FROM RISK MODELLING TO RISK OF REGULATION: HOW CAN WE THINK THE EMERGENCE OF A *TOTAL* AND CONTEXTUAL ETHICS ON FINANCIAL MARKETS?

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Introduction: Ethics at the crossroads: what is at stake today?

The concept of *ethics* applied to economic issues is ever changing promoting constant epistemological and conceptual debates. Various perspectives on the concept of "regulation" shall guide our reflection on ethics. Although finance is a science highly dependent on mathematics and risk, it is nevertheless part of the economic sphere and in this way is also subject to *ethics*. The relationship between ethics and finance has been highly significant at the turn of the 2008 financial crisis, which resulted in a redefinition of the financial sphere with the reinforcement of social, economic and political criterium.

The various ramifications of finance have highlighted the extent to which challenges related to *ethic*s arise and the epistemological challenges implied. Regulatory intervention on financial markets has also led to serious reflections on how to approach the concept of *ethics*. It is also worth pointing out that fragmentations on financial markets have impacted regulatory practices. Such regulation is also fragmented and puts forth an ethical approach to the more divided, complex and convoluted markets. The multiple ethics layers within the regulatory architecture should be looked into in an attempt to understand them.

Consideration should be given to the dynamic space at the crossroads of finance, risk, models, and regulation. How risk modelling has been involved in this space ? How risk modelling is leading to a risk of regulation ? In this context, how can regulatory policy be reshaped with the emergence of a total and contextual ethics ?

As I'm from a philosophical and economic background, I've choosen to tackle this question throughout a qualitative and thereotical approach starting on the current literature on the topic. In my first point, I wish to explore what is an efficient regulation between all those concept of risk, models and quantification. THIS gonna lead us in a second point to the understanding of a total and contextual ethics. Then finnaly in a third point I wish to draw the big picture on the concept of regulatory praxis by showing that performativity and governmentality are two faces of the same coin.

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I. A FRAGMENTED REGULATION BETWEEN RISKS AND MODELS: WHAT IS AN EFFICIENT REGULATION

The debate today is on the meaning of an *efficient* regulation. As such, we shall question whether regulation would prevent default risk in markets, and if regulation could anticipate any risk on markets. For instance, Jon Danielsson stated that "no regulation could avoid unforeseen events"[1]. Hence, the financial crisis as a disruption of the balance on markets is the starting point of our analysis.

1. The endogenisation of risk and *pro-cyclicality*

Following the financial crisis in 2007-2008, statistical models have crystallised *pro-cyclical effects* on risk, and notably on asset prices, which could then cause bubbles. As demonstrated by Danielsson, "when mainstream models are based on similar distribution assumptions, they tend to send similar signals to financial markets participants".

Regulation limiting systemic risk is today's biggest challenge. Efficient regulation depends on the management and control of exogenous risk[2]. In other words, appropriate models shall be found to increase the latter and react accordingly as signals become critical.

Systemic risk measure is a delicate process as it implies to take into consideration many parameters simultaneously the "individual and aggregate positions within a bank, which are then aggregated at the scale of the financial system by expressly including spillovers between entities"[3].

Before going further with such analysis, the fundamental concept of *risk* shall be differentiated from the concept of *uncertainty* to then better understand mechanisms behind methods of regulation.

1.1 Risk, uncertainty and risk quantification

We all know that uncertain events within financial markets could be described either through risk or through uncertainty. In Frank Knight's well-known article, *Risk, Uncertainty and Profit* (1921), the author suggests a now classical distinction between the concept of *risk* and *uncertainty*.

If we were to compare those two notions, in one case, a situation *x* is risky if the forecast is drawn from mathematical probabilities computed *a priori*. In another case, a situation *x* is uncertain if considered to be a unique circumstance that could not be reduced to similar uncertain events. Hence, probability calculation cannot be applied to this situation. Two judgements and rationality approaches can intervene to apprehend the *forecast*:

a) *Establishing a conjuncture on the situation x based on a personal preference and a professional and personal experience*
b) *Probing the validity of agents' preference of the situation x according to the concept of trust*

As stated by Frank H. Knight, modelling behaviours in uncertain situations is complex. Therefore, those situations cannot be classified and hence are rarely based on probability calculation models.

