

## **Innovative effects of hybridity**

Paper for the EGPA conference 2009 at Saint Julian's Malta  
Permanent Study Group 'Third Sector'

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### ***Abstract Paper***

*Modern governance implies that multiple parties are involved in the delivery of (health) care, cure, education, housing, welfare, safety and other public goods. Governments, private parties, third sector organizations, families, local (religious) communities, groups and individuals are all in the business of public services. As a consequence, public goods are differentiated. Each party delivers a small and specialized component. Elderly care for example can be differentiated into different medical aspects (revalidation, different kinds of cure), in specific aspects of care (personal care, transport, home support, etc.), but also into the maintenance of buildings, social welfare activities, treasury management and even staffing (regular, flexible and temporary contracts).*

*Each component can be delivered by specific and specialized parties who impose the elderly care sector with a set of multiple, contradictory, though separately legitimate, rules and demands. As a result public service providers have to respond to a complex and hybrid environment, which comes with many management dilemmas. Public service providers however prove to be perfectly able to cope with these incongruent public values and rationalities: dealing with incongruent economic (competition, effectiveness, efficiency) professional (professionalism, loyalty, love) and legal rationality (legitimacy). Though, it is not exactly evident how.*

*Empirical research on management of hybrid organisations and hybrid networks is not widespread. This is mainly because the hybrid character poses us for a problem of logic: incongruent rationalities cannot be mixed, ergo hybrid entities cannot exist. Therefore, some scholars reject the concept of hybridity for it would not be constructive in the analysis of third sector networks and organizations. This is not how we see it. We started a research project in which we explore the hybrid character of public organizations and the coping mechanisms: the methods or actual ways to hybridize. This project is phased in two sections. In the first phase we have been searching for knowledge of processes of hybridization in various scientific disciplines including PA. We have found that hybridity as a concept has been developed quite extensively in natural sciences, psychology, sociology and business administration. Examining these 'strange' sciences we hope to find the concepts and theories enabling us to pose specific and elaborated research questions. The second phase*

*includes a survey among a determined set of respondents: leaders and managers at various organizational levels of governmental organisations and social enterprises.*

*In this paper we present the first results of the first research phase. We will show that the key element of hybridisation is actually innovation: the unexpected, even contra-intuitional combination of incongruent elements, concepts or products. Hybridisation appears to be the result of unexpected even co-incidental (initially 'failed') experiments. It also appears to be a deliberate effectuated situation: forcing innovation (combining coffee machine technology and beer brewery expertise, mixing knowledge of genetics with agricultural production). We have found that hybridisation as an active, deliberate innovation 'tool' is based upon client demands: for the complex, quite incomprehensive character of created hybrid situations resembles 'real' life. Hybridisation often starts with what clients, patients or students really need. Their ambiguity -living a plural, multi-interpretable, vague and emotional life- offers answers which logic and linear thinking fail to give. It is remarkable how the unpredictability of hybridisation processes is acknowledged in sciences other than PA.*

*We are looking forward to present our first insights in these matters at the Malta conference of EGPA. We hope to discuss the added value of hybridisation literature in other scientific disciplines, in order to get a better understanding of hybridisation processes in public service delivery. Our paper will contain the first contours of an analytical framework to encounter hybrid organizations and networks. You will find our paper not to be a publication with answers, but merely with questions.*

## **1. Introduction**

Public service providers have to respond to a complex and hybrid environment, which comes with many management dilemmas. Public service providers however prove to be perfectly able to cope with these incongruent public values and rationalities in dealing with incongruent economic (competition, effectiveness, efficiency) professional (professionalism, loyalty, love) and legal rationality (legitimacy). Though, it is not exactly evident how.

Empirical research on management of hybrid organisations and hybrid networks is not widespread. This is mainly due to the fact that their hybrid character confronts us with a problem of logic: incongruent rationalities cannot be mixed, ergo hybrid entities cannot exist. Therefore, some scholars reject the concept of hybridity for it would not be constructive in the analysis of third sector networks and organisations.

This is not how we see it. We started a research project in which we explore the hybrid character of public organisations and their coping mechanisms: the methods or actual ways to hybridize. This project is phased in two sections. In the first phase we have been searching for knowledge of processes of hybridisation in various scientific disciplines including PA. We have found that hybridity as a concept has been developed quite extensively in natural sciences, psychology, sociology and business administration. In examining these 'strange' sciences we hope to find concepts and theories enabling us to pose specific and elaborated research questions. The second phase will include a survey among a determined set of respondents: leaders and

managers at various organisational levels of governmental organisations and social enterprises.

In this paper we present results of the first research phase. At the Malta conference of EGPA we hope to discuss our first insights on the added value of hybridisation literature in other scientific disciplines, in order to get a better understanding of hybridisation processes in public service delivery. This paper contains the first contours of an analytical framework to encounter hybrid organisations and networks.

