Revue trimestrielle, trilingue (Français-Arabe-Anglais), à comité de lecture pour la Logique, l'Epistémologie et la Pensée scientifique

مجلة فصلية محكّمة تنشر البحوث ذات الصلة بالمنطق والابستمولوجيا

والفكر العلمي باللّغات العربية والفرنسية والانجليزية

Quarterly, Trilingual (English-Arabic-French), Peer reviewed Journal For Logic, Epistemology and Scientific Thought

E-mail **البريد الالكتروني**

revuealmukhatabat@gmail.com

Revue publiée par
Les éditions Arabesques
33, Rue Lénine 1000 Tunis
editionsarabesques.tunis@gmail.com

Toute correspondance doit être adressée au rédacteur en chef. Les opinions exprimées dans les articles de cette revue n'engagent que la responsabilité de leurs auteurs.

ISSN 1737 – 6432

Editorial Board الهيئة العلمية Comité scientifique

AL-MUKHATABAT

A peer reviewed Journal accepting for publication philosophical papers on logic, analytic philosophy, epistemology, defined in a very broad sense to include philosophy and history of formal and informal logic, theory of knowledge, philosophy, history and sociology of sciences and techniques, analytic aesthetics, epistemology of medecine, philosophy of *design*, architecture, and technology, scientific anthropology… The aim of the Journal is to promote dialogue between cultures, to improve scientific methods into philosophical thought, and to encourage logical and epistemological creativity. Papers submitted must not exceed 30 pages (normal size), including references, footnotes and bibliography. They are accepted in Arabic, French and English. Authors should provide the journal with a copy of the paper together with an abstract in English and in French. Authors are notified of the final verdict of the referees: they are notified as to the acceptance or rejection of his/her paper for publication within a period of six months. The articles published in this Journal are the possession of their authors and all rights of publishing are reserved by them.

المخاطبات

مجلّة فصلية محكّمة تنشر المقالات الجيّدة ذات الصلة بالمنطق وفلسفة العلوم والابستمولوجيا وتاريخ العلوم والفلسفة التحليلية والفكر العلمي وتوظيف المناهج العلمية في كلّ الإختصاصات الإنسانية. تقبل المجلّة البحوث باللّغات الثلاث العربية و الإنجليزية و الفرنسية. يجب على الباحث أن يزوّد المجلّة بنسخة من بحثه على عنوانها الالكتروني والذي لا يجب أن يتعدّى 30 صفحة مع ملخّص له بلغة البحث و ترجمته إلى الإنجليزية والفرنسية. يتمّ عرض البحوث على نحو سرّي على محكم أو أكثر من المختصّين ويتمّ ابلاغ صاحب المقالة بقرار الهيئة العلمية للمجلّة في أجل لا يتعدّى ستّة اشهر. تبقى حقوق البحث محفوظة بصورة كليّة لصاحبها، ويعني إرسال نسخة منه السماح للمجلّة بنشره.

AL-MUKHATABAT

Revue à comité de lecture, trimestrielle et trilingue, AL Mukhatabat publie des articles de logique, d'épistémologie et de pensée scientifique au sens large incluant la philosophie et l'histoire de la logique, la logique formelle et argumentative, la théorie de la connaissance, la philosophie des sciences ainsi que leur histoire et leur sociologie, l'anthropologie scientifique, l'esthétique analytique, la philosophie de la technologie, l'épistémologie de la médecine, la philosophie du *design* et de l'architecture, etc. Les articles sont soumis de façon anonyme à deux membres du comité scientifique de la revue pour leur évaluation. L'envoi d'un document à la revue veut dire que l'auteur autorise sa publication. L'article, qui reste la propriété pleine de son auteur, doit être envoyé sous format doc et Pdf, ne dépassant pas 30 pages (notes et bibliographie incluses), accompagné d'un résumé en anglais et en français. L'auteur sera notifié de la décision du comité de lecture dans un délai de six mois maximum. La Revue vise à familiariser davantage les lecteurs aux subtilités de la pensée scientifique et à favoriser les approches logiques, argumentatives et épistémologiques dans le traitement des problèmes éthiques, sociaux, politiques, esthétiques, linguistiques, cognitifs, anthropologiques, pédagogiques, religieux, métaphysiques, etc., comme base pour instaurer un dialogue authentique et fructueux entre les différentes cultures.