The role of financial modelling, from a theoretical and instrumental point of view, implies to consider the financial reality as a reflexive world of the models (I refer you obviously to callon and mackenzie). As, for instance, Michel Armatte points out, "every

[1] Jon Danielsson, « Réflexions sur l'efficacité de la régulation financière », *Revue de la stabilité financière*, n°13, Quel avenir pour la régulation financière, Banque de France, septembre 2009, p. 57.
[2] *Cf.* Jon Danielsson, Hyun Song Shin, « Endogeous risk » *in Modern risk management. A history*, Risk books, Londres, 2003.
[3] *Ibid.*

model is a game of hypotheses about a reality, itself in part the product of consensus and conventions made operational by this same model"[4]. This approach to model risk is complex in the perspective that the concept of risk involves quantifying a potential loss and that it is identified by a probability of this event. The error of the model is evaluated as the difference between what it anticipated and what one observes for a certain portfolio.

For example, Christian Walter's researches[5] underline that the tendency to reduce volatility tends to rigidify the system by constraining it and placing it in situations of "sudden and large-scale movement"[6]. The reduction of financial instability by market risk regulations is counter-productive as the decrease in volatility takes place in the detriment of an increase in the probability of large jumps occurring. According to him, there is a translation between a risk of volatility and a risk of jumps,. Instead of the use of *risk modelling*, Michel Armatte perfers to highlight the concept of *uncertainty of models*[7].

2. Regulations generating instability

2.1 Systemic risk

This lead us to Systemic risk that has become[8] a key feature of our society. In this regard, studies by Ulrich Beck[9] highlight how there has been a shift from "an industrial society where the main problem was the distribution of wealth towards a society focusing on risk and its management". Challenges arise as soon as the regulator has to limit and manage this systemic risk to fulfil its mission: ensuring the well-being of the nation and society as a whole.

From an operational mind set, systemic risk cannot only be considered *ex post*, but also ought to be measured and evaluated *ex ante* to implement the necessary remedial actions. The *Center for Risk Management* (CMRL) of Lausanne University as well as the Basel Committee have the task of measuring qualitatively and quantitatively systemic risk. The latter is fixed through a calculation of the amount of the capital that banks would need to refinance themselves in the event of another crisis, in addition to the market capitalisation and the debt

[4] Michel Armatte, "Crise financière : modèles du risque et risque de modèles", Mouvements, vol.58, n°2, 2009, pp.160-176.

[5] *Cf.* Jacques Lévy-Véhel, Christian Walter, « Regulation Risk : Is There as Danger in Reducing the Volatility », Actuaries Institute, ASTIN, AFIR/ERM and IACA Colloquia, Avril 2015, Sydney. *Cf.* http://epistemofinance.hypotheses.org/2104. «This paper (…) we introduce a conventionalist framework to put some light on this unexpected effect. Second, we define precisely the volatility risk and the intensity of jumps to document the risk swap effect by analysing a daily time series of the S&P 500. Third, we propose a model which allows one to appreciate a practical consequence of this swap on the risk measures. We conclude by challenging the main objective of regulation : we argue that concentrating on reducing the sole volatility can create a new type of risk which increases the potential losses, that we name regulation risk ». See also Christian Walter, « Le régulateur peut créer l'accident qu'il veut éviter », février 2016, Les carnets de la Chaire Ethique & finance du Collège d'études mondiales, http://epistemofinance.hypotheses.org/267.

[6] Eric Brian, « Aléas, normes sociales et limites de la performativité », chapter 9, *Nouvelles normes financières. S'organiser face à la crise*, Springer, Paris, 2009.

[7] See Michel Armatte, *Op. cit*.

[8] Since the acceleration of the digital revolution and the rise of new information technology.

[9] Ulrich Beck, *La société du risque, sur la voie d'une autre modernité*, Paris, Flammarion-Champ, 2003.

level[10]. Other requirements to be considered are the role of central banks, states' budgetary resources and the size of the banks' balance sheets.

Moreover, *systemic risk* can be drawn from integrated coordination, transmission, information and incentive problems:

- **In case of a problem with the coordination of information:** the domino effect is increased because information is not processed in a rational way either by agents nor by markets
- **In case of a problem with the quality of information:** failing information asymmetry between market actors can have consequences for investors. It is also referred to as informational dissymmetry.
- **In case of a problem of incentives**: some regulations or public policies can lead to more risks that those they can manage.