## 2. Research

In looking for insights on the actual process of hybridisation in the organisational context, we analyzed the concept of hybridisation in four scientific disciplines:

- Psychology (cognitive dissonance)
- Musicology (fusion)
- Biology (genetic exchange)
- Business administration (innovation)

In each discipline we found theories that dealt with the concept of hybridisation. For each of these theories we attempted to answer a set of research questions:

- Which incongruencies are experienced?
- Which barriers prevent hybridisation? And how do they function?
- How are these barriers overcome in the process of hybridisation? And what's the exact point of application wherefrom hybridisation evolves? We also explored at which level of a system this point of application is found.

Based on these research questions and our findings we could outline the contours of an analytical framework to encounter the general question of how hybridisation comes about and its specific application to hybrid organisations and networks.

<i>Theories</i>				
<i>Aspects</i>				
Incongruency (experienced or factually)				
Barrier(s)				
Point of application				
Hybridisation process				

*Figure: framework for analyzing processes of hybridisation.*

In the following paragraphs we will fill in the framework per discipline (each column). After that, by comparing our findings on the four disciplines, we draw conclusions on the added value of this analyses for a better understanding of hybridisation processes in public service delivery. These findings we will discuss in a separate paragraph. Next we formulate questions for further research.

### 3. Findings on the 'strange' sciences

#### 3.1 Cognitive dissonance in psychology

From a hybridisation perspective cognitive dissonance was our phenomenon of interest in psychological science.

##### ***Incongruency***

Cognition is the collection of mental processes and activities used in perceiving, remembering, thinking and understanding, as well as the act of using those processes. Cognitive dissonance can be defined as an emotional state set up when two simultaneously held attitudes (or 'cognitions') are inconsistent or when there is a conflict between belief and overt behaviour.

##### ***Barriers***

According to Festinger's theory (1957) of cognitive dissonance we have, built into the workings of our mind, a mechanism that creates an uncomfortable feeling of dissonance or 'lack of harmony', when we become aware of some inconsistency among the various attitudes, beliefs and items of knowledge that constitute our mental store. Discomfort is caused by the implication of inconsistencies that we might be mistaken about something (ourselves, other people or the world around us in general). And mistakes can lead to danger, as it could mean that our behaviour 'misfits' the environment, which reduces our chances of successful survival.

The discomfort we experience as a result of cognitive dissonance motivates us to seek ways to resolve these inconsistencies. In order to be 'sure' we are not mistaken we reconstitute our inconsistent set of beliefs, attitudes and behaviour to a set that is internally consistent. Hereby we reduce the anxiety we experienced, since we believe that if this set is internally consistent and consistent with our environment (or explicable and therefore logical) again we have regained a fit

An experienced incongruency can be resolved by admitting we were mistaken in our views and subsequently adapting our attitudes. But our dissonance-reducing mechanism, like all of our psychological machinery, does not always function adaptively. We often develop unrealistic attitudes in order to sustain a perception of internal consistency.

First, we tend to avoid dissonance by avoiding situations in which we might discover facts or ideas that run counter to our current views. A phenomenon also described by the *confirmation bias*: people's natural tendency is to try to confirm rather than disconfirm their current hypotheses.

Second, we tend to firm up our attitudes to be consistent with a (planned) action. A specific choice for certain behaviour often strengthens our current attitude that underlines the exposed behaviour. Even when we come across knowledge that doesn't confirm the attitude.

Third, we tend to change an attitude to justify an action. The so called '*insufficient justification effect*'. One requirement for the insufficient-justification-effect to occur is that there be no obvious, high incentive for performing the counter-attitudinal action. Another essential condition for the insufficient-justification-effect is that people must perceive their action as stemming from their own free choice. The

justification of otherwise non-consistent behaviour is most relevant in relation to acting on impulses.

An example is described by Benjamin Franklin in his biography. He uses cognitive dissonance to his advantage, and changes the attitude of an opponent by asking his opponent to lend him a very valuable and exclusive book. As a result of his consent (maybe for decency's sake) the opponent will conclude that he would not lend Franklin such a valuable object if he would not consider Franklin as a sympathetic or trustworthy guy. He must believe that what he did was no mistake (what doing your opponent a favour would be), but a result of himself adopting a justified more positive stand towards Franklin.

It seems that we develop unrealistic attitudes not only to explain our own, otherwise inexplicable, actions but also to make sense of the chaos and injustice we observe in the world around us. For instance, research points out that, at least in our culture, people tend to believe life is fair, a tendency labelled as the '*just-world-bias*'. Thinking of or evidence telling the opposite would generate a major psychological pressure and anxiety level, which we rather avoid.