Table des matières فهرس Table of Contents

Présentation du N° 14/Avril-Mai-Juin 2015

Nous nous réjouissons de voir sortir ce numéro quatorze pour plusieurs raisons. D'abord, c'est le quatrième numéro sur papier. Ensuite, il contient des textes écrits par des philosophes notoires. Ces auteurs confirmés ont fait honneur à la revue en lui réservant l'exclusivité de la publication de leurs textes. De plus, il y a une autre raison qui nous honore : c'est le fait de voir sortir ce numéro flanqué d'un comité de rédaction international au complet ! Je cite : Mohamed Aballagh de Kenitra, Saïd Bentajar de Casablanca, Isabelle Soares Boumalala de Tunis, Haytham El-Sayed du Caire, actuellement en séjour postdoctoral à l'Université SOAS de Londres, Paula Quinon de Lund en Suède, Viviane Huys de l'IME Saint-Réal à Grenoble, Gisèle Secco de l'université fédérale du Rio Grande do Sul au Brésil, Farhat Mlayeh, un talentueux expert en langue arabe de Kasserine en Tunisie, Jennifer Lawson de l'université North Florida, de nouveau la France avec Denis Vernant de l'université de Grenoble, Virginie Muxart de l'université Paris 13 (Paris Sorbonne cité), et Sabine Plaud de SIRIS Academic. Ensemble, nous avons édité soigneusement ce numéro pour le présenter à nos lecteurs sous une meilleure forme et dans les trois langues de la revue, l'arabe, l'anglais et le français.

Quatorze articles inédits composent ce numéro. Pascal Engel, actuellement à l'EHESS de Paris après un long séjour à Genève, aborde la question complexe du désir chez Hume. Ismaïl Nouri Al Rabyi de Bahreïn, se donne la tâche difficile de jeter un éclairage nouveau sur la notion de *paradigme* à partir du contexte dans lequel elle a été utilisée par Thomas Kuhn. Il réussit, dans un arabe très clair et bien structuré, à approfondir quelques-unes des extensions épistémologiques de cette notion-clé en histoire et en sociologie des sciences. Le troisième article est l'illustration d'une belle initiative : cinq éminents professeurs issus de facultés différentes mais toutes appartenant à une même université, l'Université Ibn Tofail à Kenitra au Maroc, je cite : Moulay Brahim Sedra, Hassan Elbahi, Mohammed Laghraib, Mohammed Boussetta, Abdellah Housaini, décident de s'associer pour mettre ensemble les ressources et les concepts de leurs disciplines respectives au service d'une problématique à cheval sur l'épistémologie et l'économie. Ils prouvent ainsi que l'ouverture des compétences et des disciplines les unes aux autres, ce que Denis Vernant appellerait à juste titre l'*indisciplinarité,* est le noyau même de toute pensée et de toute intelligence. Le résultat est sans appel.

Pour sa part, Colin McGinn déploie la beauté de son écriture philosophique simple et claire pour nous exposer quelques-unes de ses idées novatrices dans le

domaine de la logique. Sur cinq longs paragraphes, il a su secouer notre esprit sur des questions logiques et arithmétiques décisives. Cet article, fruit de ma rencontre avec lui, nous invite à repenser l'essence même de la logique et à ouvrir davantage nos yeux sur son pouvoir qui consiste à scruter les possibilités infinies de notre nature rationnelle en tant qu'humains. Ce n'est pas un hasard si ces réflexions sont immédiatement suivies par l'article de deux éminentes chercheuses algériennes de Constantine, Zoubeida Ben Missi et Samia Merabtine, qui ont déjà contribué avec brio au dossier spécial sur Wittgenstein. En effet, il ne faut pas se confiner à l'intérieur du système logique classique mais au contraire il faut suivre la marche évolutive de la pensée humaine et tirer toutes les leçons épistémologiques et sémantiques possibles de cette situation. C'est dans ce cadre précis que toute valorisation du travail exceptionnel accompli par le logicien français Jean-Yves Girard peut se justifier. En effet, Alain Lecomte nous met au cœur de la question cruciale des fondements de la logique et de ses lois et tente de nous donner quelques réponses efficaces à la lumière de la logique linéaire inventée par le logicien de Marseille.

