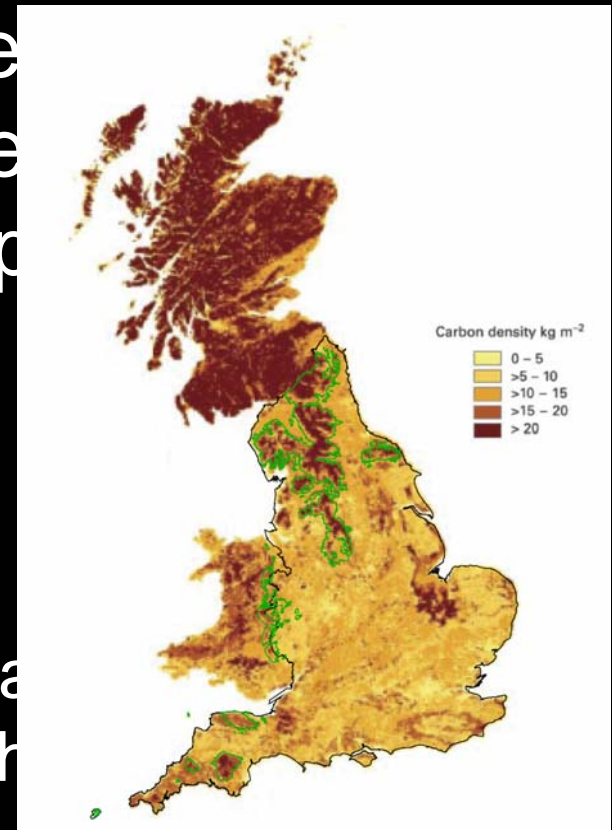
- Review suggested that different habitats had different services associated with them... *multifunctionality*
- It was apparent that habitats had benefits and liabilities... *ecosystem accounting*
- Most of the direct drivers of change related to land management... *maintenance costs*

Taking a habitats perspective

- There was very little information to link ideas about the conservation status of these habitats to their ability to deliver ecosystem services....*we need something like 'favourable delivery status'*
- It is still very difficult to make some judgement about the status of services as a whole, because we simply do not know how habitats contribute to service output....*who assigns the importances*

Taking a habitats perspective

- Even if we could overcome the limitations of weightings and scaling etc, do the outputs of the analysis help 'improve the world'?
- Probably not much.....
 - Carbon ~ maybe
 - But things like 'flood control' are not generated or managed on a habitat basis



Taking a habitats perspective

- In most cases it proved very difficult to move from an assessment made on a habitat-by-habitat basis to an overall assessment of a particular service
 - *... that was either scientifically credible or useful practically.*