### ***Point of application and hybridisation***

Cognitive dissonance is labelled as a motivational phenomenon. Dissonance is also defined as a certain physical state of arousal, which can lead us to act or behave in order to reduce the arousal state. The resolution of internal cognitive conflicts is assumed to serve as a basis for attitude change, in that belief that patterns are generally modified so as to be consistent with behaviour. The behaviour and action have already taken place, so it directs attitudes and attitudinal change to fit with the exposed behaviour.

Inconsistencies in attitudes and behaviour are dealt with using the coping strategies mentioned before, with a purpose to keep up a logical relationship (that is explicable to ourselves) between our cognition, behaviour and experience. We must conclude that the coping strategies mentioned do not include a hybridisation strategy in which incongruent elements are combined. And indeed a process of hybridisation of cognition even does not seem possible from a psychological perspective, because the simultaneous presence of incongruent elements in beliefs, attitudes and behaviour are a cause for psychological stress. And stress as we know cannot be a permanent state for a system to stay healthy. So it is a natural process of our psychological system to seek ways to reduce stress in order to keep a healthy state of mind. The only way to overcome the stress caused by inconsistencies in mental sets, appears to be to reshuffle inconsistencies and creating attitudes that are consistent with our behaviour, other beliefs or environment. This means that at least one of the incongruent elements, the one which does not fit into the new logic, is left out, instead of combined as happens in processes of hybridisation.

### **3.2. Fusion in musicology**

In musicology musical styles are referred to as hybrids when different styles are mixed or 'fused'.

### ***Incongruency***

Incongruency exists when elements of musical styles, such as rhythm and modulation, do not match. We have to remark though that whether or not elements are labelled as incongruent also seems to be a matter of personal appreciation. Some artists for instance deliberately use dissonants in their compositions, or compose music from sounds and rhythms that others would describe as 'just a lot of noise'.

### ***Barriers***

The evaluation of a piece of music by critics, in order to judge whether a new style works out or not and to determine its quality, generally consists of both a theoretical analysis and an evaluation of the experience the piece brings its listener. Some elements of the musical composition can be studied theoretically, such as the chosen rhythm or the arrangement of musical instruments, but other elements have to be experienced, such as the tone and 'vibe' a piece of music brings. In musical reviews a judgment on the quality of a piece of music is based on artistic values, such as: creativity, aesthetics, originality and uniqueness.

In musicology the barriers in the creation and acceptance of hybrid musical styles seem relatively low. The majority of the numerous contemporary musical styles was created by fusion of styles and the adding of new sounds. This means that a lot of hybrids are the result of fusion of different, already mixed styles. As a consequence more hybrid than 'pure' styles can be discerned nowadays. Maybe it's due to this widespread presence of hybrid musical styles, that critics in musicology generally seem to adopt a positive stand towards hybrids.

Another reason might be that musicians claim to listen to and appreciate musical compositions apart from their cultural background. In their opinion a (new) style can be experienced in itself and judged on its own merits, both in a theoretical sense and as an experience. Musical styles often are seen and judged as a whole. Not that there aren't any purists among musicians, but the belief that a composition only exists as a complete constellation, and therefore cannot be judged on its parts, is relatively unanimously supported.

Since music is a form of art, creativity is highly valued in musicology. The majority of critics seem to judge the artist on his creativity and on the extent to which he manages to create a new sound 'that works' by the creative combination of existing or newly invented styles and elements, rather than on the matter of purity or authenticity of the performed piece of music. This appreciation of creativity also lowers barriers of experimenting with combining musical styles; in fact, the more styles the artist explores, the better, because every new style offers new changes for creative new combinations. Because of their tradition of fusion, musicians are used to exploring if and how boundaries between styles can be crossed.

We can conclude that barriers in the creation and acceptance of hybrid musical styles depend on personal views. In practice any rhythm or sound can be adopted in a new musical arrangement if musicians learn how to play their instruments and how to tune their part with other musicians, in order to perform a composition of this new style.

In some mixing of styles a technical barrier could arise though, if certain (new) musical settings or sounds cannot be played on an existing instrument. But such a barrier needn't be a permanent hinder, since there are many examples of artists adapting or creating (new) instruments.

### ***Point of application and hybridisation***

Hybridisation of musical styles comes about by composing and needs a creative artist. Often the composer uses elements of two styles or more and adds musical ideas of his own to create a new and unique sound. The adding of personal elements creates a unique sound is seen as a proof of the composers creativity in the 'artist's culture'.

Most appraised are the artists who manage to create a style that works by giving their combination of musical elements 'a twist' of their own, and thus creating an unique style.

### **3.3 Genetic exchange in biology**

Most people will associate the term 'hybrid' with the study of genetic crossing of varieties in biological science. Hybridisation techniques were widely used in plant and animal breeding during the 18<sup>th</sup> and 19<sup>th</sup> century. Research continues today, mainly because of first-generation hybrids of crop plants tend to produce increased benefit.