Nevertheless, *controlling* risk does not amount to deleting it[11]. The regulator's ways of action lie in risk control instruments. J. J. Laffont and J. Tirole have demonstrated in their works that the regulator has to endorse "incentive"[12] regulation to achieve his goals. Indeed, the regulator does not hold pure information (*selection adverse*) on the multiple parameters of companies, especially with regards to their long term operational capacity which implies a risk of moral hazard (occurring when someone increases their exposure to risk when insured). Laffont and Tirole suggest that companies choose themselves an alternative within a framework defined *ex ante* by the regulator.

The challenge lies in risk management through norms and standards to "implement a socially optimal level of risk" [13]. The state "needs an effective lending capacity" [14] in order to make its public policies endorsed.

The management of systemic risk involves finding a balance between the regulator's framework instruments and whether he is willing "to be strong" to not get involved down the line. In this perspective, the control of the financial sphere calls for a strengthened role of the legislator. However, we notice that intermediary mechanism in the identification of responsibilities is at stake.

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[10] The CMRL has created an SRisk index applied to 46 European financial institutions. The Basel Committee ratifies some specific procedures for the surveillance of financial institutions with a high level of systemic risk, called the *systemically important financial institution* (SIFI).

[11] See the article: "*Crise de régulation*" de Thomas Cazenave, David Martimort et Jérôme Pouyet in Les Risques de régulations, sous la direction d'Anne-Marie Frison Roche, Paris, Presses de Sciences Po & Dalloz, 2005.

[12] J. J. Lafont & J. Tirole, *A Theory of Incentive in Procurement and Regulation*, Massachusettes, MIT Press, 1993. "The management of conflicts of objectives and information asymmetry consist of an arbitration between information rents to be granted to firms because of information asymmetry, and the economic efficiency of regulation. As such, high levels of efforts are not entirely desirable as information rents become too important. In this regard, the regulator has to provide the right incentives to leave a portion of risk up to firms. Risk is therefore an instrument of regulation. However, the existence of risk amounts to accepting that a crisis might occur. Therefore, it might not always be recommended that the regulator aims for a target of "no crisis".

[13] Thomas Cazenave, David Martimort et Jérôme Pouyet, "*Crise de régulation*", p.4.

[14] Thomas Cazenave, David Martimort et Jérôme Pouyet, "*Crise de régulation*", p.5, the three authors quote: J.J Laffont et D. Martimort, *The Theory of Incentives : The Principal-Agent Model*, Princeton University Press, 2002. "To provide regulated companies with an incentive to act in line with his expectations, the regulator has to put the burden of a portion of the risk on those companies, and commit *ex ante* not to intervene *ex post* in the event of the crisis. Otherwise, agents on the market anticipate the regulator's intervention when a crisis occurs. Hence they would be prompt to take risk higher than the socially optimal level. *Ex ante*, the regulator shall be perceived as "strong", which requires a commitment to have his hands tied and to not take action *ex post*."

2.2 Outsourcing epistemic responsability

The difficulty of the concept of risk lies in its immaterial and elusive nature. It is no longer about the confrontation "man versus finance". But rather "men versus uncertainty". This confrontation of actors with uncertainty shed lights on multiple mechanisms, for example, the outsourcing of the responsibility.

We are witnessing a real banalization of risk today . It brings together different types of actors with varying influence and roles. In this context, it is essential to understand the mechanisms put forward by Boudewijn de Bruin throughout the "externalization of epistemic responsibility". Risk management by actors involves cognitive biases in relation to epistemic virtues. In this context, we note that it is essential to identify the formal and informal intermediary mechanisms between actors such as rating agencies, for instance. "The important dimension of risk in modern societies rehabilitates the notion of uncertainty as a fundamental element to be taken into account in the decision-making process".

The implementation of a *total and contextual ethics* through an operational, technical and cognitive prism implies to inevitably consider the conditions and impacts of the risk from a social and political perspective. The acceleration and development of the technology with, for example the *Big Data* and the *Blockchain*, lead to an increasingly predominant shift between a "personal risk logic to a communal risk". The risk, that used to be a mostly external and "unexpected" phenomenon, is now internal and external, random and predictable. Risk management from different perspectives is outmost and calls for a debate within the social and economic entities. Such ongoing deliberations of actors could allow a continuous assessment of the contextualisation and the impact of risk.

