

Into Complexity

A Pattern-oriented Approach to Stakeholder Communications

Cornelis Pieter Pieters

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*Into Complexity:
A Pattern-oriented Approach to Stakeholder Communications*

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Into Complexity

A Pattern-Oriented Approach to Stakeholder Communications

Opgaen in Complexiteit: **Een patroon-oriëntatie.**

(Met een samenvatting in het Nederlands.)

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Abstract (nl-NL)

Het NWO-programma "de maatschappelijke component van het genomics Debat", heeft geleid voor een versterking van de samenwerking en deliberatieve betrokkenheid tussen de verschillende belanghebbenden van genomics. Dit programma is door een projectgroep aan de Universiteit voor Humanistiek vertaald naar een 'lingua democratica', dat onder meer onderzocht heeft aan welke voorwaarden zulke deliberatieve inspanningen moeten voldoen.

De bijdrage aan dit programma dat in dit proefschrift is samengevat, heeft een tamelijk abstracte invulling gegeven aan deze opdracht. Het doel was een methode te ontwikkelen dat gedeeld kan worden door de verschillende belanghebbenden met verschillende achtergronden, belangen en interesses voor welk complex thema dan ook, hoewel genomics wel in focus bleef gedurende het onderzoek. Omdat 'complexiteitsdenken' momenteel een thema is dat zowel in de natuurwetenschappen en de sociale, en menswetenschappen aan belang wint, was complexiteit een kernbegrip om een dergelijke inclusieve benadering mogelijk te maken. Om te voorkomen dat complexiteit echter gefragmenteerd raakt door disciplinaire begrenzingen, is het essentieel dat die aspecten van complexiteit die steeds terugkomen in verschillende debatten naar voren zouden worden gehaald, en benadrukt zouden worden tegenover de complexiteit van specialisatie. In dit proefschrift is beargumenteerd dat het concept van 'patroon' hiervoor geldt, en patronen vormen dan ook de ruggengraat van het vocabulaire dat ontwikkeld is. Met name terugkoppelingpatronen hebben uitgebreide aandacht gekregen, omdat terugkoppeling essentieel is voor veel themas rondom complexiteit.

Er is echter weinig methodologische (en filosofische) onderbouwing rondom 'patronen', en waarom ze doen wat ze doen. Daarom is vrij veel aandacht gegeven aan de methodologische onderbouwing, en hoe patronen zich verhouden tot concepten als 'informatie', 'orde' en ook complexiteit zelf.

Deze verkenningen liggen aan de basis van de ontwikkeling van de methode, dat ook praktische handvaten geeft om deze te gebruiken. Dit heeft de vorm aangenomen van een bibliotheek van patronen, dat disciplinaire grenzen kan ontstijgen, beginnend bij technologische gebieden, via biologische, psychologische en sociale, om uiteindelijk bij een thema dat kenmerkend is voor de menswetenschappen. Deze reis over de scheidslijn tussen de 'twee culturen', zoals beschreven is door C.P. Snow, is zowel een proeve voor een lingua democratica, als dat het beoogt duidelijk te maken wat er gebeurt bij de overgang van dergelijke disciplinaire grenzen.

Als laatste is de aanpak op een hele praktische wijze toegepast, rond een thema dat sterk beïnvloedt wordt door huidige ontwikkelingen in genomics, namelijk de trans-humanistische visies van de toekomst.

Abstract (en-UK)

The NWO-programme "the societal aspects of genomics", has called for stronger means of collaboration and deliberative involvement between the various stakeholders of genomics research. Within the project group assembled at the University for Humanistics, this call was translated to the 'lingua democratica', in which the prerequisites of such deliberative efforts were put to scrutiny.