### ***Incongruency***

Genes play a crucial role in heredity. They contain information for all hereditary characteristics, such as the colour of our hair and our eyes. A gene is formed by a delimited piece of DNA, which contains the code (or 'recipe') for a certain characteristic. Genes are stored in sets on chromosomes (often pictured as strings). From each chromosome we have two copies. This means that each gene is present in two copies. One gene is derived from the mother (on the maternal chromosome) and another gene from the father (the paternal chromosome).

Genetic information (DNA registered in genes) is passed from one generation to the next in units (chromosomes). Almost all organisms are offspring from parents of the same population<sup>1</sup> (of one variety) of a species. The paternal and maternal sets of chromosomes are matching in number and structure (parents of the same variety bear a corresponding gene pool). Therefore these sets have the ability to connect and form a complete, viable 'program' for a new offspring of this same variety. If parts of the paternal or maternal set are missing or aren't mutually corresponding, fertilisation or even a viable reproduction is considered unlikely, since the genetic program resulting from this combination is expected to lack some of the information needed for an effective growth and functioning of the offspring.

Crossing of varieties within a species is possible, but offspring (a hybrid) is rare because the parental gene pools of differing varieties have smaller chances of being compatible enough to produce a gene pool (or genetic program) for viable offspring. As long as genetics has been an object of study, scientists hold different opinions on the boundary between varieties and species. They do agree though that gene pools of different species are not compatible to produce offspring. Varieties (as well as hybrids) can only evolve into new species when reproductively isolated from their

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<sup>1</sup> A population is a group of individuals of the same species who live in a certain area.

original parental varieties for a long time. The evolution of reproductive isolating mechanisms between a population and other members of that species is seen as an important step in the speciation process. Young species tend to be more into hybridisation than older species (because of weaker isolation barriers, on which more later on), so species that do not currently hybridize may have done so in the past.

We remark that divergent offspring needn't be a result of crossing but can also come about as a result of (natural or artificial) DNA mutation (and thus not meet the definition of a hybrid) *toelichten/ definitie?*. Pieces of DNA are changed by natural mutation when resulting from a 'flaw' in the copying of parental DNA in gametes or spores. A mutation is a spontaneous, sudden change of the genes without any apparent reason for it. This mutation changes the genotype and new varieties can arise. The use of modern technologies offers possibilities to force artificial manipulation. By these techniques pieces of DNA are changed by replacement. Genetic manipulation is often used for production purposes in improving certain qualities of crops (such as size, yield, growth rate, taste, colour, resistance to crop disease, etc.) that raise production benefits.

### ***Barriers***

Which barriers are at work to hinder the successful development or survival of a hybrid?

Two types of barriers are known: prezygotic and postzygotic barriers. The first are gene flow barriers or incompatibilities that act to prevent successful fertilisation. We've already mentioned the difference in gene pools of different species, which aren't compatible.

Other wellknown prezygotic barriers are the following:

- Spatial isolation; species living in different habitats have none or few opportunities to mate caused by physical distance;
- Temporal isolation (or phenology); species breeding at different times of the day, seasons or year cannot mate due to a non-simultaneous period of fertility;
- Ethological isolation (or behavioural isolation); species having different characteristic courtship behaviours do not recognise each other's mating signals;
- Mechanical isolation; species with incompatible genital organs cannot mate;
- Cross-incompatibility (or gametic isolation); fertilisation cannot occur between species with incompatible gametes, for instance in aquatic environment.

Postzygotic barriers act after successful fertilisation and formation of a zygote, in either the first or subsequent hybrid generations.

Postzygotic barriers are:

- Hybrid inviability: the hybrid offspring of two species does not mature normally and usually dies in the embryonic stage of development;
- Hybrid sterility; this refers to the infertility of the offspring of a successful hybrid (such as the mule, an offspring of a horse and donkey). Hybrid sterility often occurs because the gametes are abnormal in some way;

- Hybrid breakdown: It is also possible that the first generation hybrids is successful in reproducing, but the second might be unable to because of 'hybrid breakdown'. Hybrid breakdown has been demonstrated in sunflower hybrids;
- Hybrid necrosis; also known as hybrid weakness which leads to symptoms such as cell death, tissue necrosis, wilting, yellowing, dwarfism, reduced growth rate, etc.;
- Floral isolation; if the hybrid does survive, it may be unattractive to pollinators;

### ***Point of application and hybridisation***

Whether or not a viable hybrid develops, depends (as we have seen) on the extent to which the gene pools of the parental varieties are compatible. So the point of application for hybridisation is the successful coupling of genes.

The process of hybridisation shows a variable level of success in the long term. Hybrids can have variable fitness, from low (necrosis) to high hybrid fitness (vigour or heterosis). Heterosis is a state where the first generation after crossing has more vitality than a parent. Heterosis is exploited by plant and animal breeders in genetic manipulation. A high hybrid fitness level leads to an increase in size, growth rate and yield. Especially first generation hybrids tend to have heterosis. The genetic basis of hybrid vigor remains poorly understood. Possible explanations of heterosis include 1) dominance (the masking of deleterious recessives) 2) overdominance (single-locus heterosis).

