



# Interuniversity Attraction Poles (IAP) Phase V

**2002-2006**

## Call for proposals

**Submission forms - SECTION I  
To be completed by the network co-ordinator**

Caution:  
please refer to the instructions document  
in order to complete this form

**Proposal title (max. 20 words):**

The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state (translation)

Titre en français : Les loyautés du savoir. Les positions et responsabilités des sciences et des scientifiques dans un état de droit démocratique (texte original)

Titel in het Nederlands : De verbondenheden van het weten. De posities en verantwoordelijkheden van de wetenschappen en de wetenschappers in een democratische rechtsstaat (vertaling)

Proposal title : The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state

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## FORM A : NETWORK COMPOSITION

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### Network co-ordinator:

1. Name : Serge Gutwirth (promoter) & Jean-Paul Van Bendegem (co-promoter)  
Institution : Vrije Universiteit Brussel (VUB)  
Type : Principal partner

### Partners

- |  |   |
|--|---|
| 2. Name : Koen Raes<br>Institution : Universiteit Gent (UG)<br>Type : Associate partner  | 10. Name :<br>Institution :<br>Type : Principal partner |
| 3. Name : Isabelle Stengers (promoter) & Jean Claude Grégoire (co-promoter)<br>Institution : Université Libre de Bruxelles (ULB)<br>Type : Associate partner       | 11. Name :<br>Institution :<br>Type : Principal partner |
| 4. Name : Marc Mormont (promoter) et François Mélard (co-promoter)<br>Institution : Fondation Universitaire du Luxembourg (FUL)<br>Type : Associate partner        | 12. Name :<br>Institution :<br>Type : Principal partner |
| 5. Name : Bruno Latour<br>Institution : Centre de Sociologie de l'Innovation - Ecole Nationale Supérieure des Mines Paris (CSI - ENSMP)<br>Type : European partner | 13. Name :<br>Institution :<br>Type : Principal partner |
| 6. Name :<br>Institution :<br>Type : Principal partner   | 14. Name :<br>Institution :<br>Type : Principal partner |
| 7. Name :<br>Institution :<br>Type : Principal partner   | 15. Name :<br>Institution :<br>Type : Principal partner |
| 8. Name :<br>Institution :<br>Type : Principal partner   | 16. Name :<br>Institution :<br>Type : Principal partner |
| 9. Name :<br>Institution :<br>Type : Principal partner   | 17. Name :<br>Institution :<br>Type : Principal partner |

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Code (réservé SSTC) :

**Proposal title :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state**

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**FORM B : CO-ORDINATOR'S CONTACT DETAILS**

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Institution

Institution name : Vrije Universiteit Brussel

Institution address :

Road/Street : Pleinlaan

No. : 2

Post code : 1050

Town/City : Ixelles/Brussels

Research unit

Name of the co-ordinator's research unit: Centrum Interactie Recht en Technologie - Centre for the Interaction Law & Technology

Faculty / Department : Vakgroep Rechtsontwikkeling, Rechtsvergelijking en Europees Recht/  
Faculteit der rechtsgeleerdheid (Department of Legal Development, Comparative Law and European Law - Faculty of Law)

Address :

Internal contact details (office, internal post code ...) : RG-ROVE (lokaal 4B349)

Road/Street : Pleinlaan

No. : 2

Post code : 1050

Town/City : Ixelles/Brussels

Promoter's name: Serge Gutwirth

Promoter's title (Prof., Dr...) : Prof. Dr

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**Proposal title :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state**

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**FORM C : SUMMARY OF THE PROPOSAL**

(max. 1 page)

Indicate clearly and briefly the project's major objectives and provide a concise description of the proposal.

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While no one contests that science and technology have a decisive general impact on our lives, societies and environments, it is surprising on the contrary to see the persistence of the postulate of partition, whereby science is limited to establishing 'facts', on the basis of which political deliberation is responsible for determining 'values'. This thesis ultimately does not explain the myriad dynamic entanglements between science ('nature') and society ('culture') that have been revealed by both actual scientific experience and practice and the work of certain thinkers (such as Foucault, Serres, Stengers, and Latour) and social protest movements (with regard to biogenetics, the environment, cloning, etc.).

We see as a 'new fact' the need to think about science's impact in relation to the democratic constitutional state. Indeed, such notions or principles as legal mediation between rights and interests, democratic participation, the rule of law, transparency, accountability, public interest, human rights and individual freedom are henceforward part of the constraints surrounding scientific work. However, one must explore the consequences on scientific activity and university education and training, for the pertinence of these notions or principles is contingent on the scientists' active interest in and openness to the activities and knowledge of his colleagues in other fields and, what is more, fellow citizens. The idea is to produce 'interesting' knowledge in the etymological sense of the word, in which *interesse* ('to interest') means creating links, producing possibilities of connecting things. In other words, the question of science's impact spontaneously leads to the question of the public nature of scientific research, for if science and the democratic constitutional state can be connected, we must ask what position public/general interest might have in carrying out scientific research on the one hand and adopt as a key question in relation to what stakes and by what procedure research can be and become public.

The *general objective* of this research is thus to conceptualize scientific and technical activity in a democratic constitutional state. *In terms of theory*, this means rethinking the relationship between science and society by means of the inter- or cross-disciplinary study of two current examples (*correlated man and biotechnology and the issue of food security*). *In terms of the law*, it means raising the issue of and defining the demand and the limits of legal mediation with regard to scientific and technical activity. From the point of view of *politics and constitutional law*, it means thinking up new forms of representation with regard to these same activities, a new balance of powers and transparency. In terms of *ethics*, we shall have to take stock of the numerous points of friction between scientific practices and ethical issues. From the more *concrete or operational* point of view we want to come up with proposals for legal, ethical, and other procedural tools that will help put the theoretical and conceptual results of this research into practice.

The main originality of this project is nevertheless *educational*, concerning *training for researchers*. Our research is designed as an *action research* or an 'experiment' to conduct interactively with researchers from different walks of life, beyond the barrier of mutual exclusion that is created by ignorance. The question of how to whet a common appetite (create a common interest) from such different ways of seeing things, can be solved only in the field. Thus, through this experiment, our project will try to identify the new urgent training needs that the knowledge-transmitting practices linked to the democratic constitutional state must meet (e.g. in a graduate school). So, in addition to the more traditional targets of 'knowledge generation' defined in the various work packages, we shall try to foster the communication of knowledge, in the strongest sense of the word, for here we shall consider knowledge not just as content that everyone can acquire, but as something that must 'count', 'be important', be part of the way in which a researcher states her/his questions. Our project thus talks of 'loyalty', 'ties' and 'attachment' in order to underline this very challenge.

**Proposal title :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state**

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**FORM D1 : OBJECTIVES, MOTIVATION AND STATE OF THE ART**

(max. 5 pages)

Describe the project's objectives. Define the problems being addressed by positioning them in relation to the current state of knowledge. Justify the relevance of the proposed methods and approaches in accordance with the state of the art.

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***a. Subject and framework of the questioning***

The outputs of science and technology have a general decisive hold over our lives and societies. On the one hand, they strongly imprint humankind's various activities and our construction of reality in that they set the conditions under which our existences are possible. On the other hand, to the extent that they claim to know the truth, they condition and forge our representations of the world, society, and others. These two aspects are not related exclusively to developments linked directly to technology (such as the wide-scale introduction of digital means of communication or the technical possibilities to control genetic processes). They also stem from the impact that the human sciences have on society (for example, in the areas of insecurity, sentencing, cultural/ethical/religious diversity, drug abuse, privacy, town planning, countering the Extreme Right, and so on).

The impact of science is obviously nothing new, nor is the problematization of this impact. The problem's position traditionally hinged on two general references, namely, 'Science' in direct relation to 'rationality', on the one hand, and 'progress' on the other hand. Regardless of the direction of this axis, whether it was lauding humankind's advance or denouncing false progress, submitting to computation, or being controlled by instrumental rationality, science was seen as a 'thinking head'. The question was whether these thoughts were dreams or nightmares.

What is new, and has already been translated in the notion of sustainable development and the principle of precaution, is the reference taken up in the issue of science's impact and a new realisation of the difference between scientifically derived knowledge and its consequences. So, the issue of science's impact now involves a reference that runs counter to the 'thinking head' metaphor, namely, the "Etat de droit démocratique" (democratic constitutional state). The relationship between a body that produces 'objective knowledge' and democracy as a political project is now seen as an issue by a whole set of social protest movements as well as by a series of thinkers. The proposition that science is limited to establishing 'facts' that political deliberation is responsible for taking into account to set 'values' has been overturned, while a new metaphor, in which the thinking head is replaced by the notion of thought as a collective output resulting from a host of more or less conflicting practical interests, is taking shape. This is what the notion of sustainable development announces when it stresses the need to allow correlatively for erstwhile hierarchised interests (the development of production forces and/or economic forces leading to social development). This is what the principle of precaution admits when it asserts the need to allow for perceived risks, without making this conditional on scientific proof that the risks are real. This new image of thinking also corresponds to a new lucidness fuelled by real-life experience as much as by scientific knowledge itself regarding the difference between knowledge that has been elaborated and verified in isolation (laboratories and other 'number crunchers', to use Bruno Latour's image) and their consequences on both nature and society seen no longer in opposition to each other but united and placed under the sign of entanglements that are sources of unexpected developments, counter-intuitive consequences, failed good intentions, and uncontrollable movements. Here, too, sustainable development and the principle of precaution are the first translations of this lucidness in that both of them oppose the hegemony of deductive knowledge and affirm instead the need for 'real-time monitoring' of actual consequences, with the word 'actual' referring to an open-ended set that corresponds to the multiplicity of human knowledge and interests.

The result of the new dimensions that we have just described is to turn policy-making into the core question. First, policy decisions cannot claim to be built on the hard ground of facts to arbitrate amongst interests. Second, it is incumbent upon politics both to give voice and legitimacy to the many pieces of practical knowledge that go into defining a problem situation concretely and to organize the process whereby the knowledge coming out of this exercise emerges.