The contribution of this thesis has taken a more or less abstract angle to this task, and sought to develop a vocabulary that can be shared amongst various stakeholders with different backgrounds, interests and stakes for any complex theme, although genomics has more or less been in focus throughout the research. As 'complexity thinking' is currently a theme in both the 'hard' sciences as the social sciences and the humanities, and has always been an issue for professionals, this concept was pivotal in achieving such an inclusive angle. However, in order to prevent that complexity would become fragmented due to disciplinary boundaries, it is essential that those aspects of complexity that seem to return in many discussions would be made clear, and stand out with respect to the complexities of specialisation. The thesis has argued that the concept of 'patterns' applies for these aspects, and they form the backbone of the vocabulary that has been developed. Especially patterns of feedback have been given much attention, as this concept is pivotal for many complex themes.

However, although patterns are implicitly or explicitly used in many areas, there is little methodological (and philosophical) underpinning of what they are and why they are able to do what they do. As a result, quite some attention has been given to these issues, and how they relate to concepts such as 'information', 'order' and complexity itself.

From these explorations, the actual vocabulary was developed, including the methodological means to use this vocabulary. This has taken the shape of a recursive development of a so-called pattern-library, which has crossed disciplinary boundaries, from technological areas, through biology, psychology and the social sciences, to a topic that is typical of the humanities. This journey across the divide of C.P. Snow's 'two cultures' is both a test for a *lingua democratica*, as well as aimed to demonstrate how delicate, and balanced such a path must be in order to be effective, especially if one aims to retain certain coherence along the way.

Finally, the methodology has been applied in a very practical way, to a current development that hinges strongly on research in genomics, which is trans-humanist movement.

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Part I
Preparing a Workshop of Complexity

Chapter 1

A lingua democratica. An Introduction

This book is about conflicts. Not conflicts in the regular sense of the word, those that are associated with problems and strife, but conflicts that enable creation and progress. My supervisor, prof. dr. H. Kunneman tends to call this ‘creative friction’ to describe similar conflicts in the humanities.¹

The phrase captures an opposition; creation in its essence ‘enabling change’, while friction is associated with constraints and limitations. Thus I begin this thesis with two words that are almost a paradox, an ideal starting point for an argumentation that is full of creation and constraint, and which will fill the rest of this book.

1 Background

The research that led to this book, is the result of a joint research project ‘The Societal Component of Genomics Research’ (SCGR),ⁱ that was initiated by the NWO, the Dutch organisation for scientific research. The aim of the programme was to ensure that proper scientific attention was given to the societal and ethical consequences of genomics that, in the view of the initiators, tends to be strongly focused on the technological aspects.

Genomics is a term that covers genetically modified corn, Dolly the cloned sheep and Herman the transgenic bull. It includes medically changing human genes to repair illnesses and psychiatric diseases, and even to extend human life expectancies and prevent aging. These issues raise concerns of a deep, ethical and philosophical nature, which should not be left entirely in the hands of technologists, policy makers and corporations.²

The University for Humanistics in Utrecht (UH), the Netherlands, couldn’t agree more with this viewpoint, and therefore applied for a number of projects within this programme that were put under the umbrella of the proposal ‘Towards a lingua democratica for the public debate on genomics’, under the supervision of prof. Peter Derkx. The ‘lingua democratica’ aimed to look at interactions between the stakeholders of genomics –governments, NGO’s, corporations, scientists, and so on— that would stimulate mutual understanding and dialogue on the various viewpoints that these stakeholders take.³

Harry Kunneman, who participated with a research project in the group, was an influential driving force in the preparation of the projects. When he heard about my graduation thesis which described a formal model of symbiosis, he invited me to join the project, and thus a self-proclaimed geek, with a background in electro-technics and computer science, ended up amongst sociologists, philosophers and

ⁱ or in Dutch: MCG

other humanities researchers with a focus on humanistics.⁴

My participation, which took shape in the research proposal ‘the complexity of genomics’ therefore was, and is, in many aspects a crazy experiment to bring a dedicated software engineer into the world of humanities researchers. Harry wanted to include contributions from representatives of the ‘hard’ sciences into a debate that is predominantly characterised by the humanities talking about (the consequences of) technology, while the practitioners of technology are close to being a non-entity in these debates. Sure, there are a lot of scientists with a broader interest than just their research, and there are technologists who become philosophers, and sometimes (though rarely, I believe) it may even be the other way round. However, I feel that the majority of technological practitioners do not really involve themselves with the ‘societal aspects’ of the technology they work with, simply because they have other things on their mind. The ‘societal aspects of technology’ is an abstract concept that may sometimes present itself in the newspapers, an article in a journal, or a bestseller in non-fiction that was picked up from a bookstore on the way to a holiday destination.

