

*Uncertainty is the bane of decision-makers lives, but it is something they need to know how to work with if their decisions are going to be acceptable to all their stakeholders.*

By **Anthony Perret**

# UNCERTAIN SCIENCE

**IN THE EARLY NINETIES MONSANTO had good reason to be confident about its future. It was a world leader in genetic modification, at the forefront of a new and potentially huge market. The company had started looking at emerging GM technology in the late seventies. This led to a research facility in the early eighties and field trials towards the end of that decade. The first application for commercial growing was made in the US in 1995. Market reaction was ecstatic, with a 330% growth in market capitalisation.**

In Europe the voices against GM started to gather force at around the same time, helped on by a media that had just got to grips with food and science issues for the BSE crisis. A Greenpeace campaign began in 1996, and that autumn articles started appearing in the press. The surge in protest was perhaps unexpected but even that same year, at a roundtable discussion in Brussels, Monsanto's European arm was told that it was facing a crisis in Europe and it didn't even recognise it. This message did get back to the US, but at the time it wasn't affecting the bottom line, it was seen as a short-term problem and the plan to deal with it was business as usual.

Why Monsanto decided to stick to business as usual is beyond the scope of this article, but the repercussions came for two main reasons. Firstly, their information base was seen as inadequate to provide certainty as to consequences. Secondly because the assumptions they had made about this lack of certainty were made in private; without any contingency plan if these assumptions

turned out to be wrong and without finding out if their assumptions contradicted those of their key stakeholders. This caused uncertainty on several levels, not only the obvious uncertainty about the effects "what are the results going to be?" but also uncertainties such as "why we are doing this?" and "what are we going to do if Monsanto's assumptions turn out to be wrong?"

This gives us an insight into the complex nature of uncertainty and how it can be relevant in decision-making, especially in areas of potential conflict. Uncertainty over data (or lack of it) is frequently just the most obvious concern. Such uncertainty can be reduced through more information. However, further uncertainties over values and related decisions are often just as important. Uncertainty is an extremely complicated area, the thing to note in this context is that such further uncertainties can only be reduced by talking to others. Desk studies and scientific analysis will not help.

**UNCERTAINTY AND CONFLICT**

Uncertainty causes fear (e.g. of getting it wrong, of the unknown), which causes stress. In situations of interpersonal uncertainty this can escalate easily to conflict. We can end up with a number of stressed people trying to deal with uncertainty, each using their own value system. In situations of limited resources, whether time or money, it may not be possible to reduce the uncertainty so the individuals make assumptions. Because of their different value system these will often contradict each other, potentially leading to hostility and conflict. Unfortunately the negative effects of the conflict will exacerbate the situation creating further uncertainty (for instance over what may happen, what others may do and what options are open) leading to further fear and so on in an escalating cycle.

The least threatening part of such a system is frequently the uncertainty. So this is often the best place to try to break in and by changing one area getting the others to change in response. If stakeholders can be helped to explore the uncertainties and how they might be managed there may be the potential to find, or even extend, some common ground.

This leads us to the following matrix.

	<b>Uncertainty is hard to reduce</b>	<b>Uncertainty is easy to reduce</b>
<b>Uncertainty is very relevant</b>	Reduce it / make assumptions	Reduce it
<b>Uncertainty is less relevant</b>	Ignore it	Maybe ignore it, maybe reduce

Such systems are inevitably a simplification, but we can see that in three out of four scenarios the approach to be adopted is fairly clear. The difficulty is, of course, where the uncertainty is both relevant and hard to reduce. Here we have two options: to reduce or to make assumptions. In deciding which path to take decision-makers have to evaluate and compare the confidence with which they can make the decision, the resources which reducing the uncertainty would take and, often crucially, the delay that exploring uncertainties may entail. After all there is no point taking the time to reduce an uncertainty if a decision cannot be delayed.