End of Second Part

Salzau Prize
for the most
innovative
way of
marketing
ecosystem
services



Third Part

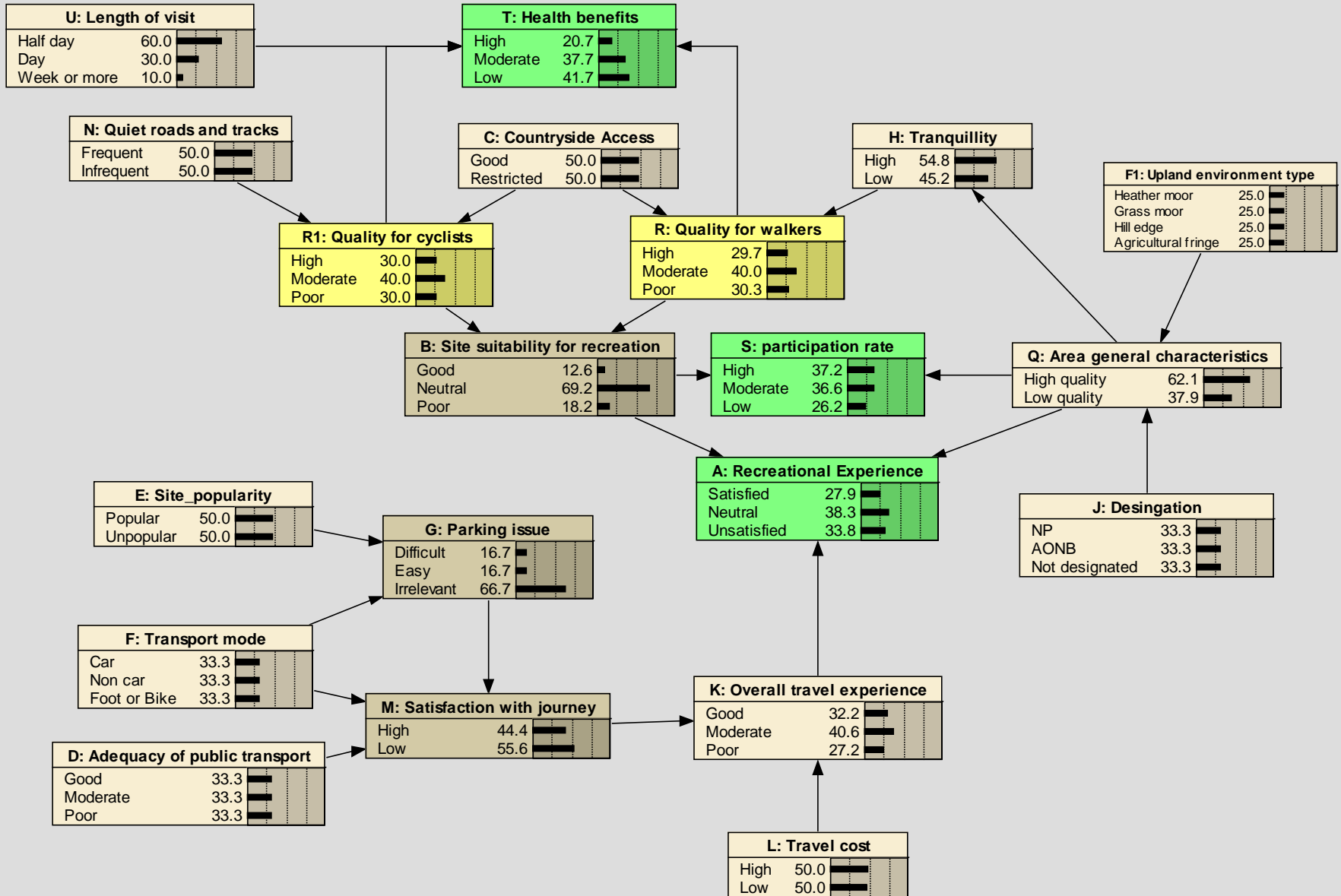
Taking a service perspective

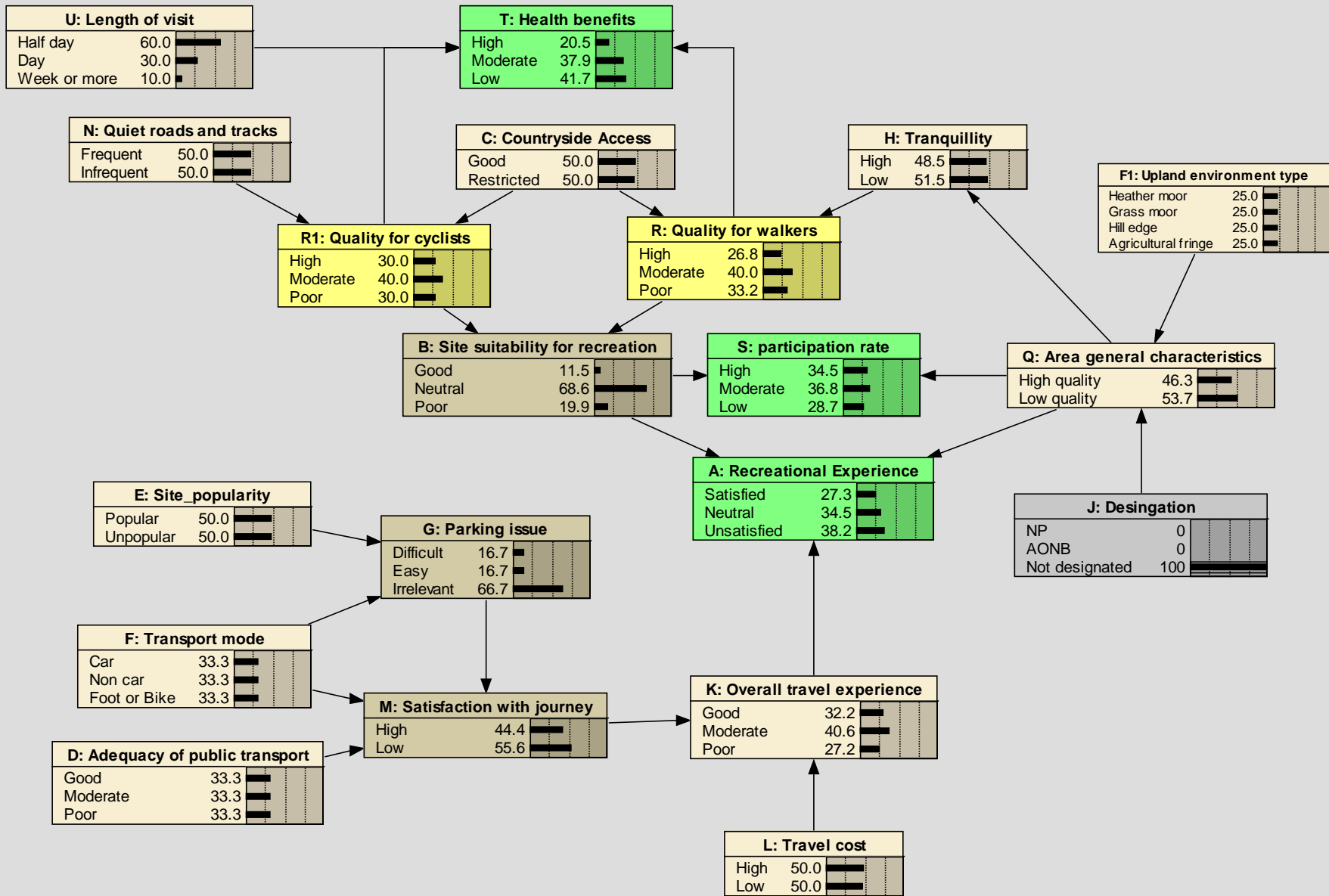
- Let's start with the services themselves and try to define the ecosystem in terms of the wider set of processes that deliver it....
 - *...Service Providing Unit (SPU), which seeks to identify the collection of organisms that are responsible for delivering the service....*