I thought that I would want to represent this archetypal group of professionals, who are not so sure whether philosophy and ethics provide real answers to the complex problems of contemporary life; who use theory pragmatically and do not see it as a panacea for our understanding of our world. Most of all, I wanted to represent people who think that theory without action is of limited use, an academic past-time at best.

Thus, by inviting me in the team, Harry saw an opportunity for ‘creative friction’ in action. With my Frisian roots that are commonly associated with personality traits being somewhere in-between headstrong and downright stubborn, I think that I have not failed him on this issue.

Having said that, problems are not solved by creating and describing archetypal stakeholders, and so the question that remained was how these sceptical technological professionals could be reached by those who concern themselves with the ‘societal aspects of technology’. Realising that I would be in a privileged situation for the coming five years to fully submerge myself in this issue, I decided to stick to my professional self, and start to read the work of social theorists, philosophers, ethicists and so on, and just ask myself the question ‘*does it make sense?*’ If it did, the obvious following question would be ‘*why?*’, if it didn’t –you guessed it— ‘*why not?*’ This, in a nutshell, is my ‘theoretical framework’. I think it doesn’t get more pragmatic than that!⁵

The resulting lateral approach to science and philosophy in the broadest sense, revealed that many heated debates on all kinds of topics actually often seem to boil down to a few related issues. There are certain *patterns* in these controversies, some of which –at a sufficiently abstract level— seemed surprisingly common to modelling issues in software engineering, where they are usually considered ‘interesting approaches’ rather than intellectual quarrels. If there was a ‘lingua democratica’ somewhere, it might be found just there!

For instance, research on complex systems in software engineering has made it more and more clear that actor-environment interactions are often surprisingly complex. This complexity is tackled with enthusiasm and pleasure, for instance when designing self-learning robots who have to do something in their environment, such as survey the landscape of Mars, or play a game of soccer against other robots. Now just consider the surprise one feels if one has such a background, and then has to delve into the deeply serious, and sometimes gravely angry debates between some biologists and social scientists, for instance on how genes affect human behaviour and/or the other way round[124].

Instead of discussions on who is ‘right’ or ‘wrong’, the happy-go-lucky engineer just thinks ‘aha, feedback!’ and takes it from there.

This provided one possible angle to the ‘lingua democratica’. Instead of ‘taking sides’, it was a matter of looking into these discussions and take a sort of ‘helicopter view’ to see if maybe a more inclusive angle could be found. In fact, this is often rather easy, as many debates are currently already losing their sharper edges. Improved modelling tools –especially the computer— and relentless scientific progress are already edging theories away from the era of simple explanations for complex phenomena. In fact, it would seem that complexity itself is becoming the banner that is uniting many islands of science, as the word seems to be popping up everywhere. For that reason –and also because I have above average experience with complex technical systems— I decided to make complexity the ‘cloth-hanger’ theme of this particular contribution to the lingua democratica.

There is also a practical reason for this, as complexity seems to be a sufficiently neutral theme to be acceptable in both the sciences and the humanities, and therefore might be a good starting point for a ‘lingua democratica’.

The other opening I had to investigate was my own professional background. Technological education tends to be packed with formal and mathematical tools that are presented ready to be used. As a consequence, the names of their inventors or discoverers and the historical context in which they were developed are sometimes given little attention. This also means that sometimes we technologists identify ourselves with ideas that trickle through our curricula and become part of that what we consider ‘obvious’, while at another level of our research –or our daily lives for that matter— these implicit ideas are not used, or are even contradicted.