II.
THE EMERGENCE OF A TOTAL AND CONTEXTUAL ETHICS

From the analysis of ethics within the financial sector, the relationship between ethics and finance in a new normative perspective showcases the concept of *context*.

1. Contextuality

1.1 Context, ethics and regulation

The regulator shall have a holistic approach to the concept of ethics to meet the complexity of financial markets.

The growing digitalisation of the financial sphere has complicated the sector's relationship with regulation authorities especially on the challenges of its *modus operandi* as well as its decision-making process in a volatile environment: for instance, collateral challenges of high frequency *trading*.

The regulator faces the challenges implied by technical and digital developments in information management. Indeed, such changes have led to the creation of structures and financial models that are more and more powerful and opaque for the regulator.

Nonetheless, although initially intended to promote more "transparent" activities, the increase of rules and regulations as well of bureaucratic processes could just do the opposite. In this regard, public governance challenges partially temper and nuance regulatory policies. As highlighted previously, the current rise of the algorithm and contextual governance is in line with the challenges specific to regulation. Those methods are driven by the limits of some governance models. Rather than framing *technique* and *governance* as opposing concepts, the latter could prove to be complementary to *technique*. As such, the concept of contextualisation becomes vital. Both the financial operation and the regulator or the administrator shall address those ongoing challenges.

It implies to capture the "thickness of the context", with the context as an evanescent moment between the past and the future on financial markets. Such concept would compress operational, technical and cognitive approaches. For this purpose, the concept of context would crystallise the difficulties of decision making out of steps with ethics. The context would *de facto* constitute the background *stimulus* that prevail in the terms of the *praxis* on financial markets in the foreground. Hence, the context would be the framework through which the intervention is performed, impacting the meaning of reality. An extreme rationalisation of the methods of regulation would lag the mobility, volatility and creativity of financial markets. In view of this, the regulator shall apprehend the global concept of ethics, taking into consideration the concept of contextualization as a *sine qua non* condition for its application.

1.2 Ethics and a contextual approach

From our analysis on the challenges and terms of the different facets of the concept of ethics, we get to the point where the basic framework of ethical levels is triggered at the crossroads of the "*context*". Ethics is a subjective contextual *continuum* to the extent that the latter is a process questioning an entity, with the goal of addressing and improving its given goals. In this regard, ethics can only be approached *ex ante* and not *ex nihilo,* or otherwise it would be the enquirer of a contextual framework[15.] We stand for a total ethics, insofar as the regulator would need to anticipate the technical, operational and cognitive approach.

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[15] The prevalence of the "contextual framework" in governance theory has been introduced by the Belgian school of reflexive governance. On a different note, we also consider Elisabeth A. Franco-Gressieux's approach *"De l'éthique des marchés financiers aux marchés financiers éthiques », Revue Banque*, n°802, numéro " Ethique et marchés financiers ", décembre 2016, "Ethics is a contextual reflexive process aiming to a fair decision.
Although ethics and morale have the same etymologic origin, ethics refers to a process of reflection or a "questioning process", whose aim is to lead us towards Socrate's concept of "the good life". Ethics is contextual and helps to define the best solution or "the least bad" with regards to the aims to achieve. Moral refers to orders such as the religious Ten Commandments or the Kantian categorical imperatives. Moral is absolute and non-contextual whereas ethics cannot be defined through a code of conduct: it is though about (reasoning, logics and reflexion), it is felt (taking into consideration emotions) and it is lived through (in internalising, to exploit the liability to aims different from ethics."

Therefore, the different ethical layers arise on a random basis for the agent and the institution, hence the difficulty for the regulator to jugulate each entity.

1°_____________________ The fundamental ethical aim: attributed to the institution and set up beforehand; or in the hands of the agent in any situation *x*
2°_____________________ The *ex ante* moral framing: carried out step by step by the agent and the institution
3°_____________________ Applied ethics: *idem*.