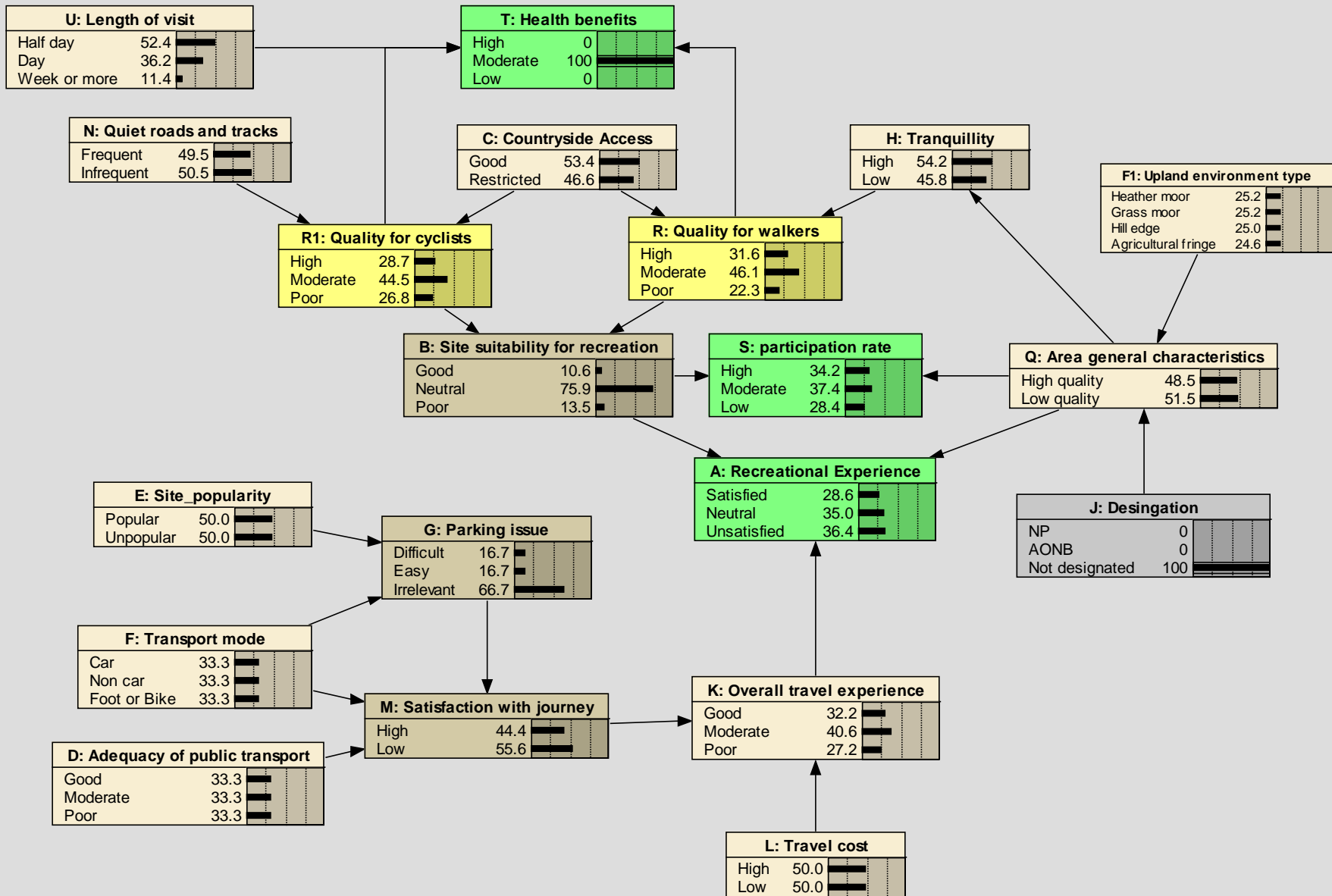
Taking a service perspective

- It was easier in one sense to track back from some kind of 'service delivery profile' to the mechanisms that underpinned it...