As we have mentioned, not all hybrids are capable of reproducing themselves. They only exist in 'hybrid zones', where parental populations of two different varieties meet and produce these hybrids (often seen among flora sharing an environment). Also a lot of second generation hybrids (and further on) seem to suffer from hybrid breakdown. Inbreeding leads to weakening because more and more features are homozygous. Weak features that are recessive then come forward.

On the other hand; for a hybrid as the result of genetical mutation (in our definition more a variant with a new trait than a true 'hybrid') to evolve into a new species it is necessary to be reproductively isolated from parental species for a long time.

Otherwise the gene pool of the complete population gradually mutates, or the new hybrids characteristics will be lost again, and there will be no difference in characteristics anymore.

### **3.4 Innovation in business administration**

Innovation is a key lever for competitive advantage, and therefore for survival, for businesses operating in a market driven environment. An innovative product could be a completely new phenomenon, but more often it is a new combination of existing products or features that leads to a new product. Such as the Post-it memo, which combined note sheets with glue. This kind of innovative products could be labelled as hybrids.

### ***Incongruency***

Because of the importance of innovation for a business' success, researchers in business administration have studied how to manage for successful innovation (a research field called innovation management). They pose questions such as: how are innovative concepts discovered and how can they be successfully developed?

We remark that a distinction has to be made between invention and innovation. Any new product is an invention, but it can only be considered an innovation when it is perceived as a value adding product by the end-user. So only inventions that are marketable are called innovations. In either case this invention process, often referred to as 'R&D' in business administration, is of interest to managers of innovating businesses. How can they organize for successful invention and innovation?

Innovation management does not focus on results but on processes. This will be the focus of our study too.

The crux of innovation is that (new) features, materials, functions, etc. for products are developed and/ or combined to create a product that was previously unavailable. Existing or new product concepts of differing composition and offering different functions have to be combined and seen from a different perspective (which needs creativity) in order to generate a new concept for a new and working product. Different, formerly non-related or even not combinable (or incongruent) concepts melt together in an eureka-moment. Creativity is needed to bridge the gap (see further on).

### ***Barriers***

Nooteboom (2004) presents innovation as a result of social interaction and social learning. In social interaction differing personal insights, knowledge, ideas, views and experiences are confronted. This confrontation of different cognitive perspectives can lead to a learning process (since all learning starts at the encounter with something new or unknown), which may result in the development of new (innovative) ideas and concepts.

Innovation management from this perspective aims to incorporate as much diversity in the innovation process as possible, since diversity offers more chances for the encounter of different perspectives, learning and the generation of new perspectives and ideas.

Organisations on the other hand often function as a 'focusing devise'. They facilitate social interaction which (as seen from a cultural perspective on organisations) leads to shared views and perceptions. Classical organisation theory even describes collective goal-setting and coordinated and united effort as the main function and reason for existence of organisations. This focus helps interaction and processes within the organisation to run more smooth, as the people involved share the same ideas and opinions about what needs to be done in their business and how this should be done. This effect of organisation might be useful for an efficient and effective execution of daily operations, but managers of innovative businesses would not want this focus to become too strong in the innovation process. Instead they are looking for cognitive diversity that may lead to invention and successful innovation.

The difference in people's cognitive perspectives (diversity) is described by Nooteboom (2004) as 'cognitive distance'. Cognitive distance in relation to

innovation management is seen as difference in technological knowledge. Even though diversity is highly valued from an innovation management perspective, the reverse of the medal is that cognitive distance may result in mutual incomprehension when this distance becomes too large for the parties involved to still be able to comprehend and discuss their differing points of view. If the gap is too large, communication is no longer possible and social learning cannot take place.

### ***Point of application and hybridisation***

The management of innovation processes aims to create optimal cognitive distance; the point where diversity is maximized, but mutual understanding is still possible. This point offers the best chances for innovation: diversity is as large as *possible*, in order to get a maximum chance on invention by confronting, challenging, discovering, combining and experimenting with new ideas and solutions. What is 'possible' depends on the employees' ability to handle diversity. The more experienced they are in communicating and interacting with other people's new and strange ideas, the larger their 'absorptive capacity' to handle diversity is. A larger individual absorptive capacity, will enable the employee to bridge a larger gap of cognitive distance. So in order to enlarge chances for innovation, management may strive to support employees in the enlargement of their ability to cope with and effectively use diversity. The better developed this capacity becomes, the more diversity can be effectively incorporated and put to use for chances on innovation in the business.