Le rapport entre logique et pragmatisme devient pour ainsi dire l'une des questions importantes de la philosophie contemporaine. Et c'est bien dans ce contexte que les trois conférences d'Hilary Putnam vont entrer en scène, où le vieux compagnon de route de Quine nous livre une belle démonstration des avantages que peut incarner le pragmatisme pour la pensée et pour son avenir dans un monde philosophique qui ne cesse de se transformer. Ces trois conférences sur l'histoire du pragmatisme ont cependant une histoire que tisse brillamment Paula Quinon en guise de préparation à leur lecture. En vérité, ces trois conférences données par Putnam en 2005 n'ont jamais été publiées ensemble. Putnam a généreusement accordé à *AL Mukhatabat* le privilège de cette publication. Pour sa part, la chercheuse algérienne dans le champ de la philosophie de Russell, Ouahiba Damouche, a le mérite de nous livrer une analyse remarquable des fondements métaphysiques de cette philosophie via la nature de la conception des objets qu'elle véhicule explicitement aussi bien qu'implicitement. Au centre d'une telle métaphysique, la relation d'identité logique reste sans nul doute cruciale d'où l'intérêt de l'article très animé de Jean-Yves Béziau.

De son côté, David Ellerman se demande avec raison à quel point la théorie mathématique des catégories peut nous aider à mieux traiter la question des universaux concrets et par conséquent à comprendre davantage la nature de l'esprit humain. Même si l'article de Nidhal Albaghdadi a l'allure d'un long compte rendu sur le livre de Yahia Mohamed *La méthode de la science et la*

compréhension religieuse, livre publié en 2014, son auteur réussit, comme à chaque fois, à nous initier aux mérites de sa théorie critique et de sa méthodologie, sans parler de son style arabe très remarqué. Cornelia Margareta Gasparel de Iasi (Roumanie) et Asma Khoualdia de Kairouan (Tunisie) réussissent tour à tour à mettre au clair quelques aspects des relations complexes entre éthique et épistémologie d'une part et mysticisme et chimie de l'autre.

Le numéro se termine sur une injonction au silence au sujet du principe logique du tiers exclu d'Aristote, où Jean-Christophe Cavallo, chercheur indépendant et auteur d'essais philosophiques, nous invite à construire une nouvelle manière rationnelle et intelligente de penser le réel qui ne soit pas la simple projection d'une cognition basée sur cette loi logique classique.

Pour terminer, nous dédions ce numéro 14 (qui correspond au trimestre Avril-Mai-Juin 2015) à la mémoire du très regretté Jaako Hintikka qui nous a brusquement quittés le 12 août 2015 après une brillante participation au Congrès international de logique et de méthodologie des sciences qui s'est déroulé cet été à Helsinki en Finlande, sa terre natale. Que les valeurs académiques qui l'ont guidé tout au long de sa grande carrière scientifique soient également les nôtres !

Hamdi Mlika
Sousse (Tunisie), le 21 Septembre 2015.

DESIRE, BELIEF AND ACTION

Pascal **ENGEL**
(EHESS, Paris)

Résumé. La théorie humienne de la motivation dit qu'il n'y a pas de motivation et pas d'explication de l'action sans désir (avec une croyance). J'examine ici certaines des difficultés de cette position et suggère qu'une conception idéalisée des désirs peut répondre à ces difficultés.

Mots-clés : Hume, désir, croyance, action, motivation.

ملخّص. تقول نظرية هيوم في الدافعية أنّه ما من دافعية أو تفسير للفعل بدون رغبة (رغبة يصاحبها اعتقاد). وسنقف هنا عند بعض صعوبات هذه الوضعية مقترحين بأنّ تصوّرا مؤمثلا للرغبات كفيل بتجاوز هذه الصعوبات.

كلمات مفتاحية : هيوم ، رغبة ، اعتقاد ، فعل ، دافعية.

Abstract. The Humean theory of motivation says that there is no motivation and no explanation of action without a desire (together with a belief). I examine here some of its difficulties and suggest that an idealized conception of desires might answer these difficulties.

Keywords: Hume, desire, belief, action, motivation.

It is a commonplace, and indeed a sort of dogma, of contemporary philosophy of mind and action that any appropriate explanation of an action must invoke two sorts of psychological states of agents: beliefs and desires. According to the so-called "belief-desire" model of the explanation of action, to give the reasons why an agent has acted is to provide a desire and a belief so that the action can be understood as the outcome of a practical syllogism of the following form:

X desires that p
X believes that doing A will be a means of bringing about that p

---

Therefore X does A

This schema is supposed to be well entrenched in our ordinary way of speaking, and in folk psychology. But the schema is, as it is well known, ambiguous and incomplete in many ways (see for instance Papineau 1993, Engel 1998). Two problems in particular interest us here. First, in so far as the desire and belief involved are conceived as reasons why the agent did A, are they reasons which *causally explain* why the agent acted as he did, by specifying the psychological states which led him to act (often called " motivating reasons" ?) Or are they reasons which *justify* the agent's action, i.e which make it rational or reasonable by his own lights (often called "normative reasons")? In other terms, an agent may have had reasons to act, which explain his action, but these might not be good reasons, even by his own lights. Famously, Davidson has argued that reasons for actions are also causes, but there is an obvious sense in which citing the psychological causes of an action need not be giving the reasons for it.