The “thickness of the context”[16] is the core aspect on which the regulator should focus. The emerging “contextual governance” would be closely linked to the reflective governance from which the created norm would assume its meaning. The latter requires to differentiate a cognitive irrevocable residue, from which a conventionalist rationality would arise. As such, the concept of “extended reflexivity” remains the focal point between the political and economic sphere to the extent that the governmental proceedings influence institutional arrangements[17].

The *total contextual ethic* is an extension of the deontological and epistemic ethics. With momentum, it defines an internal and external ethics. On the one hand, the norm cannot strengthen the ethical layers on its own. In some cases, an already complex normative prescriptive structure can make more complicated the interpretations and holistic approaches to ethical challenges. This may also lead to increase a risk that ought to be contained. On the other hand, rules are only hiding the different layers of belief at stake for the agent and the institution. Therefore, how to understand the expansion of performativity and of governmentality within the regulatory *praxis?*

[16] Marc Lenglet, *op. cit.*, conclusion pp. 82-83, “As such, the attention to the modes of its reception, the possibilities and the impossibilities generated by its deployment must resolutely engage the speculative work in the concern of the thickness of the context, without ever leading us to yield to the relativism: if such was the case, we would fall back into the ruts already welcoming the moralizing and falsely universalist discourse.”

[17] Jacques Lenoble, Marc Maesschalck, “ Reflective Governance : some clarification and an extension and deepening of the fourth (genetic) approach”, *Working Paper Series : REFGOV-SGI/TNU-2,* Centre de Philosophie du Droit, UCLouvain, 2007. “ Chapitre 1 : procéduralisme et théorie de la gouvernance” , p. 114. “Chapter 1: Proceduralism and Theory of Governance”, p. 114. “[...] Such culture could not be identified by cultural anthropologists and would not be" deposited "in the minds of individual actors as ever adaptable conventions that would serve as a" capacitation "structure for actors. [...] These neologisms highlight the necessary reflexivity of the judgment by which is "perceived" the context from which a norm makes sense. The concept of "context" must be constructed reflexively. This is why we define it via the expression of "potentiating form of life". As such, we want to highlight the reflexivity of the concept of context, which can not be reduced to any "convention" supposed to be given (and spontaneously to be revised by the cognitive and communicative capacities of the subjects).”

III. A REGULATORY *PRAXIS* BETWEEN PERFORMATIVITY AND GOVERNMENTALITY

The regulatory framework put forth two essential pillars: performativity and governmentality. Those concentrate their efforts at the level of institutional and governance mechanisms.

1. Methods of regulation

The understanding of the notion of regulation must be confronted to the inherent challenges involved in governance, transparency and its control.

1.1 Formalisation

The regulatory *praxis* undeniably leads to the confrontation of performativity and governmentality from different angles. Indeed, performativity is performed from an action *a priori*, while governmentality is considered *a posteriori*. As such, we are implementing a governance applied *ex post*, and that cannot be *de facto* thought of. Rather, performativity unfolds *de facto* because it cannot be controlled. Performativity *can be seen,* whereas governmentality is endorsed and applied to contain an entity. In this regard, we believe that performativity and governmentality are one single entity on financial markets which could also explain the regulator's difficulty to contain it. This entity spreads out in the past, the present and the future.

As for regulation, an approach to financial markets amounts to understanding the methods of governmentality between the financial and the political sphere. As such, in the past ten years, a reflexive and algorithmic governance has been rising. Such governance tends to be consistent with the financial and the political sphere as well their technical, operational and cognitive challenges. In this regard the development of co-regulation and inter-regulation can be witnessed in the core yet fragmented challenges associated with governance. Those trends lead to an institutional dialogue at the horizontal and vertical level. The amplification of the framework of the financial sphere has indeed been witnessed by the legislative and political reinforcement of national regulations in the framework of a joint sharing of risk and financial information. There is however some resistance from markets regarding public intervention, especially within the liberal tradition promoting the virtues of auto regulation. The regulatory *praxis* would result in controlling challenges related to performativity and governmentality.

A *total contextual ethics* is thus part of the agent/tool relation that goes beyond questioning the neutrality of mathematics models as it also considers governmentality and performativity challenges. To strengthen its intervention, the regulator shall take into consideration management instruments, while implementing a *reflexive* governance[18].