In research by Nootboom e.a. cognitive distance is described as difference in intellectual knowledge ('technological capital' as inferred from patent data, which can be seen as indicative of the codified knowledge that R&D has created). Moreover, R&D enables some of the important tacit skills that are needed to absorb the (codified and tacit) knowledge generated by others, who operate at a certain cognitive distance. So besides technological competencies, tacit skills are also a part of absorptive capacity. Absorptive capacity of individual employees can be developed by building up their experience in R&D.

Also on the organisational level, the cumulation of (codified and tacit) technological knowledge increases absorptive capacity. Cumulative R&D (expressed in the scope of patents) improves the general ability to understand and appreciate novelty value (which is absorptive capacity) in collaboration. On the other hand it also means that the more one knows the further away one has to look for novelty. Additional findings were indeed that larger and older companies had less advantage in radical, exploratory innovation collaboration than in more exploitative alliances. Organisational routines and bureaucratic convenience seem to favor projects that look for new solutions near old solutions over projects that rely on completely new principles. This is quite logical for an older and larger organisation, since it has developed into a complex system of many tightly coupled elements, that might be disturbed by the introduction of a novel element. The costs of this disturbance might be higher than the benefits this novelty might bring. Younger and smaller firms face lower transaction costs and therefore seem more successful in radical innovation.

Nootboom remarks that a study by Wuyts indicates that for optimal collaboration, distance should be relatively small in cognition concerning organisational values (risk, trust, etc., values that form a basis for a partnership), and should be relatively large in substantive aspects of intellectual knowledge.

A second barrier we described was the focusing effect of an organisation, which may be useful for effective daily operations, but forms a barrier for innovation. Therefore R&D activities often are placed in separate R&D units, where an environment of diversity, creativity, challenge, experiment and discovery is created. In this way optimal conditions for innovation are provided for, without disturbing the day-to-day routine operations (the primary production process) of the business.

#### 4. Preliminary Conclusions

Now we can fill in the framework per scientific discipline and draw conclusions on our findings per discipline and overall for the study of hybrid organisations.

<i>Theories</i>	<b>Psychology (cognitive dissonance)</b>	<b>Musicology (fusion of musical styles)</b>
<i>Aspects</i>		
<b>Incongruency (experienced or factually)</b>	Inconsistency between Attitude-Attitude or Attitude-Behaviour	(Personal appreciation of) Musical elements that do not 'work' together.
<b>Barrier(s)</b>	Feeling of stress, caused by fear of making mistakes.	Subjective: personal notions if the arrangement and experience of a new style works out or not. Musicians have learned how to perform this style (how to play their instruments). Technical limitations of existing musical instruments.
<b>Point of application</b>	Motivation to reduce stress leads to change of attitude(s) in order to restore coherence in attitude and behaviour.	Combination of musical elements, such as rhythm and tone, produced by instruments and voice. Resulting in a new composition for musical performance.
<b>Hybridisation process</b>	Does not take place, aspects are not combined but left out in for a coherent set of beliefs, attitudes and behaviour.	Creative process of composing the elements (by mixing, adding and even inventing new elements).

<i>Theories</i>	<b>Biology (genetic exchange)</b>	<b>Business administration (innovation management)</b>
<i>Aspects</i>		
<b>Incongruency (experienced or factually)</b>	Genetic pool: differing sets of chromosomes.	Differing knowledge and notices of the construction, function and features of product concepts.
<b>Barrier(s)</b>	Prezygotic barriers (prevent fertilisation). Postzygotic barriers (hinder long term survival of a hybrid (or its reproduction)).	Too much organisational focus hinders creativity. Too much diversity excludes mutual understanding for creative learning. Changing an existing (organisational) system might be too costly with respect to past investments and disrupting the established (and effectively functioning) order of things.
<b>Point of application</b>	Genes.	(Technological) cognition.
<b>Hybridisation process</b>	Coupling of two sets of genes (stemming from parents of two different populations), into a viable gene pool for a new organism to develop.	Enlarging absorptive capacity to bridge the cognitive gap by building up experience in R&D (encountering new ideas and concepts and creative thinking). Cognitive closeness by shared organisational values might be supportive in bridging the gap.

#### 4.1 Psychology

In psychology the theory of cognitive dissonance is defined as a phenomenon that triggers us to use coping strategies handling the lack of harmony within our own individual psyche. It appeared that from a psychological perspective we seem not able to adopt a true hybridization strategy, since we have a natural need to reduce the feeling of stress we experience when confronted with incongruencies in our perception. Whether by logical or irrational strategies, our psyche strives to restore a coherent cognitive set of beliefs, attitudes and behaviour. This might even mean that we (unintentionally) ignore or leave out information.