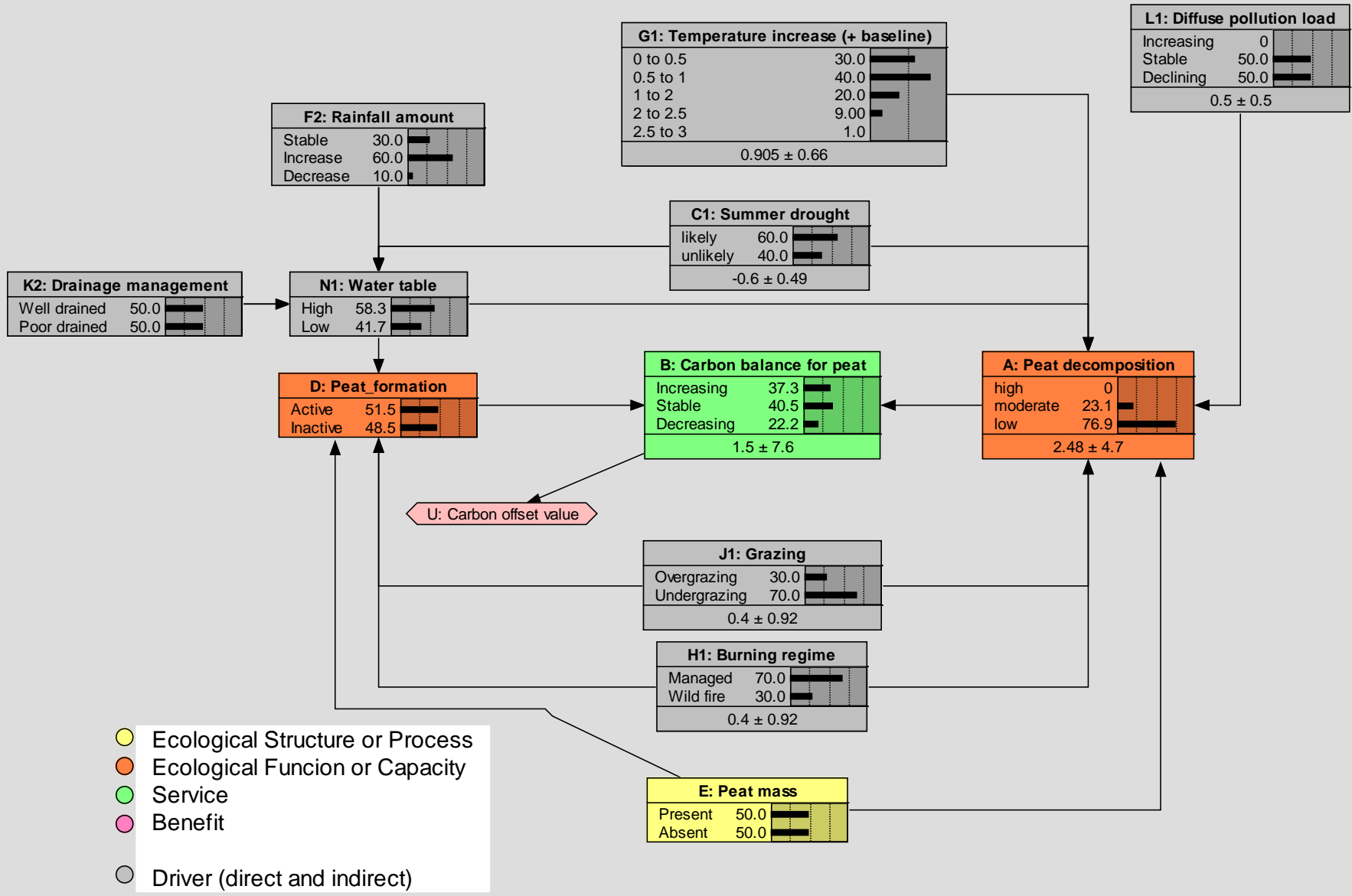






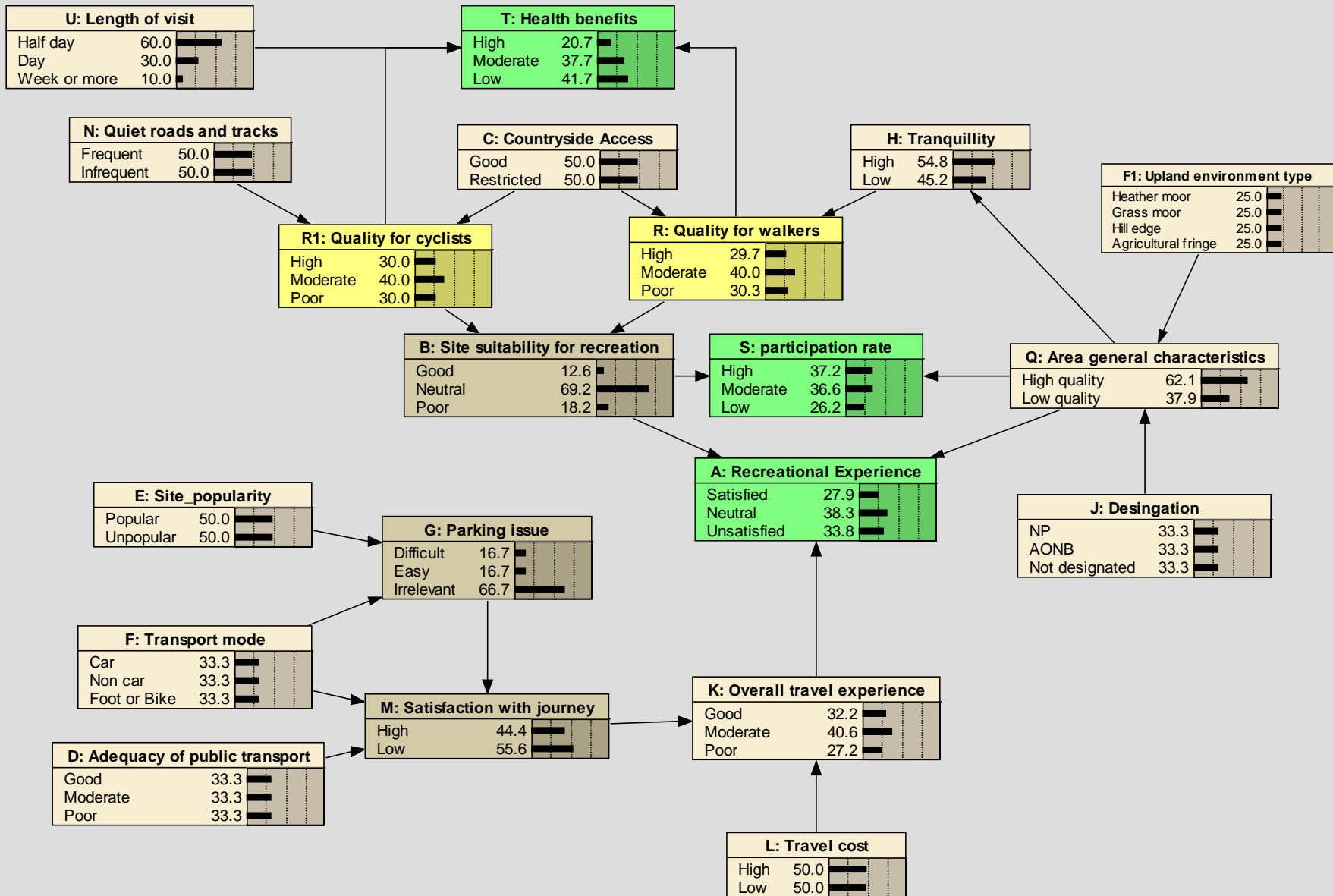
Taking a service perspective

- It was easier in one sense to track back from some kind of 'service delivery profile' to the mechanisms that underpinned it...
 - *Bayesian Networks (BN) are a good way of constructing narratives and of combining different kinds of knowledge*
 - *They can help build up this rich picture of the problem from the stakeholder/client perspective*



Taking a service perspective

- But interactions between services difficult to handle (the problem of multi-functionality)
- Particularly the case in the work we did with Natural England, it was clear that people had very different understandings of what an ecosystem service was...



Take home message 2

- People don't usually see the world in terms of ecosystem services, and it's not just a matter of advocacy on our part...
 - we need to show what kind of role natural capital plays alongside the *other* kinds of capital (social, manufactured, intellectual, financial....)

End of Third Part

Missing words competition

**UK * * consumption
fuels Columbia
violence, says report**

The Guardian 12th May 2008

Last Part

Taking a place-based perspective

- A habitat perspective is ok but it has its limitations...
- A service perspective is exciting but significantly expands the problem...and doesn't (easily) fix the issue of multifunctionality
- What about a place-based view of the world?

Taking a place-based perspective

- If we want to influence the way people make decisions (the choices they make) then we need to make sure we are working at the right scales with the right units...
- People make decisions about places
 - Places set the context in which people frame problems...
 - Their values are often context dependent

Taking a place-based perspective

- What is a place?
 - An area with a common bundle of problems
 - Why use the term place rather than some other?