Suppose, however, that we grant that reasons may also be causes. Suppose also that the above schema gives us conditions which are sufficient for an action. A second question is whether it gives us necessary conditions. The commonplace about the explanation of action tells us that it does. Could there be action if there were no beliefs? No, for a creature only endowed with desires would not be able to see how it can satisfy her desires in a particular situation. Could there be any action if there were no desires? Apparently no, since a creature only endowed with beliefs could not be able to move: desires are, it seems, the only locus of motivation. To paraphrase Kant, desire without belief would be blind, and belief without desire would be empty. This is why the belief-desire schema seems so obvious: only beliefs *together with* desires, and desires *together with* beliefs can produce actions. The doctrine that motivation has its source in the presence of a relevant desire and of a means-end belief is deeply entrenched in our common sense notion of a reason, and it has perhaps its origin in Aristotle (in particular in the doctrine of the practical syllogism). But it is more properly called, in the contemporary literature, "Humean". Hume held it in a particularly strong form, as the view that "reason" (belief) is "the slave" of the passions"(desires). According to Hume, beliefs as well as desires are necessary for action, but desires are the driving force. Without desires, no motivation, hence no action. The Humean doctrine, however, does not pertain only to actions, but also to values. The ultimate source of our values lies in our desires; it is because we desire certain things that we value them. But this doctrine seems to be very objectionable. Is it correct to say that whenever I act there must always be a desire of mine which leads me to do what I believe will satisfy this desire? Opponents to the Humean doctrine claim that it is not, for I

may act, instead of act out of desires, out of principles, moral obligations, categorical imperatives, and the like. And there need not be any desire present in my motivations nor in my deliberations. This is the classical issue opposing Kantian and Humeans in the theory of reasons for actions and in the theory of value[1]. But there is another issue too, which opposes Humeans to another sort of theorist, who claims that in order to value something, and for this valuing to constitute a motivation, there need not be any *non cognitive* state, such as desire. According to that kind of theorist, the "cognitivist", only a certain sort of cognitive state is necessary for acting, namely the state of *believing that something is good*. Hence desire is not necessary for action. But now the previous question posed about belief arises again: how can a belief, which is a mere cognitive state, have motivational force?

This is the problem that I want to address here. We can formulate it under the form of a dilemma (Smith 1992). On the one hand, if to value something is to believe that it is good, then is difficult to see how a mere belief can produce an action, for there are many things that we value, without, so to say, putting those values into practice, and without acting according to them. On the other hand, if to value something is a matter of desiring it, then it seems that our values can never be *independent* from our desires, while they obviously are: we often fail to desire what we value, and fail to value what we desire.

As one sees, these questions do not pertain only to the nature of reasons and motivation, but also to issues about moral epistemology and ethics. But here I shall try to concentrate only upon the former.

I. The Humean view of motivation

Let us call (following Smith 1987) the view according to which any action must be caused at least by a desire the *Humean theory of motivation* or simply the *Humean view*. In its purest form, the Humean theory is simply Hume's[2]. Hume's famous thesis is that the cognitive psychological state — the belief— which figures, together with the non-cognitive state— desire— among the minimal causes of an action — is necessarily subjected to this non cognitive state. Reason, famously, is the "slave" of the passions, belief is the slave of desire.

[1] See e.g Nagel 1970.

[2] The Humean thesis may not be Hume's. See e.g. Snare 1991, Le Jallé 2013. Historians of philosophy show that Hume had a much more subtle view than the one attributed to it. Nevertheless, the characterization of the Humean view is sufficient for the purposes of contemporary meta-ethics.