The use of logic and formalism is one of the more striking examples; despite their importance for our professional selves, I have never met any techie whose personality even remotely approximates that of Spock, the Vulcan from Star Trek. As a result, I can only conclude that apparently some things — such as ‘facts’ — are important only in a certain setting, and therefore it might be important to reconsider these implicit ideas and mindsets if one enters a different field of enquiry.

Lastly, I wanted to do something practical with the notion of ‘lingua democratica’. As I made headway in my research, also in the purely technical work on complexity that I am still doing, it became more and more clear to me that many distinc-

tions, such as between science, philosophy, methodology and practicality, are often tremendously limiting. We, as human observers, may desperately cling to such distinctions, but complexity just weaves its own web of relationships and does not tend to be overly impressed with categorisations and thematisations. As a result, I could just as well stubbornly refuse to accept a singular attitude towards complexity. This way I would be able to do justice not only to various stakeholder positions, but also to ‘balance out’ claim with counterclaim from a much larger repertoire of viewpoints.

Having read a vast number of mainly theoretical works by now, I have come to the conclusion that practicality is often intellectuality’s best friend; the one that dares to say what the latter does not want to hear.

So I decided I would try to make a book about an extremely abstract subject, namely ‘complexity’ in as accessible a way as I could possibly manage. I figured that if I could myself get interested people from various stakeholder domains to think ‘hey, that makes sense’ on a subject that is as vague and maybe even illusory as ‘complexity’, then I would have achieved something of a ‘lingua democratica’ myself.

A ‘lateral’, cross-academic approach in research holds the extreme risk of being attacked from all sides, and so there is some danger in my aims.ⁱⁱ However, I can also accept this as being inevitable, and that this stance also can give me the ‘academic freedom’ that is often sought for and just as often challenged by interests, expectations, publication pressure and culture[72].

1.1 Complexity!

A few words have now been introduced rather informally; ‘(creative) friction’, ‘lingua democratica’, ‘patterns’ and ‘complexity’. Then there are ‘stakeholders’, ‘genomics’, ‘debate’, ‘engineers’ and ‘humanisticans’. These words, or rather *concepts*, are going to be more or less connected into a web of relationships in the coming chapters, in which ‘complexity’ is the spider that is feeling the silk for every new concept that hits the sticky threads. ‘Complexus’ is Latin for ‘that what is woven together’,⁶ so the metaphorical image of a spider seems rather appropriate. It does mean, however, that I am already moving away from a standard scientific treatise, that begins with an introduction, moves towards a theory, methodology or a framework, and ends at certain conclusions. That is way too linear; complexity just does not work that way.

As I hope to argue in more detail later, and following others who have drawn similar conclusions, complexity is proclaiming the end of an agenda to come to an all-encompassing body of knowledge, based on a minimal amount of theoretical underpinnings. This agenda is being consulted less anyway.⁷ There may still be a few

ⁱⁱ Currently, the technical papers I write will always end up having one or two peer reviewers considering it ‘too philosophical’ for their liking...

pockets of resistance, but most of science has come to the conclusion that the famous witticism that ‘the more we know, the less we actually *know*’ may actually be true. Fragmentation of knowledge is all around us; ‘specialists seem to know everything about nothing, while generalists know nothing about everything’, as another famous witticism goes. The specialist will tend to say ‘It’s complex! Give me more time!’, while the generalist will say ‘Everything’s complex! It’s no use!’.⁸

However, complexity is more subtle than this. Complexity suggests—as Grandma used to say—that ‘the truth is somewhere in the middle’; in a friction space where stakeholders, engineers, humanities researchers, debates, genomes and many other concepts, are rubbing against each other. In fact, the number of these interactions seems to be on the rise, while the friction space seems to have stopped expanding ever since humankind became globalised. The complex world we currently live in also includes concepts such as ‘global warming’, ‘oil’, ‘credit crisis’, ‘radical Islam’, ‘depletion of natural resources’, and ‘Western capitalist society’.