This position of the political sphere involves a new relationship with legal practices, for the legal model is relevant from the standpoint of convening the conflicting interests, all of which are recognised as legitimate, and the constraints affecting the decision. It also involves a new relationship with the practice of expert appraisal, since the reliability of an expert's knowledge regarding a specific field situation is now part of the problem.

### ***b. State of the art***

The political sphere's new position with regard to the impacts of scientific and technical outputs can claim to stem from the writings of a few 'founding fathers', such as Michel Serres and Michel Foucault, both of whom challenged the unity of scientific knowledge and rationality, albeit in different fields, to study the complex relationships between knowledge and power.

The contrast between compartmentalized knowledge and actual situations, along with the shortcomings of an ideal of control, has found its best illustrations and thus its most eloquent interpreters in the field of ecology (including in particular its relations with climate) (see Ulrich Beck's *The Risk Society*) We can quote Pierre Lascoumes, who summarises the 'irrationality contained in modern scientific knowledge' (and revealed by ecology) by five main features: 'most scientists' continued silence about the limits of their knowledge, the negation of any social status for science that might exist outside the systems that subtend it, the confusion between risks that can be controlled in laboratory-scale situations and risks that cannot be controlled on an actual scale, the extent of the uncertainties in terms of knowledge that exclude the existence of valid policy-making criteria in all areas, and finally the a priori refusal of all democratic oversight' (P. Lascoumes, *L'éco-pouvoir*, Paris, La découverte, 1994, p. 301, our translation). Today's debate about GMOs gives these five features burning currency, at the same time as it links them to the march of industrialization, which is trying to redefine living beings in market terms with unprecedented intensity.

At the same time, a set of 'knowledge and powers' (Foucault's *pouvoir-savoirs*) aimed more specifically at human beings and their societies (reproductive techniques, possibility of cloning, development of the psychotropic arsenal, correlations between genetics and medicine and genetics and behaviour, diagnosis and the possibility of embryo selection, etc.), opens the door to the prospect of radical transformations that challenge human being's very identity. Of course, this has triggered reaction in the form of the creation of ethics boards and committees that cast the issue of ethics in the role of mediator between technico-scientific proposals and political/policy decisions. However, the questions of the public legitimacy of the expert representatives of ethics and the appropriateness of the mediation are continuing to be put more and more insistently, especially when this mediation, which is dependent on scientific expertise, reproduces the division between 'facts' and 'values' – a division that is particularly inadequate in this context. If one must recognise something that sets human beings and social processes apart, it is indeed the practical inseparability between allowing for facts and their consequences with regard to values. Thus, the fact that one 'knows' that one belongs to a risk group or interpreting a sexual orientation or mental disorder as being biologically determined has immediate consequences on the way in which a person lives her/his life.

We can discern two major groups among the interpreters of the new configuration of knowledge and power, one that looks to the past, the other that looks towards a future yet to be invented. The first group diagnoses the *de facto* political nature of the until very recently dominant representation of the position assigned to scientific research, with a strong distinction between 'fundamental science' as a matrix that is necessary for a set of innovative applications, and these 'applications' themselves, which tie in with the dynamics of production and in this case are subject to political decisions. The fundamental/applied dichotomy, implying the autonomy of fundamental research and its discipline-bounded nature (the questions asked being those that a given discipline defined as being decidable) was supported by some scientists as early as the 19th century. It became a general theme after World War I (innocence of science, responsibility of those who applied it for deadly purposes), but became an organizing principle (see the 1945 Vannevar Bush report, *Science, the Endless Frontier*) with the Cold War. Bush's linear model is basically political, for it assigns the industrial applications of fundamental research the (apolitical) responsibility for improving the commonweal that will put an end to industrial unrest. This corresponded to a series of writings that attempted to put scientific progress in a historical context (Thomas Kuhn's *The Structure of Scientific Revolutions* is the best example of this current). This helped to stabilise in the scientists' own minds the conviction that scientific progress was a 'natural' model, the only one that could establish a connection between progress in knowledge and social progress. (For

more on this, see Jacques Mirenowicz, *Sciences et démocratie, le couple impossible ?*, Editions Charles Léopold Mayer, 2000; and Steve Fuller, Thomas Kuhn. *A Philosophical History for our Times*, University of Chicago Press, 2000.)

As for inventing the future, Bruno Latour puts this future under the sign of the generalisation of the category of political ecology, which corresponds to a change in the democratic constitutional state that he situates in the state's very constitution (see *Politiques de la nature. Comment faire entrer les sciences en démocratie*, La Découverte, 1999). The 'modern' constitution is effectively founded on a separation between 'facts' (= reference to science), which are outside politics, and 'values', which come under political decision-making. It is powerless to deal with the entangled movements that are not parasites but, on the contrary, the building blocks of socio-technical innovation. Political ecology cannot bank on a ready-made separation, but must on the contrary manage to get an actual separation of powers around each problem that must actually be handled without producing short-circuits that might cut off part of 'reality'. In each case – this is where democracy comes in – the first question must be 'how many of us are there and who is involved?' (Who are the interested parties, the various representatives of the many facets of a situation) (*moment of perplexity or puzzlement*). Only afterwards will a consultation process designed to connect up all of the knowledge as relevantly as possible be produced. And this is the basis upon which the process of hierarchisation, deciding the ways that the knowledge will be taken into account, and the institutions of the new configuration and its consequences (assignment of rights and duties, monitoring, evaluation, etc.) will be able to commence (*moment of consultation*). As we shall see, in this proposition the issue of expertise becomes a completely political question, since the reliability of a decision is vitally dependent on the production of 'expert knowledge' without any transcending body to determine the legitimacy of these different types of knowledge. In this case, the legitimation process is immanent with the moments of consultation and hierarchisation.

### **c. Motivation**

We have focused on these two orientations from the many on offer because together they constitute the motivation of our research project. The perspective that Latour proposes corresponds to a definition of the democratic constitutional state in which law and politics oppose by definition the absolutist abuses of power by putting them obligatorily in balance with that which resists them. It is thus important to think this 'juridico-political moment' of 'balancing' or mediating the powers and countervailing powers also in the sphere of scientists' outputs and demands and scientific and technological practices (see S. Gutwirth, *Waarheidsaanspraken in recht en wetenschap* [Truth claims in law and science], 1993). This means that law and politics serve to manage the friction and tension generated by heterogeneity and multiplicity by procedures that mediate between powers and interests under the spotlight of the democratic constitutional state plan. The main item on the agenda is thus to find operational legal, political, and/or ethical forms and procedures that make it possible to get out of the system of irreversible decisions taken on the basis of scientific data – experts' data – that are above all doubts in order to inaugurate a 'constitutional' and democratic management and steering framework for science and technology production. It is a matter not only of introducing principles of the democratic constitutional state into scientific networks, but also one of caution, precaution, and thus responsibility. What is more, this frame must not be seen as being 'against science' but from a perspective that is consistent with the scientific approach, which systematically establishes connections between reliability and the putting at risk. Far from the reductionism that can be found in the descriptions and analyses of the networks that produce science, it is a matter of emphasising that which characterises scientific work, that's to say, the continuous testing of the results in the network. Indeed, as Stengers says, in the case of science, all human statements *must* cease to carry weight, and the testing that *must* create a difference between them entails the creation of a reference that they designate and that *must* be able to distinguish science from fiction (I. Stengers, *L'invention des sciences modernes*, La Découverte, 1993, 151)

In other words, all searches for alternatives must allow for the specific nature of the scientific enterprise, its singularity, its own system of utterances, and that which distinguishes it from other practices. It thus is not a matter of embracing a reductionism that would reduce scientific activity to 'only politics' or a relativism that would consider all scientific statements to be opinions like any other. Nor is it a matter of rejoicing over the claimed victory of subjectivity over reason. Such an attitude ultimately does not enable one to say anything distinctive about the singular reality-building undertaking of science (just as it does not enable one to say anything about the singularity of politics, law, ethics, etc.). On the contrary, there is an urgent need to point out the separate ways in which scientific practices create differences, what these differences impose on us, and the price that we pay for them. There is thus an urgent need to

break down the amalgamations that equate science with method and rationality and turn it into a 'bulwark' around the notions of facts, neutrality, and objectivity.

#### *d. Scope of the proposal*

The problem that our research project answers concerns more particularly the first two steps in the path described by Bruno Latour, that is, the moments of perplexity and consultation. These two moments effectively ask directly the question of the responsibility of the universities and sites where public research is carried out. The idea thus will not be to propose solutions or arbitration, but rather to ask how able universities are to meet a correlated double challenge: the production of relevant knowledge that is likely to shed light on a situation without trying to define it (which is up to the hierarchisation body) and the production of researchers who are interested in the idea that when they deal with issues of common interest, their knowledge becomes significant only if it is connected to other types of knowledge.

Seen from this double standpoint, we can argue that universities have quite a way to go with regard to both training researchers and organizing research. This way is even more arduous in that it has to climb two slopes – training and the imperative of creating usable knowledge – that bring in the question of what attaches scientists, what constitutes the 'loyalties' of knowledge.

The first slope – that of training – continues to hinge on the values of research that has fundamental and discipline-specific questions coincide. Loyalty is not to 'reality' but to the possibility of capturing the features of loyalty that will enable the discipline to advance.

If we take first of all the researchers trained in the exact sciences, the problem is not that they are unable to allow for the political, economic, legal, and social consequences of their propositions (which would put them behind the controls), but that nothing is done to forge any interest in such things. The dominant mode is 'it will work itself out'. (If necessary, legally determined constraints may be integrated into their problems, as in the case of pollution and health risks in chemistry). This is directly connected to the unreliability of appraisals, which are dominated by the specific fields to which they belong. As for their relationship with the public, it tends to remain primarily under the sign of the opposition between (rational) science and (irrational) opinion. The sharing of knowledge and uncertainty is hobbled by the fear that the public 'won't understand'.