By this Hume does not mean that we always engage into wishful thinking, that the contents of our beliefs are determined by the contents of our desires. On the contrary, he wants to say that beliefs and desires necessarily play a different role. Beliefs are states which represent the world, whereas desires are states which produce certain things in the world. But they cannot exchange their roles: a belief can never produce anything in the world, and a desire can never represent anything in the world. According to Hume's terminology, beliefs belong with the side of reason, which is only concerned with relations of ideas, whereas desires belong with the side of passion. A desire, or a passion, cannot represent anything about the way the world is, since it is a mere feeling, as Hume says "an original existence". (A belief too, for Hume, is a sort of feeling, but it has in addition the power of representing to us the ways things are). That belief, or reason, is the slave of the passions, or desire, means that reason has not role to play in action. It can only represent to us the means-end relations which we need to understand in order to satisfy our desires. There cannot be any *practical* reason as such. Hence the moving force of an action can never be a belief. It is always a desire. As Hume notorioulsly writes:

> It appears evident that the ultimate ends of human action can never, in any case, be accounted for by *reason*, but recommed themselves entirely to the sentiments and affections of mankind, without any dependance on the intellectual faculties. Ask a man *why he uses exercise*; he will answer, *because he desires to keep his health*. If you then enquire, *why he desires to keep his health*, he will readily reply, *because sickness is painful*. If you push your enquiries farther, and desire a reason *why he hates pain*, it is impossible that he can never give any. This is an ultimate end, and is never referred to any other object. Perhaps to your second question, *why he desires health*, he may also reply, that *it is necessary for the exercise of his calling*. If you ask, *why he is anxious on that head*, he will answer, *because he desires to get money*. If you demand *Why ? It is the instrument of pleasure*, says he. And beyond this it is an absurdity to ask for a reason. It is impossible there can be a progress *in infinitum*; and that one thing can always be a reason why another is desired. Something must be desirable on its own account, and because of its immediate accord or agreement with human sentiment or affection.
>
> (*Inquiry Concerning the Principles of Morals*, Selby-Brigge, Third Edition, Nidditch, Oxford 1975, p. 293)

This is the basis of what is sometimes called Hume's "sentimentalism": any human action has always to be referred to an ultimate "end" (which we may also here call a cause), which is a feeling, a sentiment, or a desire. As it stands, the Humean view is open to at least two *prima facie* objections. The first one is

that it misrepresents our actual reasons for acting, by reducing reasons to mere psychological states which have a causal role, whereas reasons are not simply causes of actions, but also justifications of them. The second one is that it misrepresents the actual phenomenology of acting for a reason. Let us consider them in turn.

II. Two objections against the Humean View

1) First objection. The Humean View according to which desires must necessarily figure among our reasons for acting is incorrect, because it captures only one possible meaning of the term "reason". When we say that an agent has acted for a given reason, we may mean two things: we may mean either that the reason *explains* the action, or that the reason *justifies* it. In the first sense, we simply cite a relevant psychological state which, in Davidson's term, *rationalizes* the action. In the second sense, we do not simply cite a relevant psychological state. We also want to say that the reason was rational for the agent, that it was for him a *good* reason, or that, in the light of this reason, it was for him the rational thing to do. We may call it a *normative* reason (Smith 1987, 1992). But, the objection goes, the Humean view simply reduces normative reasons to explaining ones. To take an example given by Bernard Williams (1979), suppose that I now desire to drink a gin and tonic and that I believe that I can do so by mixing the stuff before me with tonic and drinking it. Suppose now that, unbeknownst to me, my belief is false: this stuff before me is not gin, but petrol. I certainly have a reason to drink it, because I desire to drink a gin and tonic, and believe that this is a gin and tonic. But this reason only explains my drinking, it does not justify it. For if I were to know that what I am about to drink is petrol, I would certainly not drink it. In this sense, I have *no reason* to do so, either from my own perspective or from the perspective of an external observer. But the Humean view is silent upon whether my reason is a good or a bad one. It simply says that I have reasons to drink the stuff in question, and that my reasons are constituted by the relevant desire and belief. This, however, is not completely right as it stands, for the Humean view allows us to say nevertheless that my reasons for drinking this stuff can be criticized. But it can be criticized, according to Hume, only on the basis of the belief that I have, because my belief is false. According to Hume the only norms of reason that we can invoke here pertain to beliefs, not to desires (Smith 1988, 244). There are no norms of reason which prevent me from desiring to drink gin and tonic, and there are no such norms which prevent me from drinking petrol, if I want to drink petrol. The only norms of reasons are theoretical ones: I should not believe what is false. Provided that I have a given desire, the only reason that

can be given from my action is this desire, which is a motivating reason. It can further be asked whether I am justified to act, but only in so far as I have the correct beliefs. As Hume says "it is not contrary to reason to prefer the destruction of the world to the scratching of my finger."