It would seem that everything *is* complex, and no matter how much time is spent on research and theorising, we will only be scratching surfaces and not get to the heart of things. Intellectual endeavours are local, provisional, and temporal; they are islands of knowledge, fragmentary and often isolated!

But complexity is also more than just scratched surface; that would also be too simple! A complex world is not necessarily a harsh world—raw maybe, in the sense that it can be beautiful *and* dangerous, unforgiving *and* mild, closed *and* open; the surface is sloped and steep with high tablelands and deep crevasses. And in these crevasses of complexity, sometimes we may see a glimpse of a deeper structure, a glimpse of some kind of order. These form the patterns I was talking about, and my claim here is that they, although not exclusively, can make the connections between fragmented theories or amongst pockets of knowledge. Patterns are yet another common term from the weaver’s vocabulary, and so they seem a natural ally to *complexus*. According to Wikipedia:

A pattern, from the French “patron”, is a type of theme of recurring events or objects [...]

If knowledge tends to fragmentation, then patterns may just be one of the possible means to weave the patchwork together. Thus these patterns help to shape the maps along which a ‘lingua democratica’, amongst *any* stakeholders in *any* debate, might just be possible. Therefore this thesis will concentrate on patterns rather than theories.

These patterns do not reveal themselves easily, they require a different way of looking than may have been customary in science, and I would argue, in philosophy as well, as both were born of theory. Patterns, as I will argue later, are children of the craftspeople, of practices. Hence the metaphor of the spider; the *patron* of the weavers.

Patterns are hidden in the vocabulary of professionals who have to act with finite means in finite time. Theories tend to be for the in-crowd, for elites, while pat-

terns are meant to be communicated and shared. As theory has become ever more dominant in the professional's daily work, alternative vocabularies that shape their practices have sometimes receded to the background, but in some areas they are currently also resurfacing, *especially* when dealing with complex themes. Patterns are more 'streetwise' than theories are; they are less refined, but therefore also more accessible for a wider audience.

Theory traditionally relies heavily on observation and reasoning, while craftsmanship rather relies on touch and formation. Observation tends to focus, to distinguish, to make crisp and to differentiate. Tactile senses, on the other hand, are less precise, but also more subtle. Observation tends to distance, while the tactile draws near, in the way a potter handles the lump of clay in front of her.

Patterns, as we will see, follow the crafts, of making things from undetermined substance, from coarse to fine. Patterns are not a means of theorising, but a means of modelling. And the lump of clay in front of us at the moment is aimed to become a model of a 'lingua democratica'.

1.2 *A lingua democratica*

If a 'lingua democratica' finds itself in some sort of conceptual friction space, then the first question is what this yet undefined term is in friction with? The most obvious candidate would be a *lingua franca*, a 'common language' that can be shared amongst the stakeholders in the genomics debate. This differentiation is directly related to the NWO programme. Initially, the ideas of the programme committee were aimed at finding a lingua franca between the various stakeholders in the genomics debate; companies, governments, consumers, NGOs, research labs, etc. In order to address the challenges and contingencies of current developments in genome research, this common language would allow them to become partners rather than factions. In the words of the opening statement of the proposal:

The furtherance of reflexivity, responsibility and broad participation with regard to the development of genomics are important themes in the call for proposals for the program 'The Social Components of Genomics Research (SCGR)'. This democratic intention underlying the program is specified in terms of the desirability of a lingua franca which could promote interactions between the wide range of scientific disciplines involved in genomics research and could help to bridge the gap between the specialist languages of the scientists involved and the concerns of the wider public. This proposal aims to contribute to the realization of these democratic intentions of the SCGR-program by elaborating the concept of a lingua democratica for genomics. This concept is inspired by the notion of a lingua franca and shares its focus on the role of language in the reflection on genomics, but introduces a more complex perspective on the interaction of the parties involved [142].