The various university departments of law, social science, economics, and political science give only a marginal role to the issues that do not toe the old dividing line between 'nature', which is defined in terms of scientific facts, and 'society', which is organized by human beings' decisions. The researchers are not trained to cope with the unprecedented situations that challenge this opposition. What is more, the schools themselves are also hostage to an apolitical conception of the scientific knowledge that they are supposed to produce and transmit. If we take up a distinction proposed by Bruno Latour, they are consequently expected to describe objectively, as 'matters of fact', rather than explore as 'states of affairs', all of the controversial and conflictual positions that make up a 'case' that cannot be described neutrally, for the descriptions themselves are conflicting. From this point of view, the determination of facts in the statistical sense of data analysis, while it may be extremely valuable, is no less worrisome a model of scientificness. When the various positions are reduced to data for correlation, they become relative to the generic category of opinions, which does not force one to think but instead must be evaluated in terms of groups and representativeness. The oft-denounced convergence of politics and opinion polls starts with the construction of 'facts'.

The second slope is that of the imperative to have to produce usable knowledge of foreseeable technical, economic, or social interest that is now incumbent on university research. Many researchers consider this to be a corruption of things, a genuine breach of contract, a manifestation of non-scientists' irrationality, a constraint to which they must submit but that authorises cheating, with notably what is called the 'relabelling strategy'. Research of interest to a specific field will be presented in a way that makes it unavoidable for the collective interest. In this eminently unhealthy context, all proposals that can be interpreted as being new fiats will be borne with gritted teeth and placed at a distance. Correlatively, it is also a matter of creating relationships of trust and cooperation with the citizens groups that until now had been disqualified and for whom the imperative of producing 'useful' knowledge means subordinating public research to private interests. Now, in these two cases, the researchers' interests are primordial, for their aim is to produce 'interesting' knowledge in the etymological sense of



the word, in which *interesse* ('to interest') means creating links, producing possibilities for connection. This thus means creating multiple networks of loyalty, attachment, and obligations.

The foregoing gives rise spontaneously to the *issue of the public or general interest nature of science and scientific research*. Indeed, if there are grounds for having science enter the democratic constitutional state, we must ask what place public/general interest might occupy in the conduct of scientific research and place the question of in what capacity (in relation to what stakes) and how (by what procedure) research may be and become public at the heart of the matter. To this end, mustn't we recognise the heterogeneity of the many actors involved in the production of science and expertise? How can we connect research – as of the statement of the problem and implementation of the protocol – to general/public interest considerations? And how can the losers and vanquished in scientific networks, who are currently excluded, be turned into minorities with a voice and an archive to conserve the traces in scientific research's 'preparatory work'? Another question: What must be done to get 'public experts' not to think 'like' private sector researchers, not to give priority to the same perspectives and risks?

Let us underline, with regard to this last point of view, the criticality of the debates in which the public can see that protesters often ask the questions in a broader, more interesting, more informed manner, in opposition to scientists who are on the defensive and visibly unaware of the knowledge that the former invoke. This situation is serious in terms of democracy, for it can lead to mistrust and cynicism even in matters in which scientists have important knowledge to put forward. It emphasises the threat of a wide gap between our universities and the movements of social change, including those of the public powers. Thus, some EU programmes are starting to require plural analyses, based on different scenarios, regardless of the research project. Soon researchers will be required to imagine the possible – something for which university training does not prepare them!

In the face of this challenge, we have to think in terms of three inseparable focal points. There is a need to produce relevant knowledge to underpin the new configurations of scientific knowledge, law, and politics; a need to give researchers the new skills that this knowledge requires (rather special skills that are closer to 'expertise' than the branch of science itself); and a need to test the possibilities of creating evidence for other researchers of the need for and relevance of this knowledge and these skills.

To the extent that the configuration of knowledge and power is essentially dynamic and cannot be generalised, we are convinced that no single university can fit the bill as is. That is why our project must be seen as a first step towards a stable interuniversity training and research network (the 'interuniversity pole of attraction'), which alone will be able to catalyse the far-reaching changes that each university will have to undergo if public research is to keep the role that the public recognises it as having, *i.e.*, that of a source of reliable, relevant expertise.

**Proposal title** :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state

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**FORM D2 : To be completed only in the case of proposals from networks funded during earlier phases of the IAP programme**

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a) Mention the phases of the IAP programme (I, II, III or IV) and the titles of projects in which the partners of the present proposed network have participated:

Not applicable

b) Justify participation in phase V in accordance with the results of the **ex-post evaluation** and, where applicable, with the network's re-organisation and reorientation of its research direction (max. 1 page) :

Not applicable

**Proposal title :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state**

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**FORM E : DETAILED DESCRIPTION OF THE PROPOSAL**

(min. 5 pages, max. 10 pages)

Submit a general description of the project as well as a precise description detailing each work package (coherent packages contributing to the pursuit of the project's interim objectives). At the same time, indicate the partners involved in each work package.

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**I. GENERAL PROJECT DESCRIPTION**

**a. Objectives**

The *general aim* of this project is to help to describe, problematize, define, and perhaps redefine, scientific and technical activity in a democratic constitutional state. This general aim can be broken down into a series of separate but connected objectives, as follows:

In terms of *theory or concepts*, the idea will be to rethink the relationships between science and society by an inter- or cross-disciplinary study of two topical examples (see below). The goal is to be able to test the analytical grids and conceptual stakes that should help 'science and technology enter the democratic constitutional state' and outline the conditions under which a 'science of general interest' might be possible. From the *legal* standpoint, the aim will be to look at the demand and limits of legal mediation (amongst the various interests concerned, including the general interest) with regard to the scientific and technical production networks' activities. From the standpoint of *politics and the constitution* the aim will be to devise new forms of representation and the balance of powers that will make the political nature of scientific production activities explicit by opening them up to processes of transparency. In terms of *ethics* we shall have to take stock of the emergence of many points of friction between scientific practices and ethical concerns so as possibly to envision a sort of 'code of constraints' for the players involved that would force them to stop passing the buck when it comes to the consequences of their proposals. From the *practical or operational* standpoint we shall try to propose legal, ethical, and other procedural and policy tools that could help put the theoretical and conceptual results into practice (for example, the code of ethics, possibility of scientific research protocols, ways of evaluating proposals and outcomes, etc.).

The main originality of this project is nevertheless *educational* and concerns *training for researchers*. So, the research is designed as an *action research* or an 'experiment' to be conducted interactively with researchers from different fields, beyond the barrier of mutual exclusion that is created by ignorance. Creating a common appetite/interest from different ways of seeing things must be done on the ground, not from an ivory tower (see Form H). This starting 'ground' will be the education of agricultural scientists. ULB's Section of agricultural sciences, which belongs to both its science and polytech schools, has been wondering about its responsibility for training practitioners who can take account of the intertwined social, political, technical, economic, ecological, and health implications and consequences of their work, notably when it comes to overseas development work and biotechnological innovation. The correlate of this *de facto* responsibility is a rich body of knowledge and experience touching upon the issues of sustainability and ecological risks (unforeseen consequences of human intervention in natural environments as opposed to being confined to the laboratory). How to introduce students and researchers in agricultural sciences to and get them interested in the problems raised by the human sciences and connections between development and politics could thus be rooted in already quite down-to-earth knowledge.

**b. Method: two case studies**

This project will be carried out along *two interlocking and interactive methodological axes*. The first axis is that of an *interdisciplinary reflection upon the theories and concepts* involved. The teams will carry out and adjust their current research in this area to meet the common goals. They will pool their respective knowledge in a common *think-tank* to stimulate interdisciplinary *cross-fertilization* on a more theoretical level. This must contribute to in-depth reflection – in flux, in interaction with the case

studies' results (see second methodological axis) – about the relations among science, law, politics, ethics, and society. The second axis is that of the joint, interdisciplinary examination of two *topical and specific case studies*. This project's aims must be reached *inductively*, by starting with the analysis of a few current issues that stand exactly at the intersection of politics and the law, ethics, and science and technology. We have chosen two such cases, the goal being to treat in parallel one case related to the exact sciences and one related to the human sciences, *i.e.*, 'correlated man' and food security, respectively. These two cases will be transverse subjects of research, that is, they will be examined by each team in the network from the angle of its own perspective or speciality but within the framework of a constant dialogue involving the entire network.

### ***Correlated man***

Since the start of the 19th century the human sciences have developed in interaction with a battery of observation, investigation, recording, and spatial and temporal organization techniques that make it possible not only to gauge and compare individuals, but also to control and discipline them. Foucault called these 'panoptic' techniques the human sciences' 'technical matrix'.

The techniques that revolve around the notion of 'correlated man' are complementary to but distinct from those that revolve around the closed institution (clinic, prison, etc.). What is peculiar to them is to make visible an open set of differences between the normal and abnormal, without referring to the flesh-and-blood-individual-with-her/his-reasons-and-plans. The norm and deviations therefrom emerge from data analysis techniques so that an individual finds her/himself belonging to a set of potentially indefinite statistical groups without needing to know it or above all being able to take a position on this subject. What emerges is '*correlated man*', that is, the individual exists only as a function of the statistical group with which s/he is compared. To this we must henceforward add computerization, for an overwhelming number of human interventions have been replaced or reinforced by computerized processes. Today's individual leaves in her/his wake a huge mass of computerized traces (electronic records, magnetic and chip cards, badges, ID systems, etc.). All of these data are in principle processable, correlatable, and usable, given the concern for compatibility.

Since the 19th century the human sciences have generated and (re)produced a large number of profiles, stencils, and models for the comparative evaluation of individuals and the 'normality' of their behaviour or conduct. While all of this says absolutely nothing about the individual and her/his reasons, it offers privileged meeting points between the 'sciences' of the social sphere and the 'techniques' of the social sphere, from marketing to security measures (dangerous classes) and town-planning measures (risky neighbourhoods). Now, what is peculiar to correlative analysis is that it is a technique for all places, for the most disparate data can be correlated, including those that apparently refer to the exact sciences. Many scientific teams are looking for correlations that will enable them to establish the genetic components of a series of reputedly pathological or merely significant traits. Just as correlation is blind to reason, it is blind to cause. Of course, a correlation may indicate that genes have 'a role', but this role can remain radically indeterminate.