The first objection to the Humean view is not simply that it is silent on the normative meaning of "reason", when we talk about the reasons for an action, as if normative reasons were an optional extra added to the mention of our motivating reasons. It is that appeal to motivating reasons alone is not sufficient to account for our actual reasons for action, which at least *can* be normative. The point is this. An agent may have reasons to act which do not only pertain to his present desires and beliefs, but also to his *future* desires and beliefs. In acting we do not only consider what we actually desire and believe, but also what we *should* desire and believe, or what a rational agent has to desire and believe. We put ourselves in the place of what an ideal agent would do in such and such circumstances. But the ideal beliefs and desires that motivate us in this case are not desires and beliefs in Hume's sense. They are not feelings or "original existences". In so far as they are ideal desires and beliefs that *any* agent should have, or which an agent should have if he considers his future self, they are not simply motivating reasons, but also normative reasons. And we can act upon them. Take the case of a man who would like to drink petrol and tonic instead of gin and tonic. Hume would say that there is nothing irrational in the desire of such an agent, for he may well, if he pleases, have this reason ot act. According to Hume, as we saw, the agent can be criticized in his beliefs: he should believe what is true. So Hume is able to recognize that there are norms of reasons governing beliefs, so he can grant that the belief-part of our reasons are normative and ideal in this sense. But he refuses to acknowledge that the desire-part can be normative and ideal: the desire-set of reasons is only normative or rational in the sense that *he*, for his own part, has such desires. So they cannot be critized. But this seems just wrong. First his desires can be critized by the agent himself. He can be able to recognise that he *should not desire* to drink petrol, on the ground that it would damage his health, and also on the ground that it would damage any human health. So there seems to be, after all, rational and irrational desires. And it is false, in this sense, that only *actual* desires enter into the picture of our acting for reasons.

The Kantian here may want to press this point : rational desires are rather to be conceived as *requirements*, *principles* and *imperatives*, indeed *categorical imperatives*. For rational desires are such that they *should* be desired by any human agent, in whatever position, from a point of view which necessarily transcends the

particular perspective of a single agent. So we would better not call them "desires".

Even we we do not go as far as the Kantian, the point can still be made against the Humean that his account of practical reasoning fails to account for an essential part of our acting for reasons : the fact that we do not act out of desires, but also out of what Tom Nagel (1970, 29) has called "motivated desires". Unlike "unmotivated" desires, motivated desires are not "original existences": they are desires *arrived at* through the process of a deliberation or of a decision. What is wrong, then, in the Humean view, is that it seems to reduce our desires to these simple, unmotivated desires, or to claim that the primary and ultimate causes of our actions are always desires of this kind (as the quotation about the man who exercises shows). The Humean view may be correct for the simplest of our actions, those which are caused by such desires as hunger, thirst, or various physiological needs. But we are reflexive creatures, not simply desiring ones. So in that sense desire is not only insufficient for the explanation of action. It may not be necessary. This can be seen from the fact that we do not only have desires, in the simple form, but also *desires about our desires*. The smoker, for instance, may desire to smoke, but he may also desire not to desire to smoke. In this sense, he does not *value* smoking, although he desires it (see for instance Frankfurt). Conversely, there are cases where one values something, in the sense of desiring to desire it, although one fails to desire it. For instance, the coward may value courage and sense of duty, but fail to have, in the relevant circumstances, the proper motivation for being courageous and dutiful, and indeed find himself to be neither courageous nor dutiful.

Note in passing that this argument can be made not only against the standard Humean view of desires, but also against the standard Humean view of beliefs. For according to the standard belief-desire model of the explanation of action, beliefs, as well as desires, are passive states that we cannot help having. This again, may be true of our simplest beliefs, those which are caused by our perceptions and experiences, but this is not true for the most sophisticated of them, which we have because they are arrived at through inference, deliberation and decision. Just as there are desires that we arrive at through motivation, it may be argued that there are beliefs which we have through some form of deliberation and decisions. The latter should rather be called, according to Jonathan Cohen's terminology, *acceptances* rather than beliefs (Cohen 1992)[1].

[1] On acceptance see Engel 1997, 2000.

The point here is that just as we may be moved to act from *goals* instead of desires, we can be led to think from *acceptances* rather than beliefs. In other terms there are many more motivational states and doxastic than the official Humean view seems to allow, and motiviational and doxastic states of a greater complexity that mere unmotivated, simple desires, or unmotivated or simple beliefs.

As we shall see, this objection against the Humean theory is not necessarily damaging, since motivated or rational desires are still supposed to be *desires*. But if one understands the term "desire" in the Humean sense of a *feeling*, affection or passion, the objection is indeed a serious one.