At the University for Humanistics, the participants who were preparing a proposal for this programme realised, for different reasons, that language itself is a highly complex form of interaction, and an ambiguous one at that. There is little reason to believe that language will unite stakeholders with different interests and intentions if there is no incentive or motivation to do so. So the group decided to go one level deeper, to the motivations, desires and intentions themselves, to the underlying

metaphors that shape the different vocabularies, and the values and world-views that the various stakeholders host:

The notion of a lingua franca presupposes a shared language between the parties involved which would allow them to transcend the different world views and presuppositions embodied in their respective local languages. However, these ‘local languages’ are not only characterized by different presuppositions with regard to the many complex issues involved in the debates on genomics, but also express divergent legitimate interests. Instead of trying to transcend these divergent interests by means of a hypothetical lingua franca, this program aims to elaborate the idea of a lingua democratica for genomics [142].

A ‘lingua democratica’ moves away from a ‘lingua franca’ through its abstinence of any aim to *construct* a language that various stakeholders would have to abide to, and rather directs attention to *interactions* as means to bridge some gaps between the various stakeholders of current and future developments in the field of genomics:

In such a lingua democratica the differences between the central presuppositions and core concepts of the parties involved are seen as a legitimate expression of the complexity of the questions at stake. Given this complexity the communication and interaction between the different stakeholders involved can be improved by respecting the differences but looking at the same time for conceptual ‘interfaces’ and points of connection between the central concerns and presuppositions of the different languages [142].

The interesting point that is made is, that under the often raging surface of the stormy waters of rhetoric, propaganda, and (other) language games, there may be undercurrents that allow ‘points of connection’. For a linguistically oriented species as humans, we may not always be aware of the limitations and pitfalls of language as a means of expressing and sharing beliefs, desires and intentions. It may even be that, up to a certain extent, language may be blinding the fact that opposing parties, while bobbing up and down the waves of their preferred positions, are in fact drifting along on the same currents, sufficiently far apart to be aware of each others differences, yet oblivious to the tug of a shared direction.

The focus on these undercurrents in the spheres of interactions allows emotions, presuppositions, interests and other sentiments to take their place in the spotlight, as recognition that they are part of our biological and social behaviour. As a result:

These languages themselves do not have a unitary character, but exhibit different variants, some more closed and ‘self-centered’, others more open towards interaction and possible connections with the concerns and presuppositions of other languages involved in the debates on genomics [142].

This leads to the central theme of the proposal:

This program aims to elucidate the notion of a lingua democratica for genomic and contribute to its development by identifying and elaborating ‘interaction-prone’ dialects of the language of four central parties to the debates on genomics: scientists, NGOs, international corporations and representatives of religious and humanist world views. More in particular the program focuses on variants of these languages offering opportunities for public deliberation and democratic debate with regard to the many pressing questions connected with the development of genomics [142].

For the purposes here, this translates to a search for constructive patterns of interaction. If these can be identified, then they may offer possibilities of adjusting the ‘language games’ towards cooperation.⁹ On the other hand, if there are no possibilities of cooperation, then a lingua franca will be of little use anyway.

Genomics is not unique, in the sense that a novel technology has far-reaching implications for us humans, or the world we live in. I personally consider the emergence of the Internet and the world-wide web as a good example of this in our recent past. The Internet was not only a technological revolution, but has had an enormous impact on how we organise our lives and our inter-social relationships.

But the NWO realised that the ethical and normative consequences of genomics may be more severe than any technological revolution we have faced so far, and the UH is also deeply aware of the implications of this new development. The Internet may have brought up issues, such as virtual relationships, spam, distributed social networks and ‘abuse by MSN’, but the genomics group at the UH is looking into matters such as artificially extending our life expectancy [57], engineering human intelligence [91], or examining the ethical consequences of ecological destruction [135]. Such topics push ‘extreme makeovers’ to the extreme, and we are far from knowing what the impact is on our lives or that of our descendants. Progress is a raging bull thundering along its rigid path and leaving us little to grab and grasp on, but meanwhile treading on and trampling on our ethical presuppositions and ideals on its rampage.