The idea will be not to denounce, but to follow the scientific, legal, and political dimensions of this massive movement of redefinition. This will be done from two points of view: that of its impact on these practices and that of its frictions with these practices. By impact we mean the changes that occur in these practices through the incorporation of what presents itself as simple instruments or guarantees of scientificity. By frictions we mean the ways in which these practices are likely to turn the instrumental apparent neutrality of this redefinition movement into a problem (ethical, political, and legal problems). From this double standpoint, establishing connections with the 'non-human' sciences will be important. This will consist first of all in creating an 'interest by contrast'. This contrast will be all the stronger if the tools resemble each other (models and averages that pay no attention to human 'reasons'). We shall take advantage of their skills in certain areas (differences between models, between ways of establishing relations and correlations, etc.), but also introduce them to the intrinsic differences between the efficacy of a description, the assignment of a role, and the development of a model, depending on whether we are talking about human or non-human populations.

### **Biotechnology and food security**

The intensity of the worries and movements of opposition to biotechnology is unprecedented and has been an unexpected event for researchers and the industries alike. It is at first tempting to put the irrationality of these worries and protests on display, that is, to take a teacherlike attitude. It nevertheless remains that the feeling of fear is legitimate. It is possible to assert that many researchers share the

public's concern for ecological risks just as for the socio-economic consequences of redefining agriculture.

Taking as our starting point the idea of food security, and thus the right of human populations to have sufficient food resources, means stating the problem from the point of view of its conventional connections to industrial applications of high-level research providing hopes of a solution to the dramatic problems of food shortages. Any resistance to such a promise cannot but be irrational. We shall show that this argument, which short-circuits all political deliberations and transforms private interests into unavoidable constraints, now comes up against a number of well-informed actors with knowledge that can dismantle this argument.

This 'proof' will interest agricultural scientists in two respects. 'Agricultural sciences' (a vast field that includes biological control and a large number of sustainable development facets) has a rich history of ecological risk and, as such, is likely to found the public conviction that 'commercializing and industrializing living things' raises unprecedented and formidable problems, for the redefinition of life effectively attacks populations that are known to have myriad interconnections and always unforeseen abilities to take the initiative (take the case of mad cow disease, in which the prions have 'succeeded' in passing from cattle to humans). However, the agricultural sciences curriculum focuses neither on these risks nor on the 'unforeseen' social consequences of technical and scientific progress. Here, as elsewhere, failures and deviations are not transmitted so as to introduce everyone to the economic and strategic stakes of so-called rational practices.

Food security entails and justifies a fundamental homogeneity between public and private research (this is also reflected in the constant flow of researchers from the public to the private sector). There is mobilization around an urgent situation that should be unanimously recognised. The issue of the risks, for its part, leads ones to emphasise the role of reliable expertise and countervailing power that the public institutions should play. However, this role calls for a research culture and openness to knowledge of various types that our project intends to develop.

## II. DETAILED DESCRIPTION OF THE WORK PACKAGES

(legend: the symbol @ is followed by the partner taking the initiative and responsibility for the work package (WP) described)

### WP1@ULB - *Prototype researches taking the Web as the main territory to explore*

This first of these researches will concern a vitally important problem, that of the research being conducted into the *transgenic modifications of rice*. We shall study all of the arguments produced by the protagonists, from the scientists who are working on the problem to the industries and research bodies to the anti-GMO activists and peasants' organizations, with the NGOs in passing.

Besides knowledge-building about this problematic subject, the research will also strive to study how the arguments interlock, ignore each other, reinforce each other, or contradict each other. The idea will thus be to map the interventional landscape and explore the possibilities that scientists have to use the Web to come in contact with the host of positions, criticisms, denunciations, and promises that clash with each other about the prospects opened up by their research.

Depending on the results of this first research, we shall determine what other objects of manifold knowledge we shall explore. This 'patchwork' or 'mosaic' approach corresponds to the specificity of the knowledge to build, for, unlike the knowledge generated by the more conventional research dynamics (in which 'specific applications' are connected to possibilities of intervention identified 'upstream' with regard to more generic situations), here knowledge production will focus on the situation of expertise and will depend, like expertise, on the questions that society asks. In other words, the approach reflects the need for a divorce from the notion of 'research programme', which intimates a cumulative approach that depends immediately on the privilege granted to the possibilities of technical and scientific intervention. What should be cumulative will be the experience of the resources and conflictual landscapes to which each problematic situation belongs. The stake will be the possibility that these resources and landscapes become stakeholders in the researchers' training, for the Web is already part of their daily lives. The idea will be to foster new habits that will open them to, even enable them to take part in, the ongoing socio-politico-technical controversies.

This research will be conducted in close interaction with Bruno Latour's team at CSI, the FUL team, and the VUB team. Indeed, there will be an exchange of knowledge and complementarity, since ULB will contribute its expertise in the area of the ecological and biological stakes, FUL in the area of biosecurity, CSI in the area of network analysis, and VUB in the area of legal frameworks.

### WP2@ULB – *Conceptual research into the relations between knowledge and power*

This research will start off with Michel Foucault's 'knowledge/power' analyses and the notions that are related to them, from the discursive formations to the matter of biocontrol and sovereignty, and Bruno Latour's analyses of the many ways in which scientific facts circulate and knot social, legal, economic, technical, and political stakes. The relevance of this philosophically oriented research for the protagonists of the Interuniversity Attraction Pole (IAP) will be ensured in the following two ways:

- It will be the subject of multiple focused contributions on the Web site as described in Form H (book reviews, hypotheses, analyses of situations and concepts, etc.). Whereas one 'thesis' can put off those who are not 'competent colleagues' because it wants to make a difference for the latter, a succession of conceptual positions hinging on specific aspects of a situation can spark interest in the unexpected convergences or divergences between different approaches.
- It will take as its starting point the matter of the 'facts' and 'knowledge' that revolve around the notion of the gene and will thus be a federating focus between the research on biogenetic innovations and the theme of food security and the research on 'correlated man'.

The theme of 'security' immediately refers back to Foucault's analyses of sovereignty (linked to life instead of death and legitimizing in this case juridico-economic innovations such as patenting living things). However, this theme also calls for testing of Foucault's concepts, which were developed in the fields of medical, social, and legal knowledge and did not consider knowledge linked to experimental science. On the other hand, the gene as an experimentally defined object, that is to say – in Latour's terms – its ability to link the fields to which it refers, is also a matter of controversy. We shall thus have to 'follow' the gene in the different roles that the various types of knowledge/power assign it, starting in particular with Evelyn Fox Keller's hypothesis that genes take on a different practical identity in each field of research. One of these fields obviously refers directly back to the 'correlated man' and announces the importance of the irruption of a reference to knowledge that is reputed to be finally objective (to the tune of 'we used to believe, now we know... and so we can') in the surveillance, 'quadrillage' (networks of forms of control), and differentiated treatment of populations that have in common the importance that they attach to the 'statistical group'. In this case, we shall thus follow the changes in 'knowledge/power' in the same fields in which Foucault had envisioned them.

### WP3@CSI – *Transformations in science policy*

This WP, which will be Bruno Latour's responsibility, will try to shed light on the contemporary ways in which the difference between public and private research is constructed in France, taking the critical point of biogenetic innovations as its reference. The very notion of science policy, which until recently was reserved for a small number of civil servants in the ministries and a few large enterprises, has taken on a much more general meaning and now is part of the ordinary citizen's tackle. Instead of waiting for scientific outcomes to come out of the laboratories to be accepted subsequently by the public ('science proposes, the public disposes'), more and more groups now mean to participate well upstream in the research priority-setting process. In so doing, they have come to fill positions reserved heretofore for the researchers themselves (in the increasingly rare cases in which the scientists have such independence) and those commissioning the research (ministries and enterprises). This is seen in the case of aids, that of the *Association française pour la Myopathie* (French Muscular Dystrophy Association), and the myriad ecological crises that have occurred.

This work package will thus involve following the change in science policy with regard to biogenetics. CSI has served as an instrument to establish indicators and methods of a finally operational science policy in both companies and government for the past twenty years. How does one make the jump from methods for monitoring and evaluating actor networks to tools of technical democracy and what one can call 'the rule of law in science' (*Etat de droit en science*)? That is the purpose of this international collaborative effort. The stake is to extend science policy monitoring methods and indicators to the notion of a 'protocol for a collective experiment'. The legal, political, scientific, and ethical questions of the 'sovereignty' of research programmes and their monitoring will be asked henceforward within the context of technical democracy.

The empirical study's starting point is the recent destruction by anti-GMO activists of some major research projects carried out by France's Centre for International Cooperation in Agricultural Research for Development (CIRAD). Is this the expression of the rationalists' worst nightmare (laboratories sacked by obscurantist hordes preventing the free exercise of reason) or the legitimate expression of a political decision made by citizens who are rejecting poorly designed, poorly evaluated research programmes? In the latter case, the actions are equivalent to the normal, legitimate decisions taken by

government research departments and company managers when they decide to abandon one or the other avenue of research. What tools exist to decide between these two visions?

The merit of our collaborative programme is to try to define the legal tools that will yield a good evaluation and good protocol of collective experimentation. The 'rule of law and democracy in sciences' requires many inventions, both legal and scientific. The collaboration is longstanding (the very notion of 'matter of fact' stems from law), but the gradual shift to 'states of affairs', to these new imbroglios, demands that we re-open the link between science and law (Latour, B. (2001). *Dire le droit. Une ethnographie du Conseil d'Etat*. Paris, La découverte (in press)). This link emerged in the dramatic infected blood scandal in France (Hermitte, M.-A. (1996). *Le sang et le droit. Essai sur la transfusion sanguine*. Paris, Le Seuil), but there it could still be thought of in terms of controlling a scientific and technical element that came from the laboratories. The biogenetics cases are different, for the intervention of the public (the citizens) occurs much farther upstream, in the very conception of the research to carry out. We shall thus map the protagonists' positions and arguments, taking as our horizon the contrast between the official distribution of rights and duties linked to the old distinction between 'fundamental research' and 'applications' and the new incentives for 'academic' researchers to come up with 'usable knowledge'.