2) This first general objection to the Humean view of motivation can be backed by a second, related, one, which is that it misrepresents the phenomenolgy of desires. According to Hume, a desire is a passion, and a passion is a certain kind of feeling that we experience. This seems to imply that when an agent acts out of a desire, he feels it or experiences it in a certain way. Again that may be true for certain desires, such as thirst or hunger, which we cannot fail to feel when we have them (if I do not experience thirst when I am thirsty, it is dubious that I am thirsty, unless my attention is distracted by another feeling or thought of mine, for instance if I experience also a severe bodily pain, for instance a toothache). But there are plenty of desires which do not have this phenomenological character. Suppose that I desire to be a good philosopher, and that this causes me to try to write philosophical papers. When I attempt to write one, I may act out of this desire, but I certainly do not need to experience the desire in question, not even to *believe* that I desire to be a good philosopher. But the Humean view seems to be committed to the idea that my desire is always present in the phenomenology of my acting, or at least to the idea that it need to be consciously believed by me to be a desire of mine. This seems wrong on two counts. First it is wrong on the view that my psychological state is a desire, for a desire is a not like a sensation or a feeling. Unlike these, most desires have a propositional content: one desires *that p*, or *that q*.. And desires as propositional attitudes do not necessarily have a phenomenological content. In this respect they are rather like beliefs: just has I do not need to have an particular phenomenological experience to believe, say, that *Nyer is in the South of France*, I do not need to have a particular experience to desire *to go to Nyer* I need not even think of it, and nevertheless go to Nyer just for this reason, that I desire to go there. Second it is wrong *a fortiori* on the view that my psychological state is a rational desire, a desire that I take to be a desire that I

should have. For such a normative desire certainly needs not be associated to any particular feeling of belief about this desire, not even a memory of it.

Unlike the first, this second objection, which bears on the phenomenology of desiring, can, I think, be easily answered by the Humean. In fact Hume answers it when he says that not all of our passions are like emotions or feelings that one experiences, so to say, in the short term of our minds. There are, he says, some passions which are not "passionate" in the ordinary sense, but *calm* ones (Hume, *Treatise of Human Nature*, II, III, iii). A calm or cool passion is one that we need not experience as such, but which nevertheless leads us to act in just the same way as a "hot" one. To take an example from Austin, I may have always desired to eat ice cream, and when at the High Table I am presented some, I quietly empty the plate, without passing it over to you, to your stupefaction. In other— familiar— terms, a desire, for the Humean, need not be an *occurent* state of mind. It may well be a *dispositional* one, a disposition to act in certain ways in certain circumstances. (The same is true of beliefs, altough it is not always clear in Hume's own discussions of beliefs.) In other terms, the Humean view is not necessarily committed to the claim that desire is short-lived experienced psychological state, which is always present to the mind. It may be a long-lived one, which is not conscious. In Smith's and Pettit's terms (1993), the Humean may not hold that desire is always present in the *foreground* of deliberation leading to action. He may simply hold that it is always present in the *background*. But the Humean will nevertheless claim that it is always present, not necessarily in the sense of being possibly conscious on reflection, but at least in the sense of being an unconscious motivational state. This answers the second objection, although it does not answer the first.

III. The Revised Humean view

It begins to emerge, from our discussion so far, that the Humean view is threatened by the two objections that I have presented only if it is reduced to its simple form, with a particular construal of the notions of "desire" and of "reason". For allow that in the standard belief-desire scheme of action explanation the term "desire" (or, for that matter, the term "belief") need not designate a particular occurrent state, but only *may* designate such a state. And allow that in this schema "desire" can also refer to any attitude or motivational state such that the agent *values*, in one way or another, something, then it seems that we can avoid the previous difficulties. Suppose in particular that we define the fact that an agent does something for a reason in the following way:

1) He has some sort of pro-attitude towards actions of that kind
and
2) He believes that his action is of that kind

where the term "pro-attitude" is a sort of place-holder which covers not only:
a) desires, wantings, urges, promptings
but also
b) moral views, aesthetic principles, economic prejudices, social conventions, public and private goals or values.

Then it becomes true analytically or as a matter of conceptual necessity that if an agent did something for a reason, she did it because of a particular desire of hers: whatever she did, and whatever was her reason, be it rational or not, good or bad by his standards or by ours), she did it because she had a particular motivation for doing A, and because she valued, in whatever way, a certain thing or goal that A, she believed, was supposed to lead to. In particular this characterisation leaves it open whether the action was the outcome of a deliberation on the part of the agent, where she reached her goal on the basis of a range of alternatives, or whether her action was the output of a psychological state that acted upon her as a brute force.