**WORKING WITH UNCERTAINTY**

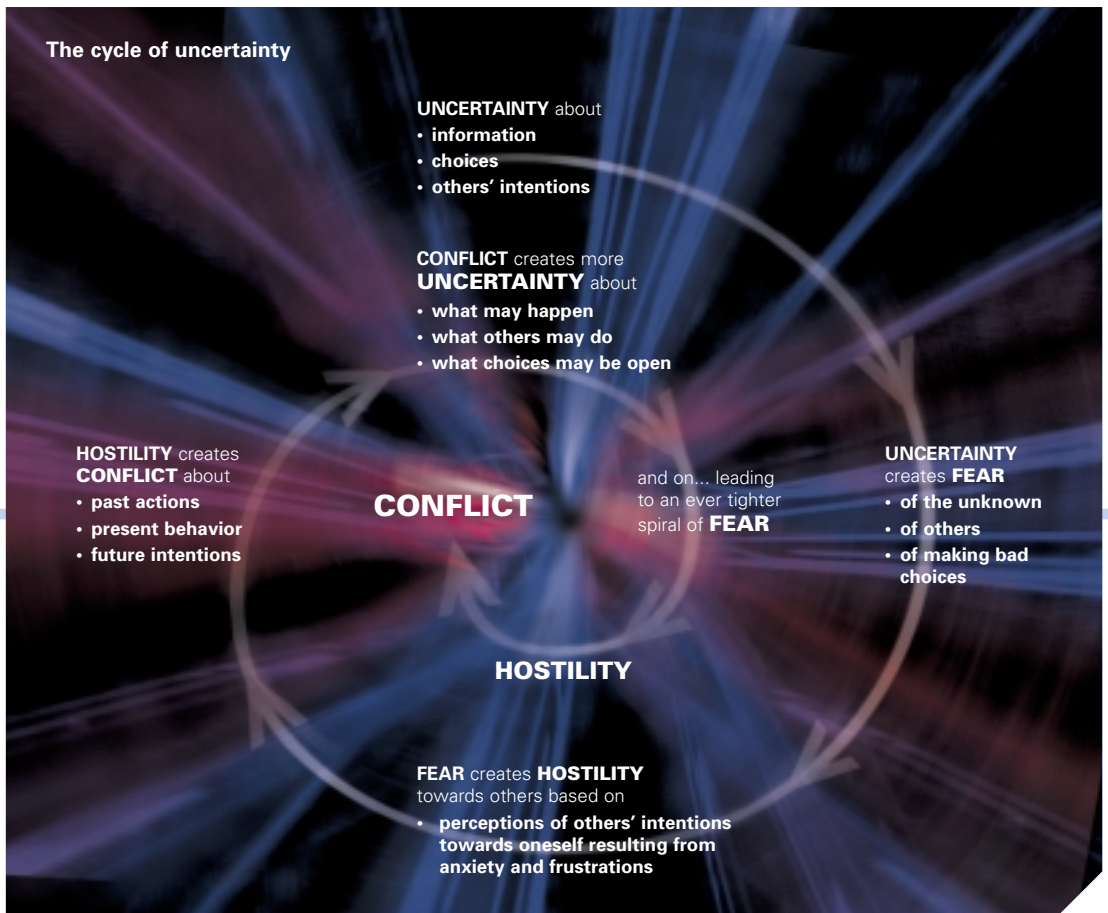
When deciding how to manage uncertainty, it is important to relate the uncertainty to the decision to be taken in two ways: how relevant it is to the decision to be taken and how hard or easy it is going to be to reduce the uncertainty.

**REDUCING UNCERTAINTY**

Time and money are great resources for the reduction of uncertainty. But they need to be well spent. Taking 'scientific uncertainty' as a starting point it may be that the best way to attempt to reduce the uncertainty is through further research.

**exec summary**

There are two basic ways of dealing with uncertainty: reducing it and making assumptions so you can carry on working. While reducing it may be ideal, whether you can do so or not can depend on resource factors. If you have to make assumptions it is essential to have a contingency plan, but if you are able to put the resources into reducing the uncertainty then you need to make sure that they are well spent. Any work done must be acceptable to all stakeholders, which means collectively agreeing on the scope and direction of research.