But there is something strange about this raging bull, for it is a bull that is *us*, as collective of human agents. We create it by all our individual endeavours, our dreams and intentions and yet now it often appears as if it has got a life of its own and is feeding on our differences and oppositions. But do not these differences and oppositions originate inside ourselves?

At the time of writing in 2006, a United States president with a life-long background in the oil industry presented a ‘State of the Union’ in which he addressed the addiction of the United States to oil [32] and the associated risks this has for our planet, while only a few years earlier he refused to ratify the Kyoto protocol to limit global warming of our planet. In all honesty, we do not need to analyse the intentions of a United States president and his staff to know that the origin of such oppositions are ultimately inside us all. We all know the difference between our ideals and our actions, of the frictions between short term and long term goals. Consider the sheer complexity when the frictions of well over six billion other people are taken into account, with their own backgrounds, cultures, languages and so on.

If one aims to look for ‘points of connection’, then the various “system theories”, that have matured in the latter half of the previous century seem to be an especially good starting point for a lingua democratica. Here is an opening for analytical reflection, based on methodology and insights that are being developed in the ‘hard’ (or natural) sciences, but is enforced through the interdisciplinary crossovers with disciplines that traditionally are rooted in the social sciences and the humanities. It

is here that some tools may be found which can describe phenomena that are more or less in the latter's vocabulary, in terms of one that is more 'attuned' for technologists, *and the other way round*. If we can at least create some form of 'pidgin language' between technology and society, then at least the stakeholders may know better about *what* they are disagreeing on.¹⁰

This is also an area where an engineer can 'interface' with contributors from humanist philosophy and ethics, biology and sociology, and participate in the micro-cosmos of a *lingua democratica* of the research programme 'The Social Components of Genomics Research'. For indeed our research group at the UH is a micro-cosmos of this friction!

For the time being, we can say that the '*lingua democratica*' aims for a deliberative and co-operative means of interaction between different stakeholders. With this, two questions immediately pop up. *Why* should this be pursued, and *how* can it be done? Ideally one should aim to go beyond those often rather tasteless options, to 'agree to disagree' or 'respect different points of view', for these may be true, but say little on how — and why — often opposing factions should take the effort to find a middle ground. On a similar vein, a *lingua democratica* should be put to test with stakeholders who, generally speaking, have little patience with each other. By now, I have read too many well-meant calls for mutual respect and understanding, while by-passing the most pressing problem of stakeholders who just cannot get along, both intellectually as well as practically.

As an example, I have by now met quite a few humanities thinkers who are just appalled by the idea that 'those scientists' do *not* seem to understand that knowledge is multi-interpretable, subjective and relativistic.

This may all be true, but then why does mathematics work so well for the tremendously large as well as the extremely minute in our known universe, and quite a lot of things in-between? Why is solid scientific research steadily progressing into the neuro-sciences and biology?

It is almost impossible to even *start* reading a thick book on any topic, if the introduction already takes certain biased positions that raises these questions without accounting for them. If an author claims from the start that genomics is hazardous, then s/he will almost immediately loose those who see the possibilities and opportunities that this new technology offers. And this group includes quite a lot of people who are actually shaping gen tech!

It will be clear that such differences are quite interesting for a *lingua democratica*, and the 'helicopter view' may already reveal that these differences occur because *all* the parties involved are somewhat naive with respect to the contributions and cultures of the other domains. Normally this isn't really problematic —or it doesn't show—, *unless* these parties experience friction from each other. And so the question becomes *how* and *why* this happens?

These issues will be detailed further at a later stage, but I can already reveal that concerning the *lingua democratica*, I think, the 'why' question relates to the theme