A hybrid organisational context is defined as ambiguous, complex and multiple. The organisation itself is characterised by a mix of incongruent, contradictory and conflicting rationalities (of different public and private values). From the psychological perspective we can predict that this environment will lead to a feeling of cognitive dissonance for individuals within the organisation, a feeling which they tend to avoid. The incongruencies in the environment are likely to cause psychological arousal, since people feel uncertain about how to interpret their environment and how their own attitude and behaviour would fit in best (does my behaviour fit in this environment? am I likely to survive here? or do I need to look at

things from a different perspective and change my behaviour and maybe even attitude accordingly?). It is a natural process of our psychological system to seek ways to reduce stress in order to keep a healthy state of mind, also needed for our long term survival.

On the organisational level we have to conclude that from a psychological perspective hybrids as consisting of incongruent rationalities, are not expected to remain this way for a longer period since these inconsistencies lead to stress in the governing system. Which is one way or the other reduced by natural coping mechanisms that lead to focus.

#### 4.2 Musicology

Critics in musicology generally seem to adopt a more positive stand towards hybrid musical styles, than critics in organisational science display in discussions on hybrid organisational forms. In discussions on music, hybrids are often met with a positive approach because they are seen as a product of creativity, which is appreciated as an artistic value. Characteristics such as creativity, originality and uniqueness are often considered problematical from an organisational point of view. Organisational science has difficulties in judging 'creative' organisational forms, since it leads to uncertainty as to how organisational effectiveness should be defined and measured.

This also means that the process of evaluating musical styles in musicology differs from the organisational science approach. The organisational debate can be characterized as a mainly theoretical debate on the effectiveness of different types of organisational structures, with respect to organisational goals and functions. Organisational hybrids often are judged 'from a distance' (based on theoretical frameworks and debates) and not from 'experience', as is common in musicology. In musicology, the assumption that a composition only exists as a complete constellation, and therefore cannot be judged on its parts, is relatively unanimously supported. Studies of organisational forms more often seem to discern and evaluate the composed elements.

Both in music and in organisational studies the domain in which fused constructs come about isn't clearly defined and therefore can be called 'landless'. In music it points to the undefined area between musical cultures, where different styles are confronted and fused. Hybrid organisations operate in the field of the private-public sector, which also cannot be exactly defined. In the organisational debate authors have not been able yet to formulate a positive definition for this field; literature only suggests what is in *not*.

Musicians seem to be able to operate more easily in this 'landless' area. They find little objection in focusing on the experience and evaluation of musical styles in their 'own right', coupled loose from original cultural backgrounds. Crossing boundaries and looking for fusion in a landless area moreover is seen as an opportunity for creativity in discovering and inventing new and unique styles. In some cases even new musical instruments are created to make the new style work. The study of hybrid organisations might benefit from the possibilities a more creative, positive approach opens up, if organisations could be judged in their own right (possibly on values such as: creativity, originality and how they 'work' as a composition) and less in their specific context or position compared to archetypes. This means we have to change

criteria on which we judge. It is also likely that this organisational form needs its own instruments (systems, processes, accounting, etc.), which effectiveness has to be evaluated on standards different from standards in a market- or governmental setting.

### 4.3 Biology

From a biology perspective we have seen that hybridization often occurs in hybrid zones (where different varieties of a comparable gene pool meet). This would mean that it is a natural phenomenon that hybrid organisations exist in a hybrid zone between state and market.

A precondition for hybridization is that gene pools are compatible.

The presence of hybrids in a hybrid zone does not always mean that a new variety is able to successfully survive on its own. The examples of viable reproduction of hybrids are rare compared to the number of first generation hybrids in biology. For hybrid varieties to develop into a new species, long term reproductive isolation of hybrids is a precondition. But more important: the first generation has to be fertile (which often isn't the case) and following generations have to be able to overcome postzygotic barriers. In practice offspring suffers from hybrid breakdown.

In incremental hybridization (actually 'mutation' instead of radical hybridisation) chances for longterm survival and successful reproduction are better. They seem to experience less hinder from pre- and postzygotic barriers we found.

Mutations are not radically different from their parents. They are basically alike with only a few deviant characteristics. This would mean organizational varieties, based on traditional constructs with only a few adapted characteristics or functions, have better chances for survival than radically new or mixed organisations. We could call them: incremental hybrids and radical hybrids.

Further, it depends on a process of selection (by dominance of genes or reproductive isolation) whether organisms bearing some new characteristics survive (and even gradually displace their parental varieties) or disappear over time. This means that organisational forms closely related to archetypical forms could have good chances for survival. They even might displace their parents over time if hybrid organisations prove to be better providers for products and services that customers now and in the future are looking for.

### 4.4 Business administration

A hybrid organisation can be seen as a process innovation. In hybrid organisations standard ways of organising from pure forms (such as their characteristic methods for goal-setting, financing, control, etc.) are combined into new ways of organising.

A hybrid organisation combines two (or more) archetypical forms of organising and organisational rationalities; a business management approach of the production process (market rationality) is combined with a purpose to create public value (government rationality), not maximizing profit for the business (which was the aim in market rationality).