Practically speaking, we shall link qualitative field research methods to some powerful quantitative methods (reconstitution of actor networks) developed from both the various protagonists' web sites and the increasingly numerous scientific and technical databases (for example, ISI's 'web of science'). We shall compare these methods by using the Web to explore the key issue of the public area of representation of these controversies. This analysis will also enable us to show that behind the criticism of correlation methods (see 'correlated man', WPs 2, 8, and 9) there now exist effective network monitoring methods that are much more suitable than statistical methods for examining what one wants to tell the public.

#### WP4@FUL - *Study of a scheme to evaluate biosecurity in connection with GMOs.*

Public scientific bodies – government laboratories, evaluation bodies, and other organizations – form a separate environment, alongside universities and industry, where science is put into practice daily. They offer a fertile and crucial ground for the empirical study of the relationship between carrying out scientific activity and concern for the public interest. The specific contribution of this WP will thus be to conduct historical, ethnographic, empirical research into the production, mobilization, and circulation of knowledge about GMOs in the movement of their translation in a public interest-oriented evaluation scheme.

In this context, three questions merit in-depth investigation. First, the emerging risks that are linked to the production, sale, and dissemination of GMOs are a relatively new challenge for the evaluation bodies, to the extent that these risks call for extending their actions and scientific practices well beyond the laboratory's walls. Second, much of the knowledge about GMOs is produced from different perspectives (health, agriculture, etc.), that challenge the apparent unity of biotechnology. This raises the problem of the pluralism of the approaches to and definitions of these 'objects'. Finally, this dispersal of the specific and general knowledge that is produced in a host of different places, including private and university laboratories, raises the problem of how the evaluation bodies should mobilize this knowledge to assess things in terms of public interest. The roles of the law, ownership rules, and economic interests will be examined in this connection.

Our investigation will consist first of all of drawing up a map of the places (scientific networks) that are connected within and by this evaluation scheme. Special attention will be paid to the diversity of definitions given to the gene, depending on how it is incorporated into the scientific networks. This task will entail collaboration with WP3. We shall then analyse quite specifically the way in which expertise takes shape within this evaluation scheme, that is to say, how the heterogeneous types of knowledge circulate, communicate, and lead to assessments of risks and benefits. We shall focus in particular on analysing, in counterpoint to WP1, how the 'bell-ringers' or opponents of GMOs are factored into the equation. Finally, we shall conduct a transverse study of how the public interest, which imposes new forms of representation that differ from the interests present in the scientific networks, is formulated in terms of socio-economic and ecological impacts. This WP will enable us both to fuel WP1 and to produce grounds for comparison with a scheme such as the one that will be tested.

#### WP5@FUL - *Study of multidisciplinary research schemes for public action*

This WP will concern diagnostic and evaluation schemes involving research scientists, administration, and representatives of the public. The matter of innovative schemes is often treated (conference of

consensus, for example), but few analyses of the conditions of their efficacy, the criteria of judgement to use, and their effects are available. This second WP will consist of the study of *innovative* research schemes concerning *water resource modelling* and *biodiversity management* that are based on the sharing and circulation of knowledge within public forums that are open to associations and professionals and directly or indirectly linked to food production. So, we shall compare research into biodiversity and water resource modelling that share the common features of being framed by European law (Habitats Directive, Framework Directive on Water) and involving various configurations of researchers and non-research actors. These areas of research are particularly useful cases from an educational perspective, since they concern directly the ordinary work of agricultural scientists grappling with environmental issues.

The FUL team is already involved in such multidisciplinary research operations, which bring together researchers in the natural and applied sciences and human sciences under the aegis of regional or local forums. These schemes, be they turned towards action or decision-making assistance, all involve an element of constant negotiation over what is to be studied (what should be taken into account) and the forms to be given to the knowledge for managers, operators, and the public at large. The team will study:

- the ways scientists equip themselves and design their work with regard to the other actors, especially how they see the requests for research, consider the users, and allow for the recipients' reactions;
- how social and economic data are mobilized and used to managed this collective property (link with the 'correlated man' theme);
- how what is 'to be managed, discussed, and mobilized as public knowledge or information' is defined in each case;
- the role of the right to information in the development and working of these schemes and more broadly the significance of these forums in law (What role does law play in them? What legal value do these outputs acquire?);
- the importance of databases and the problems that are linked to their ownership, use, and interpretation;
- the ways in which knowledge is (or could be) distributed and circulated daily and ordinarily in order to have a collective representation of what is involved in the phenomena being studied and what is relevant for possible normative and regulatory action (modelling and regulation of water use, its nature and circulation, characterization of what must be protected).

These schemes and their operation will be compared with foreign experiences and provide food for thought for the discussion that will take place in Work Packages 1, 2, 6, 7, 9, and 11.

#### WP6@VUB- The relationship between law and science from the perspective of law and legal theory

The aim of this WP is to dig deeper into the relationships between law and science in the context of the questions and objectives broached in the general project description. This will mean analysing these relationships in light of a comparison of the fundamental/constitutional principles of the democratic constitutional state and scientific and technical practices. This (meta-)reflection will be fuelled by both ongoing sociology of science and philosophy of science research (see the ULB and CSI WPs) and sustained participation in this project's own action research (see Form H). It will also entail designing, prospectively, legal instruments meeting the need to create a juridico-political conceptual framework to anchor the scientific and technical production networks democratically and constitutionally.

We shall focus in particular on the relations between scientific and technical practices and the principles of the (polyphonic) democratic constitutional state, that is to say, the fundamental human rights and freedoms, democracy, constitutionality (*rule of law*), pluralism, and, finally, the 'openness', polysemia, or '*contrafakticiteit*' ('counterfactuality' or 'artificiality') of law. How to accommodate or link the sciences and expertise to legal concepts such as transparency, accountability, responsibility, participation, mediation, the proceduralization and traceability of actions, the prevention of damage, precaution, etc.? How to link the true and the right – 'veridiction' and 'jurisdiction' – in the context of the contemporary changes in conceptions of law and science? How to think about scientific and political enlightenment together? How to get the scientific networks to enter law and democracy while recognising their singularity? What legal tools, procedures, and new forms of representation (see Labour) must be invented to get the scientific networks out of the 'clandestinity' in which they are currently working? How to conceive of the scientist and expert's liability in law? How to conceive of the public's participation in scientific research in law? What roles must be devised for the 'expert' in the legislative, judicial, and decision-making processes?



### WP7@VUB - The legal status of knowledge and information

The aim of this work package is to analyse the legal status of information. To this end we shall analyse from a legal standpoint the body of rules of positive law concerning the development, appropriation, and circulation of and access to information. This will be done from the standpoints of the various branches of law that are implicated. So, we shall analyse matters of public law (freedom of speech, the 'right to information', the principle of the freedom of movement of ideas and information, the status of the information that is produced by the public sector, the publicness of administrations, etc.) and private law (*droit d'auteur*/copyright, patent law, the system of the legal protection of know-how, etc.). Key question: Can knowledge become the property of private or public actors, in legal terms, and, if so, under what conditions? And beyond the law in the books and principles, what about the practices of appropriation and sharing of information and knowledge: are they in line with the principles and rules in force?

The legal analyses making up this WP will provide a legal frame of reference for the other WPs. Nevertheless, they must also culminate in prospective thinking about the legal status of scientific and technical knowledge. How can one devise such a legal status that would reconcile three essential concerns, namely, (1) the concern for collective participation in and responsibility for choosing the knowledge to develop, experiments to conduct, and limits that should be applied thereto; (2) the concern to stimulate research by means of economic incentives; and (3) the concern for fair, non-discriminatory sharing of the achievements of scientific and technical knowledge. In a nutshell, what legal status must be assigned to scientific and technical knowledge that has entered the constitutional state?

The research carried out in this WP will also concern the legal aspects that are linked more specifically to the topics of *food security* and *correlated man*.

### WP8@VUB - Correlated man and man as seen by law

The autonomous individual and individual freedom are at the heart of the democratic constitutional state. The purpose of law is effectively to connect/'compatibilize' the freedoms of all and connect/'compatibilize' these same freedoms with the general interest. While law can at times legitimately limit freedom, it must above all make freedom possible and protect it. We can say, from the standpoint of positive law, that *privacy* or the *freedom of private life* is what takes charge of this protection.

The development of the forms of knowledge-power in the human sciences and emergence of 'correlated man' fit poorly with this freedom. The normalization of a society segmented by discipline (see Foucault's disciplinary society) and the homogenization that is characteristic of the society of control (see Foucault, Deleuze and Cohen) empty the freedom of its substance by 'guiding conduct' (see Foucault's description of power as *une conduite des conduites*) and give rise to the existence of non-legal norms that enable one to sort, evaluate, reject, condemn, and exclude or include certain behaviours by referring them to statistical averages. So, when law sets up, reproduces, or is 'colonized' by this type of norms, derived from the human sciences, it negates its fundamental categories and at the same time consecrates the exercise of a power that is justified not by law, but outside or across law, by the human sciences. This is where one finds problematic relations between law and the sciences. How can one advance the arguments of law in dealing with the categories of the human sciences? How can one connect legally the flesh-and-blood individual with the homogenizing scientific norm (and the policies that this norm seems to justify)? How does one frame human science research juridically in accordance with the pluralism of the democratic constitutional state? How does one protect individuals from all of the techniques that make it possible to extract data from them, measure, gauge, and compare them?