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[18] On the other hand, performance has very important consequence for politicians: once the performance of a financial reality is brought to light, theories can be publicly debated. This favours the reappropriation of technical challenges through public debate (Callon, Lascoumes, Barthes, 2001, Leclerc-Olive, 2010). One can then question the nature of the elements that have been assembled to show that another formatting is possible, which must in turn result from a long work of performance. Christian Walter, *op. cit.*

With that understanding of performativity challenges, the regulator implements a purposeful governance within all ethical layers at the crossing of the financial and public arenas, through the concepts of control. To sum it up, we propose an example of regulatory architecture that showcase the three key angles in our ethical debate: a technical, an operational and a cognitive approaches.

Those three structural situations highlight three empirical approaches stating the complexity and enbeddness of ethical layers, for the agent and the institution:

Three dimensions	**Modalities of the *praxis***	**Ethical approach**
« *Technical approach»*	The relationship between the operator and the technique in an uncertain situation.	An ethics of the *screen* with regards to deliberation challenges: the *I* *How do I deal with this issue? What are the risks?*
« *Operational approach»*	The choice process, the modalities of decision making and the underlying responsibility.	A core ethics with an applied ethics: the *institution* *Is the decision consistent with the institution?*
« *Cognitive approach»*	The relationship between the operator and the financial information and what its use entails.	A normative ethics: the *knowledge* *What are the risk that I face with and towards such information?*

1.2 Hypothesis – proposal

Ethics in financial markets considering the adjustments for every layer of the reflection's scale and every structure of action is only rarely debated. To achieve the stakes and the scope of this study, we have crossed different ethical layers and rational layers of action to strengthen the discussion on the relationship between *finance* and *ethics*.

1°______________________ The core ethical aim
2°______________________ The *ex ante* moral framework
3°______________________ Applied ethics

1°______________________ Technical approach (*x*): *financial tools*
2°______________________ Operational approach (*y*): *financial practices*
3°______________________ Cognitive approach (*z*): *financial decision making*

As such, the approach is often vague and confused on the "moralisation of financial markets" and the relationship between *markets* and the *law*[19]. Our study should not form part of this debate that only describes actors in a simplistic view. Moreover, an ethical approach which has for only aim transparency would not be thorough[20]. The regulator shall bear in mind the technical, operational and cognitive challenges, and the scale not only of the agent but also of the institution. In this context, rationality shall be apprehended within this complex environment. Regulation is the result of an analysis of three operational structures. The hypothesis of an efficient regulation would imply to master the technical, operational and cognitive challenges. The question on which types of control is therefore at the core of our study.

CONCLUSION

We underlined with the actual literature that markets can generate systemic risks that no prudential regulation is fully able to neutralise. Mathematical and financial instruments are unable to handle events too rare to be quantified into account.

Evaluating risk probabilities is a mathematical exercice shaped by financial models. Conversely, risk acceptability is relative and cannot be isolated from the *context* in which it appears. Paul Ricoeur[21], for instance, assessed what he called "the ethical intention", as an ethical yet moving *medium*. For this purpose, the "ethical intent" that we describe as *contextual* and *holistic* shall be highlighted. The dynamic, contextual and holistic regulatory issue is an incomplete project constantly being refined, which remains at the intersection of the politic and economic arenas.

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[19] The "vague approach to the moralisation of financial markets" is often criticised, from certain sectors of the financial sphere irritated by the increasing regulation of markets, and for other section of the political sphere against how unclear "moralisation of financial markets" can be from a practical standpoint. The role of financial and political lobbies is often mentioned is this debate.

[20] Marc Lenglet, *op. cit.*, « To put it another way, the questioning of practices as a place for a possible description of discussions in the face of the moral rule - which Ricœur calls "hard core" and the "intermediate reign between anterior ethics and posterior ethics" - seems to offer a solid base on which to root the open debate on the ends pursued by the financial operator. This is undoubtedly the task of a philosophical anthropology of the financial worlds, which remains to unfold according to its multiple possible".

[21] Paul Ricoeur, definition « Ethics », *Encyclopaedia Universalis*, version 8, 2002. Paul Ricoeur defines the "ethical intention" as the interaction between three poles: "a "I" pole-, a "you" pole-and "it" a pole".