Hybridisation of organisations as a process innovation can lead to product innovation, but this needn't necessarily be the case. The privatising of public transport for instance didn't lead to innovative modes of transportation.

Based on our study of the cognitive side to innovation management, the hybrid organisation itself can be seen as a result of the confrontation of different perspectives

on organisation, whereby cognitive distance was overcome and a new perspective on and a new form of organisation emerged.

In day to day practice managers and employees within these hybrid organisations have to deal with the diversity that comes with this combined nature of their organisation. Hybrid organisations incorporate a rather diverse set of rationalities and values. This means that hybrid organisations (as a process innovation) will only 'work out' effectively when managers' and employees' capacities to bridge the gap between the differing rationalities within the organisation are sufficiently developed.

Developing the absorptive capacity of managers and employees should therefore be a major point of interest for management in hybrid organisations. As we have seen this capacity could be developed by building up experience in working with the different rationalities and with people holding different views. This leads to more technical knowledge as well as tacit knowledge on how these rationalities operate and have to be handled.

Another conclusion we can put forward is that hybrid organisations offer better chances for innovation, since diversity is seen as a basis for chances on successful innovation. Hybrid organisations by nature incorporate more diversity than archetypical forms of organisation.

Diversity may offer favourable conditions for innovation, but may also be a cause of disturbance in daily operations. This disturbance results in a less than optimal production process in terms of efficiency and effectiveness. This would mean that the hybrid organisation as a whole might be more innovative, but less optimal in day to day operations than the pure forms of organisation (market and state). In business administration managers of innovative businesses are advised to concentrate innovative activities and the required diversity in a separate organisational unit (R&D) in order to increase the effectiveness of daily operations. For hybrid organisations this might mean that it is also advisable to remove part of the diversity of rationalities and values from executive units and limit it to part of the organisation (for instance at the top-management level).

#### 4.5 Overall

- Younger systems seem to be more adaptable and therefore more open to hybridisation than older and larger (established) organisational systems. This was concluded from the biology perspective (reproductive isolation) and from the business administration perspective (transaction costs).
- Diversity within the primary production process seems unwanted, since it leads to a drop in performance from both from a psychological perspective (fallout because of stress) and a business administration perspective (reduced effectiveness and efficiency).
- Both in psychology and in biology hybrid systems are not expected to survive for long. Psychology indicates that focus by coherence is needed or the system will break down because of stress. In biology first generation hybrids tend to be stronger than their parents on certain aspects but they are not fertile or their offspring has a tendency for degeneration by increased influence of certain weaknesses.

## **5. Questions for further research**

### ***Psychology***

It became clear that dealing with incongruencies in a hybrid context leads to feelings of stress, which we tend to reduce by restoring a coherent set of beliefs, attitudes and behaviour (even when this set is objectively seen not logical or ignoring certain information).

An interesting question from the psychological perspective would be whether people are able to reduce their feeling of anxiety caused by incongruencies in their environment. Is there a difference in people's individual abilities to handle the psychological state of arousal these inconsistencies lead to? Can people learn to feel less uncertain in confrontation with incongruent rationalities? If we can learn to feel less disturbed by inconsistencies or have less need for harmony and still feel secure, it will be easier (because less stressful) to operate in a hybrid environment.

### ***Musicology***

When we are looking for a new perspective on the evaluation of the effectiveness of hybrid organisational forms, musicology presents a holistic view. Judging 'the composition as a whole', not on position compared to archetypes, means we have to change criteria on which we judge. On which criteria can we judge hybrid effectiveness in realising organisational goals. The effectiveness of instruments (systems, processes, accounting, etc.) has to be evaluated on standards different from standards in a market- or governmental setting, since they are expected to work different and have a different function in the hybrid organisational context.

### ***Biology***

Seen from an evolutionary perspective our first question would be how we can determine whether a hybrid organisation is an incremental or radical hybridisation. In a biological context the latter would have less chance for successful survival. An assertion that would be interesting to test empirically.

A second question would be if we can argue that hybrid organisations are mutations from archetypal forms market and state, which are better equipped to fulfil customers' needs now and in the future and therefore might replace their parents.

### ***Business administration***

An interesting field of study would be training of absorptive capacity. Since managers and employees in hybrid organisations have to deal with diversity in organisational rationalities, enlargement of their absorptive capacity would help them to effectively operate in this environment. Which types of knowledge and skills have to be trained specifically for a hybrid organisational environment?

Another question in relation to organisational effectiveness is the disturbance variety causes in the primary production process. Business administration advises managers to keep these processes focussed in order to maximise effectiveness and efficiency of the production process. This would implicate that hybrid organisations, incorporating diversity by nature, are less effective in day to day operations. To minimise loss it would be advisable to restrain as much diversity as possible to delimited parts of the organisation. The (top) management level would be most likely for this concentration.

The question is up to which level this concentration is possible and how management should arrange for this.

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