To answer these general questions we shall begin inductive research into a few subjects that are located at the intersection of criminal law, human rights, and criminology. Historically, social defence and the special legislation that is sometimes still in effect give us good mooring points, such as the categories of 'dangerous' persons or 'risk groups' such as 'juvenile delinquents', 'abnormal individuals and repeat offenders', and the 'mentally ill'. The work done by criminal anthropology laboratories in the early 20th century is very interesting in this regard, in that it had a 'split personality': on the one hand, it constituted and 'handled' the individual file (control over the individual), while on the other hand it gave existence to statistical 'risk' or 'dangerous' groups (control of flows, of groups of individuals). What are the links between these two aspects and, for example, public opinions, current or planned policies, etc. Today, 'actuarial justice' is taking over, in that it justifies the taking of special legal measures to deal with certain categories of offences and offenders that are singled out by statistical analyses. So, for example, in Belgium the law of 5 March 1998 concerning conditional liberty reintroduces that notion of putting sex offenders at the disposal of the government (non-reducible sentences). This type of statistical

targeting can also be found in security programmes and policies that focus on *certain* neighbourhoods (usually settled by immigrants) and *certain groups* of people. To take another example, how should one understand the emergence of what Garapon and Salas, in *La république pénalisée* (1996), have called the new figures of insecurity: ‘the invulnerable teenager’, ‘the undesirable foreigner’, and ‘the incurable pervert’?

#### WP9@VUB - *Mathematical practices, statistics, and society*

This WP will deploy three axes of research, as follows:

a. *The sources of objectivity and the need for mathematics.* The starting points are two obvious assessments. First, up to now, the philosophy of mathematics has been interested wholly in mathematics’ internal problems (internality). Second, mathematics is also seen to function as a reference or necessary and irrefutable form of knowledge in all discussions, be they scientific or philosophical (externality). The aim is to understand the origins and sources of this remarkable effect. While at first glance this issue appears to be specific to mathematics itself, the fundamental hypothesis is that this internal necessity turns into a series of external ‘necessities’. In other words, the ontology and epistemology of mathematics are translated and show up in – and ‘contaminate’ – the ontologies and epistemologies of the natural sciences (take physics as the paradigm) and social sciences (see WP2@ULB - identities of the subjects of scientific research – and WP8@VUB and WP10@UG) and daily life (see ‘correlated man’).

b. *Statistics as a case of the complex and multiple relations among mathematics, the social sciences, and society.* Since Ian Hacking there has been a consensus on situating the origin of the theories of probability and statistics within a society whose economic organization must meet some special conditions. Statistics thus developed before the notion of probability was rigorously formalized. The slogan might read: ‘First came correlations, then “chance” or “probability”’. Now, correlations raise the fundamental problem of causality.

Today, in what is called ‘analytic’ philosophy, many studies have been conducted (e.g., J. Pearl, *Causality. Models, Reasoning, and Inference*, 2000) to determine which correlations are or are not indicative of a cause-and-effect relationship. However, these studies are almost wholly internal in nature. If we want to break out of this restricted framework, we will find ourselves grappling with two problems, first, from where or from what are the correlations derived and, second, where does the notion of causality come from? Given that life in society and daily life ‘are familiar with’ many notions of causality, this WP will tackle the matter of the relations among these different conceptions of causality. The link with WP3@CSI concerning the use of quantitative methods is clear.

c. *Popularization of mathematics.* In a direct application of the preceding, we shall tackle the greatly neglected matter of mathematics’ popularization. The self-image that mathematicians broadcast reduces mathematics to a sort of puzzle-solving, to rebuses and riddles in an imaginary world like Flatland (see WP13@UG). Now, what would a popularization of maths for non-mathematicians look like? The aim in this WP will be to produce trials of such popularizations.

Let us add to this that an underlying objective of these three axes of research is to establish a connection between the ‘analytic tradition’ on the one hand and sociologists, psychologists, political scientists, and the economists of science, on the other hand, who have a tendency to focus on the external connections only.

#### WP10@UG - *Questions concerning scientific experts’ independence*

a. Generally speaking, ‘science’ is perceived to be a body of discourse, practices, and institutions that owes its legitimacy to the claims of truth that it makes. However, today these truths can no longer be incorporated in one and the same comprehensive message. Thus, the claims of truth can become the stakes of political debate. This is clear in the case of scientific evidence.

The same applies the other way around. Scientists make use of political and ethical notions such as ‘the public interest’, ‘the level or degree of risk’, ‘acceptable risk’, ‘efficacy’, ‘critical limit’, etc. As a result, the scientific forum in turn becomes a venue for discussing subjects touching upon political and ethical responsibility.

Is it consequently possible/necessary to use different norms, depending on whether one is dealing with experts in the civil service (inspectors, certifiers, etc.), advisory board experts, academics working for the State, or academics working only for a scientific institution? The research’s material and the way it is conducted will be handled in close cooperation with the partner’s work in WP1@ULB.

b. The democratic legitimacy of a constitutional state used to rely in large part on the saying ‘no legislation without representation’. Now, as Brian Barry points out, our society now makes the consultation of experts a condition of the legitimacy of its laws (‘no legislation without consultation’).

So, besides representativeness, ‘scientificness’ has become a criterion of a policy’s legitimacy. We may then ask about the foundations of such legitimacy and its implications for the researcher’s position and decision-making in scientific matters (close cooperation with WP6@VUB)

c. Similarly, scientists are called upon as ‘independent experts’ to produce data to serve politics. Besides the question of the expert’s independence, we may wonder about the publicness of such research, which is often subject to an information embargo imposed on it by the party requesting the information.

d. The State and companies play an important part in determining the directions taken by science through mechanisms to subsidize scientific research. Can scientists accept no matter what research mission or programme? The case of transgenic foods and food security in general will serve as testing grounds to explore the question ‘What ethic(s) and what normative discourse affect science?’

e. Finally, it is striking to see that specialists in ethics are increasingly consulted as ‘experts’ on various legislative review boards and the like. What is the exact role of these experts in ethics – these ‘ethicists’ – in such bodies? What kind of expertise might they have, and just what exactly is an ethicist?

#### WP11@UG - *Questions concerning the ethical acceptability of scientific research*

a. In our research a great deal of attention is reserved for certain health risks, especially those that come under the heading of food security. In research dealing with this type of risk one rapidly comes up against the dilemma between a ‘precautionary norm’ (as long as a possibility of risk exists, no one must be exposed to this risk), and a ‘norm of certainty’ (as long as it has not been proven scientifically that there is indeed a health risk, everyone may be exposed to this possible risk) (see the WPs@FUL as well). Of course, a case can be made for each of these norms. However, the basic question that we shall try to answer in this work package is, ‘On what ethical foundations are they based?’

b. We know of enough cases in which researchers, despite their strong suppositions of a cause-and-effect relationship between a particular agent and a certain syndrome, continued to expose the population to a supposed risk in order to acquire scientific certainty as to the relationship. Does this apply to the food security context as well?

c. In a large number of situations one must have science’s prior consent before being able to introduce certain products of production methods in society. This is the case, for example, when one has to decide on the patentability of certain technical or scientific inventions or to allow new medicines onto the market. What values are invoked by scientists in these cases? Are there cases of patents’ having been refused on purely ethical grounds?

#### WP12@UG - *Questions concerning researchers’ professional ethics*

a. More and more categories of professionals (psychologists, engineers, ecologists, etc.) are tending to band together, worldwide, around specific codes of ethics applying to the entire profession (codes of professional ethics) that are to be observed regardless of where one is working and the position one fills. Do codes of professional ethics exist for scientific experts, and what is specific to their professional ethics? Does a scientist have special moral obligations specific to her/his position? Do any scientific disciplines remain in which such codes do not yet exist, and can one put forward arguments that would warrant demands that they be created?

b. The untrammelled communication of and access to scientific data within the ‘scientific community’ is a universally recognised principle. However, how many scientists are ‘bound’ by the parties commissioning their work (companies, the State)? And just how far does this ‘gag’ go? What are the rules governing the circulation of scientific information? (See WP7@VUB, WP4@FUL)

c. Is it possible to ask academic researchers to conduct work that is governed by the rule of non-divulgence? Aren’t universities bound to take the necessary measures themselves in order to protect and conserve their status of public research institution?

d. Can scientific research tackle any subject? Are there (ethical) limits to what one may investigate? These questions apply not only to the natural sciences, but to the human sciences as well. What ethical restrictions may one invoke? Or else, is it not possible to imagine any such restrictions?

#### WP13@UG - *Scientific information as an ethical duty*

a. The specialization and deepening of scientific research widen the gap between experts and laypeople. The latter are increasingly forced to abdicate as judges through lack of expertise. They thus find themselves having to trust blindly in scientists and can only claim the right to call in a ‘second opinion’. Yet don’t scientists have a duty to ‘popularize’ their knowledge? Are they not bound to state their work in a more accessible language that is likely to interest those who are actually interested in their work?

That is doubtless desirable, but is it possible? Our research questions are thus: ‘What interests stimulate or incite popularization efforts? What type of discourse do they use? What are their effects?’

b. This duty to inform the people is not restricted to the sciences. It is becoming more and more vital in the area of legislation, especially since legislation relies increasingly on the sciences (see WP6@VUB & WP5@FUL)). Here, too, our research questions concern the underlying interests, discourse, and effects.

**Proposal title :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state**

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**FORM F : SYNOPTIC LIST OF WORK PACKAGES**

Record the title of each work package (as described in form E) and the list of partners involved in its production.