For such research to be of real value though it has to be acceptable to all the stakeholders. Problems can appear in many areas, for example is the research addressing the right questions and is it being done by the right people. When a study was done in 1999 to investigate the safety of a BNFL proposal to marshal trains carrying spent nuclear fuel at Cricklewood, it was discredited not for any scientific reasons but because the company that undertook the study had a remote link to BNFL. By establishing a dialogue with stakeholders and collectively agreeing what information is needed, who should gather it and how, concerns over methodology and the provenance of the results can be lessened. Uncertainty will never disappear and reducing it will not negate conflict or differences in values. But giving time and resources to the shared management of uncertainty can have major positive effects on the decision-making process.

### LIVING WITH UNCERTAINTY

Sometimes deciding not to decide is the best decision that can be made, the caveat being that it has to be a decision rather than vacillation. More subtly, by repackaging a single decision into a series of incremental decisions to be planned over time the decision-maker is no longer faced with all the issues at once. A balanced series of proposed steps to dealing with a decision may embrace a set of immediate actions, a series of uncertainties to be explored and an agreement on how any deferred decisions should be addressed. Dealing with a problem in such a way can mean that the decisions which have to be taken are taken, while those that can be deferred are deferred. This may mean that new options may become available or competing options impossible. So it may be possible in circumstances of interrelated decisions to look at the various uncertainties and decide that some decisions can be delayed and their associated uncertainties reduced, while other decisions either can or have to be made. This could be because the choices would be little affected by the reduction in uncertainty around the interrelated decisions. It could also be because of a situation where time or resources are more limited and there is pressure to move forward with a decision. In these cases it is important to accept that assumptions are going to have to be made. It is imperative that these assumptions are made clear from the outset so that people understand how the decision is being made. But it is also necessary that there are contingency plans in place in case the assumptions turn out to be wrong. The robustness, or not, of such a plan b may have an important effect on the acceptability of the decision made.

This leads us back to GM and Monsanto. Remember that one of the reasons for the campaign against GM was that the information base was seen to be inadequate to provide certainty as to consequences. On top of this those consequences, in terms of biodiversity for instance, were seen by some to be extremely serious, in fact irreversible. It is perhaps hard to imagine a contingency plan that might have been robust in such a situation; in fact Monsanto didn't seem to have one at all. So if the assumptions they had made were wrong then ...

### COMMERCIAL BARRIERS

Of course the 'businesses of business is business', and time and secrecy are often important factors in determining business decisions around cutting edge technology. They can also be important barriers to dialogue. But such decisions increasingly have to grapple with questions of acceptance as well. So how can a company in Monsanto's position safeguard its commercial interests, while also considering the views of its customers and stakeholders? Maybe Monsanto themselves have provided the first steps to an answer.

In April last year Monsanto decided to freely share their newly produced draft of the genetic structure of rice with public researchers around the world. It was a decision taken in the light of a several months of engagement with key stakeholders, many of whom were also involved in an international project researching rice's genetic structure. The project members have been given the Monsanto data at no cost, to use as they complete and publish the rice genome sequence. The international project is now expected to be completed on an accelerated timescale, in part helped by the use of Monsanto's data. In the meantime, other public researchers can access the data directly through a free-of-charge website, [www.rice-research.org](http://www.rice-research.org).

Why did they do this? Well, Kate Fish, Monsanto's Vice President of Public Policy, has said that the company have realised that their own understanding of the uncertainties around the public reaction to the company's announcement of this scientific breakthrough, and its associated risks, was limited. Realising this is a short step from understanding that uncertainty has social and moral dimensions as well as scientific ones and that wide stakeholder involvement is necessary to address these. This might mean that the potential rewards for companies seem lower, but it will mean that the potential for conflict is lower too. ■

**ANTHONY PERRET** IS THE EDITOR OF >ELEMENTS

Though this article cites a number of examples and cases, The Environment Council as an independent third party, makes no judgment about the substantive issues concerned. The Council will only express an opinion on whether there may be better, more inclusive ways of developing solutions in a particular situation.

**For more information on Stakeholder Dialogue contact  
The Environment Council's Dialogue Team**

tel 020 7632 0117

email [stakeholder.dialogue@envcouncil.org.uk](mailto:stakeholder.dialogue@envcouncil.org.uk)