 - What do we need to know to help people make decisions about these places...

Taking a place-based perspective

- What are the ecosystem services associated with this place that matter to people's well-being?
- How are these services generated? Do they arise locally or are they generated outside the place or area being considered?
- How important is each of these services, to which individuals or groups, and for what reasons? Do people outside the area also depend on these services?

Taking a place-based perspective

- How can the importance of these services be prioritised or valued?
- Do we expect to have enough of each of these services either here or elsewhere in the future?
- What, if anything, could replace or substitute for each of the benefits obtained from these services, either here or elsewhere?
- What kinds of management or policy actions are needed to protect or enhance these services and in particular how might actions directed towards one service impact or enhance another?

Take home message 3

- The problem with soft systems is that they don't yield optional solutions
 - the best we can do is to find 'adequate' solutions and show what choices are possible and what the limits and consequences of those choices are....
 - We need to help delimit a **sustainability choice space** within which the output of ecosystem services is more or less maintained...

The End (almost)

Missing words competition

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The Guardian 12th May 2008

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Take Home Messages

- If you approach these hard (difficult) problems as involving hard (well structured systems) then you are likely to fail in your attempts to understand them.
- People don't usually see the world in terms of ecosystem services we need to put them in context.
- The problem with soft systems is that they don't yield optional solutions the best we can do is to find 'adequate' ones.