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1. Work package title: WP1@ULB -Prototype researches taking the Web as the main territory to explore  
Partners involved (promoter, institution) : Stengers & Grégoire, ULB, and all the other partners
2. Work package title: WP2@ULB – Conceptual research into the relations between knowledge and power  
Partners involved (promoter, institution) : Stengers & Grégoire, ULB; Gutwirth & Van Bendegem, VUB, and Raes, UG
3. Work package title: WP3@CSI – Transformations in science policy  
Partners involved (promoter, institution) : Latour, CSI, and all the other partners
4. Work package title: WP4@FUL -- Study of a scheme to evaluate biosecurity in connection with GMOs.  
Partners involved (promoter, institution) : Mormont & Mélard, FUL, and all the other partners
5. Work package title: WP5@FUL - Study of multidisciplinary research schemes for public action  
Partners involved (promoter, institution) : Mormont, FUL; Gutwirth & Van Bendegem, VUB, Stengers & Grégoire, ULB and Raes, UG
6. Work package title: WP6@VUB- The relationship between law and science from the perspective of law and legal theory  
Partners involved (promoter, institution) : Gutwirth & Van Bendegem, VUB and all the other partners
7. Work package title: WP7@VUB - The legal status of knowledge and information  
Partners involved (promoter, institution) : Gutwirth & Van Bendegem, VUB; Raes, UG and Latour, CSI
8. Work package title: WP8@VUB - Correlated man and man as seen by law  
Partners involved (promoter, institution) : Gutwirth & Van Bendegem, VUB; Stengers & Grégoire, ULB and Raes, UG
9. Work package title: WP9@VUB - Mathematical practices, statistics, and society  
Partners involved (promoter, institution) : Gutwirth & Van Bendegem, VUB; Stengers & Grégoire, ULB and Latour, CSI
10. Work package title: WP10@UG - Questions concerning scientific experts' independence  
Partners involved (promoter, institution) : Raes, UG, and all the other partners
11. Work package title: WP11@UG - Questions concerning the ethical acceptability of scientific research  
Partners involved (promoter, institution) : Raes, UG and Mormont, FUL
12. Work package title: WP12@UG - Questions concerning researchers' professional ethics

Partners involved (promoter, institution) : Raes, UG, and Gutwirth & Van Bendegem, VUB

13. Work package title : WP13@UG - Scientific information as an ethical duty

Partners involved (promoter, institution) : Raes, UG, and Stengers & Grégoire, ULB

**Proposal title :The loyalties of knowledge. The positions and responsibilities of the sciences and of scientists in a democratic constitutional state**

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**FORM G : MAIN SKILLS OF THE PARTNERS**

Give the list of partners and record the main skill of each of them in relation to the project.

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1. **Partner (promoter, institution):** Serge Gutwirth (promoter) & Jean Paul Van Bendegem (co-promoter), Vrije Universiteit Brussel

**Main skill:** Serge Gutwirth (jurist, criminologist) is professor at law. He teaches Human Rights, Philosophy and Theory of Law and Comparative Law, in Brussels and in Rotterdam, to law students and students in political sciences and criminology. His research in the three mentioned disciplines always has focussed upon topics at the crossroads of law and sciences, such as e.g. computer law, environmental law, psychiatry and law, individual freedom (privacy) and control and surveillance techniques. Gutwirth is also involved in criminological research about the nature and functions of contemporary punishment. Jean Paul Van Bendegem is a philosopher and mathematician and professor in logic and philosophy of science at the Vrije Universiteit Brussel. His research concerns mainly non-classical logics, the philosophy of mathematics and the recent emergent field of sociology of mathematics and general philosophy of science.

2. **Partner (promoter, institution):** Koen Raes, Universiteit Gent

**Main skill:** Koen Raes (moral philosopher, jurist) is professor in applied ethics and legal philosophy at the Faculty of Law of the University of Ghent, where he teaches various courses in applied and professional ethics (e.g. medical ethics, health care ethics, media ethics, lawyer's ethics). From this perspective, but also because of his experiences in various medico-ethical commissions and his presidency of the Preventive Chamber of the Flemish Health Council, he became particularly interested in professional ethics and in the ethical responsibilities of scientific experts. His recent research concerns professional ethics in various legal and medical professions. The present research project would allow him to confront his observations with other professional settings where experts are solicited for advice.

3. **Partner (promoter, institution):** Isabelle Stengers (promoter) & Jean-Claude Grégoire (co-promoter), Université Libre de Bruxelles

**Main skill:** Isabelle Stengers : Philosopher of sciences, department of philosophy and co-director of the Centre for the Study of Sustainable Development at ULB. Principal competence: "ecology of practices" : characterizing the diversity of knowledge production practices, the relationships between this practical diversity and the general images of scientific method, and the different ways these practices interact. Teaches both to students in science and in philosophy. Experiments creating mutual interests through the possibility of better understanding one's own practice by discovering its differences with other practices.

Jean-Claude Grégoire : Agricultural scientist, chair of the Interfaculty Section of Agricultural Sciences. Principal skills: plant protection, in particular biological control. Facing the multiple implications of agricultural practices both in his own research and, more generally, through the teaching given to the Agricultural Sciences students.

4. **Partner (promoter, institution):** Marc Mormont (promoter) & François Mélard (co-promoter), Fondation Universitaire du Luxembourg

**Main skill:** Marc Mormont is sociologist, PhD in environmental studies. He is especially interested in environmental and food politics. He is professor at the FUL (environmental sociology) and at the Agronomic Faculty of Gembloux (rural sociology). The SEED research unit, that he coordinates, focuses the research on the relations between scientific practices and socio-political practices. It develops studies on the specific forms of scientific practice in the process of policy implementation especially in uncertainty contexts.

François Mélard (sociologist) is researcher at the Fondation Universitaire Luxembourgeoise (FUL). He is lecturer of sociology of technological challenges at the Catholic University of Louvain la Neuve (UCL) and of environmental controversies at the FUL. His research field is the analysis of metrological practices and the controversies concerning use and appropriation of scientific knowledge. He is also interested in the ethnographic and historic study of research and control laboratories in industry.

5. Partner (promoter, institution): Bruno Latour, Centre de Sociologie de l'Innovation (ENSMP)

**Main skill:** researcher in social sciences specialised in history and anthropology of sciences; published many books and articles about 'technical democracy' and recently about ecology; animates the Ph.D. program since 15 years; worked a lot about science and innovation policies in private companies

6. Partner (promoter, institution): ,  
Main skill:

7. Partner (promoter, institution): ,  
Main skill:

8. Partner (promoter, institution): ,  
Main skill:

9. Partner (promoter, institution): ,  
Main skill:

10. Partner (promoter, institution): ,  
Main skill:

11. Partner (promoter, institution): ,  
Main skill:

12. Partner (promoter, institution): ,  
Main skill:

13. Partner (promoter, institution): ,  
Main skill:

14. Partner (promoter, institution): ,  
Main skill:

15. Partner (promoter, institution): ,  
Main skill:

16. Partner (promoter, institution): ,  
Main skill:



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**FORM H : NETWORK ORGANISATION AND MANAGEMENT**

(max. 3 pages)

Describe the network's organisation as well as the practical terms governing collaboration and interaction between the partners (taking account of the fact that joint working is one of the IAP Programme's objectives).

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The **network dimension** of the project is decisive. Indeed, it is not only a matter of enabling teams working in different institutions to work together, but also and above all teams working in different fields. So, besides the more traditional ambition to 'produce knowledge' as specified in the various work packages, an attempt will be made to '**get the fields to communicate their knowledge**' in a big way, to wit, the knowledge is not considered merely as content that each party can acquire, but is what must 'count', 'be important', be part of the way in which a researcher states her/his questions. Our project speaks of 'loyalty', 'ties, and 'attachment' precisely to underline this challenge, for all these questions are worthless if it is a matter of a selective, productive approach such as that of the sciences, and our aim here is not to criticise, but to try to produce change and enhancements (see I. Stengers, *La guerre des sciences, Cosmopolitiques 1*, La Découverte/Les empêcheurs de penser en rond, 1996).

Indeed, as Bruno Latour has shown (*La science en action*, La Découverte, 1989), scientists are used to working in very heterogeneous networks and, in developing their innovative strategies, taking account of all of the possible alliances (economic, institutional, media, and ideological ones) that can give their proposals more strength and interest. However, unlike the cases that Latour analysed, here we are not striving to 'mobilize' interest or to give the innovative proposal a central position. What we should manage to have taken into account is less what reinforces than what may **engender perplexity**, not weakening, but suggesting that a proposal's meaning depends on the way a situation is defined.

Creating the conditions for communication is thus seen here to be an integral part of the project, of its experimental section. Its evaluation and the exploration of its constraints, successes, and failures will be part of the work itself and give rise to a real '**protocol of collective experimentation**'. This protocol is part of the network's twofold aim of sowing the seed of an interuniversity concentration of expertise of a new type, with the focus on the problems that puzzle us call for 'consultation', and sowing the seed under conditions that ensure that the researchers that are formed in this manner are accepted as interesting colleagues by the other researchers concerned by the issues, and not as 'communication specialists' responsible for 'getting their projects accepted'.

From this point of view, the ways the students, researchers, and teachers in ULB's section of agricultural sciences accept 'knowledge from elsewhere' are crucial. Indeed, given the current state of affairs between fields of knowledge, the 'laboratory sciences' are both those that 'frighten' the other groups and those that define themselves as not needing the other groups (the problems that the others handle are defined as being 'downstream' from them). Whereas a lawyer will be painfully aware of her/his incompetence when it comes to the sciences, a biologist could very well assert that 'you just have to regulate'. That is why a series of **seminars run by the IAP partners** and some outside experts will be held on the ULB campus.

One of the challenges of these seminars will be to bring together not only the different teams, scientists, researchers, and students of the section of agricultural sciences, but also members of non-university groups (NGOs and protest groups). This will involve testing whether our approach can succeed in what it posits to be a necessity, namely, opening up academic research to the questions, knowledge, and doubts outside.

Besides the conventional aims of such seminars (communication and discussion of knowledge), the communication that this seminar yields will undergo **meta-analysis**. This meta-analysis, which will be conducted with the various partners, corresponds to a hypothesis according to which opening up

academic research to the intrinsically non-discipline-related questions that are raised by technical and scientific innovations in a democratic regime entails not only arousing the researchers' interest but also the fact that this interest is recognised as reliable by the protagonists who until now have been disqualified and have some reasons to challenge public research's independence from private interests. This interest, like this trust, must be earned.

So, by means of interviews and microdiscussions, we shall try to give the participants the possibility to come up with and state their own reactions, puzzlement, criticism, analyses of the situation, and successes and failures of communication. The aim will be to carry out an experiment on the requirements that operations that bring different forms of knowledge face to face must meet. These requirements are not aimed at creating a consensus (which would mean that these meetings would have to explore what might be decision-making negotiations). Rather, they target what must precede all negotiations, *i.e.*, learning to describe an actual situation from the many versions that one must tackle. Success thus will not consist in winning trust that would delegate back to academics the legitimate production of value-neutral knowledge, but in **creating a 'forum' in which each type of knowledge will be able to incorporate a competent reference to the other parties' knowledge.**

The texts, discussion summaries, and results of the meta-research will be made available on a **web site**. This web site's creation is a stakeholder in our knowledge communication project. It will not be a simple 'instrument' of communication, but what we might call a 'system' or 'scheme' (*dispositif* in French). Whereas the term 'instrument' refers to a function that could be accomplished by other means (fax, exchanges of texts, seminars), the term '*dispositif*' (or 'scheme') refers to an operation of active transformation of those who are involved in it. In this case, the web site that we want to create will enable us to make available (by forms, links, and key word searches) all of the documents produced by the various partners in the IAP. Moreover, the *modus operandi* will be decentralized (everyone will have the possibility of posting documents on the web site directly) and structured (it will be possible for a document to follow on the tail of another one as a remark, addition, question, criticism, etc.). All those who participate in the work in one way or the other will be able to consult the site and thus will be able to follow the research's progress in real time, as well as being able to have their own positions taken into account. If at first only the researchers associated with the IAP will be able to contribute to the site, this is because we do not want to turn the site into a forum of free speech or unbridled controversy (many such sites already exist, and their addresses will be posted on the site). This site must effectively be the core of a process to build knowledge that can interest and link partners belonging to different fields, and the commitment to participate in learning what such a process requires will determine the possibility to intervene in it. As such, it may be called upon to play a vital role in providing training in the skills and competences demanded by an interdisciplinary interuniversity 'pole of attraction'. It may gradually be enriched by more contributors (students, non-university groups) as well as from a technical standpoint (interactiveness) and become an instrument for opening up academic research to the polity.

We can already foresee a few avenues that will make the site a true **learning environment**. So, it is clear that production coming under the heading of scientific research first addresses confirmed colleagues in the field and must thus allow verification of its statements (experimental protocols, methodology, etc.). For those who belong to other fields, these components of a scientific report nonetheless form a body of information the scope of which they by definition cannot gauge. On the other hand, they lack what is shared by all of the competent readers: the way to problematize the issues, the difference between the questions that may be asked and those that may not be, the extent of the proposals innovativeness, and its stakes in the field involved. The participants will thus have to learn how to produce contributions that are likely to interest people who are foreign to their fields.

So, this project will plunge the project's **legal scholars, ethicists, and philosophers** into the world of the other disciplines as well as into the world of experimental, dialogue-based, interdisciplinary research. They will have to listen to what is said, 'change their pitch', open up, let themselves be interested in, even influenced by, knowledge that they knew of in the best of cases only from 'outside' and in/by questions that they did not learn to ask. On the other hand, they will have to produce and transmit relevant legal, ethical, and philosophical knowledge in answer to and in step with the questions that are asked by the other partners' research and participants in the course of the web site discussions and seminars.

The **agricultural scientists and chemical and bio-industrial engineers**, for their part, will be confronted – most unusually for them – with the legal and ethical criticism that will or should frame the subjects and results of scientific research, whether in terms of intellectual property, the setting of standards (for example, pollution and quality standards), the status of companies or employees, or even the legal and ethical limits on research (as, for example, with regard to experiments on humans and animals or the respect for privacy). From this confrontation they will learn to weigh stakes other than strictly technical ones in the course of their work.

All of the foregoing has nothing to do with either the popularization of science or ‘sending people to school’. Popularization targets people who are defined as ignorant, and ‘sending people to school’ is designed to turn beginners into ‘colleagues’. Here we have neither ignorant people nor beginners, but researchers working in different fields. It is thus more a matter of ‘introducing oneself’ and ‘interesting the others’ successfully, of giving other people a clear picture of how questions are asked in a given field, the constraints and stakes involved, the difficulties and obstacles to overcome. That is why it seems that the best form of intervention should be the treatment of focused subjects, not a general review. The idea is to succeed in communicating what is important, an event, or problematic in each specific field, not in general. The starting hypothesis that we shall test is that successful communication between different fields must not strive to give each party the possibility to ‘be in the other party’s shoes’, but, on the contrary, **to learn**, by coming in contact with what makes the other party dream, what frightens her/him, what s/he is searching for, and her/his bonds and obligations, **how different and singular are the practices of knowledge that, together, must contribute to the exploration of an actual situation.**

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**FORM I : BUDGET (GLOBAL DISTRIBUTION PER PARTNER)**  
(in EURO, without decimals)

	<b>Pers onne l</b>	<b>Oper ating cost s</b>	<b>Equi pme nt</b>	<b>Over head s</b>	<b>Subc ontr actin g</b>	<b>Total</b>
Partner : VUB	890930	80000	10000	49047	0	1029977
Partner : UG	405125	50000	8000	24375	0	487500
Partner : ULB	283713	44621	8676	16417	19831	373258
Partner : FUL	328744	49083	4462	18891	0	401180
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Partner :	0	0	0	0	0	0
Foreign partner :	0	0	Not allowed	Not allowed	Not allowed	125000
Foreign partner :	0	0	Not allowed	Not allowed	Not allowed	0
Foreign partner :	0	0	Not allowed	Not allowed	Not allowed	0
<b>Total</b>	1908512	223704	31138	108730	19831	2416915

- Personnel: indexed gross remunerations, employer's social contributions and statutory insurance costs as well as any other compensation or allocation legally due

in addition to the salary. (This heading must account for 60% minimum of the total budget.)

- Operating costs: basic supplies and products for laboratory, workshop or office; documentation, travel and accommodation; use of computing facilities; software; telecommunications; maintenance and operation of equipment and, more generally, consumables; hosting of visiting foreign researchers.
- Equipment: acquisition and installation of scientific and technical appliances and instruments, including IT equipment placed at the project's disposal.
- Overheads: general expenses of the institutions covering, on an inclusive basis, administrative, telephone, postal, maintenance, heating, lighting, electricity, rental, material depreciation and insurance costs (the total amount for this heading may not exceed 5% of total personnel and operating costs).
- Subcontracting: costs incurred by a third party in order to perform tasks or provide services necessitating specific scientific or technical skills outside the normal framework of the institution's activities.

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**FORM Z : NAMES OF EXPERTS**

Put forward 8 foreign scientific experts capable of producing the evaluation of the proposal.

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1. **Name of expert:** Pierre Lévy  
**Speciality :** Philosophy of cyberculture  
**Institution :** Université du Québec à Trois rivières  
**Research unit :** Département Loisir et Communication Sociale  
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Country : Canada  
Tel. : 1 819 376 50 11 poste 32 97  
Fax. : 1 819 37319 88  
Email : pierre\_levy@uqtr.quebec.ca
  
2. **Name of expert:** Sal Restivo  
**Speciality :** Studies in science, society and technology  
**Institution :** Rensselaer Polytechnic Institute  
**Research unit :** Science and Technology Studies  
**Address :**  
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Town/City : New York  
Country : USA  
Tel. : 00 1 518 276 8504  
Fax. : 00 1 518 276 2659  
Email : salrestivo@hotmail.com
  
3. **Name of expert:** A.C. 't Hart  
**Speciality :** Philosophy and Theory of Law, Criminal Law and Criminal Procedure  
**Institution :** Rijksuniversiteit Leiden  
**Research unit :** Departement Strafrecht  
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No. : 7  
Post code : 2312 HB  
Town/City : Leiden  
Country: The Netherlands  
Tel. : 00-31-71-51 33 727  
Fax. :  
Email : acthart@mail.com
  
4. **Name of expert:** Michiel Korthals  
**Speciality :** Applied philosophy  
**Institution :** Universiteit Wageningen

**Research unit :** Leerstoel Toegepaste Filosofie

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No. : Postbus 8130

Post code : 6700 KN WAGENINGEN

Town/City : Wageningen

Country: Nederland

Tel. : 00 31 0317 48 41 78

Fax. : 00 31 317 4 84763

Email : [michiel.korthals@alg.tf.wag-ur.nl](mailto:michiel.korthals@alg.tf.wag-ur.nl)

5. **Name of expert:** Miguel A. Altieri

**Speciality :** Agro-ecology

**Institution :** University of California, Berkeley

**Research unit :** ESPM-Division of Insect Biology

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Country: USA

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Fax. : 510-642-7428

Email : [agroeco3@nature.berkeley.edu](mailto:agroeco3@nature.berkeley.edu)

6. **Name of expert:** Arie Rip

**Speciality :** Philosophy of science and technology, technology assessment and science policy

**Institution :** Universiteit Twente

**Research unit :** WMW

**Address :**

Road/Street : Postbus 217

No. :

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Town/City : Enschede

Country: The Netherlands

Tel. : [31] 53-4893345

Fax. : [31] 53-4894775

Email : [A.Rip@WMW.UTwente.nl](mailto:A.Rip@WMW.UTwente.nl)

7. **Name of expert:** Brian Wynne

**Speciality :** Science studies, technology and risk assessment, public risk perceptions

**Institution :** Lancaster University - Cartmel College

**Research unit :** Centre for Science Studies

**Address :**

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Email : [B.Wynne@lancaster.ac.uk](mailto:B.Wynne@lancaster.ac.uk)

8. **Name of expert:** Jean-Pierre Berlan

**Speciality :** Agrarian economy and sociology

Institution : Institut National de la Recherche agronomique (INRA)

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