The characterisation, and the terminology just used, is of course Davidson's well known one, in his seminal essay "Actions, reasons, and causes"(Davidson 1963). In that paper and elsewhere, Davidson uses precisely the term "pro-attitude" to cover any sort of attitude that the agent may have and which may be a motivating reason for doing something. In so far as "desire" is understood in this very broad and neutral sense, it seems that Davidson's view can both keep the spirit of the Humean view and accomodate the difficulties that we have raised for it. So let us call it, in contrast with the former simple Humean view, *the revised Humean view.* In fact this revised view is the one that is most of the time referred to when philosophers talk of "the standard belief-desire" thesis. It seems to be so general that it can account for any sort of motivation that we might have, be it rational or not, be it based on simple desires on on sophisticated desires to desire, i.e rational desires.

But is it so? We have seen that one main defect of the Humean view in general is that it does not distinguish *explaining* (causal) reasons from *normative* (justificatory) reasons, and thus that it fails to tell us whether the agent's reason is the product of a rational deliberation or the product of a mere psychological state which acts in a causal way. The revised view tells us that this difference

does not matter for the general truth of the thesis, provided we construe "pro-attitude" in a sufficiently broad way, to denote any sort of valuing. But now the thesis seems so broad that it is either empty or that it begs the question at issue. For suppose, as the revised thesis says, that "desire" is just a place-holder for "value". Then what does "value" mean here? Presumably it means: any *motivational* state which is apt to cause action. But is precisely what is at issue in the first objection above. For when we talked about values, rational desires, imperatives, principles or normative reasons, we were precisely talking about reasons which need not act in the causal way in which simple desires were supposed to act. This was precisely the point of distinguish explaining, causal reasons, from normative, justificatory ones. But now the revised Humean view faces a dilemma:

a) *either* it is compatible with the claim that valuing something or having a "pro-attitude" may not be a motivational state of the desire-kind, and can be a *cognitive* state, like a belief that something is good, or desirable, or valuable; but then it ceases to be a "Humean view", for the essence of such a view is that desires, as *non cognitive* states, cause actions;

b) *or* it reduces all kinds of pro-attitudes and valuings to states of the desire-kind, in which case it is indeed Humean, but then it encounters precisely the same objections as the simple Humean view.

I shall in one moment consider the first option. But in so far as what I have called the revised Humean view is largely Davidson's, we can see how his reduction of valuing to desiring faces the same difficulties as the simple Humean view. Davidson's well known thesis in "Actions, reasons and causes" is that

> "R is a primary reason why an agent performed the action A under the description *d* only if R consists in a pro-attitude of the agent towards actions with a certain property, and a belief of the agent that A, under the description *d*, has that property"

and

> A primary reason for an action is its cause.

But Davidson does not only say that a primary reason in this sense acts as the cause of the action: it also rationalizes it, in the sense that it justifies it. In

other terms, for Davidson, an explaining reason *is* a normative reason. But, as it well known, this conception encounters difficulties in the case of irrational actions, such as *akrasia* or weakness of the will. In such cases, the agent values, prima facie, something, but fails to desire what he values. So there is something that he finds rationally desirable, without being motivated in the appropriate way towards it. In such cases, says Davidson, the reasons why he acts are not rational causes: his own reasons fail to be intelligible and normative to him. We could say the same of the cases alluded to above of the smoker who does not desire what he values or of the coward who does not value what he desires. But then there cannot be the connexion between explaining reasons and normative reasons that Davidson says there is. Like any Humean view, his view faces the problem of accounting for the gap between valuing and desiring.

IV. Desire as belief

So let us turn now to the first alternative in the dilemma. It suggests that we can understand the desire-part of the standard belief-desire schema in the following way: to desire that *p* is to believe that *p* is good, or valuable, or desirable. But believing that *p* is desirable is not itself a desire. Precisely, as we just saw, we can believe that something is good without desiring it. The suggestion, therefore, is that after all we do not need the desire-part in the belief-desire pair of reasons: only belief that something is good would suffice. This is what David Lewis (1987) has called the *desire as belief* thesis. But this view can be construed in two ways.

First it can be construed in a typically cognitivist or realist way, in the sense in which these terms are understood in contemporary moral epistemology (see for instance Platts 1981, 1990). It means then that valuing is not a non cognitive state, such as a desire, or a pro-attitude in Davidson's sense, but a genuinely cognitive attitude, towards independent entities, real objective values, such as the Good. We need not quarrel here the ontology implicit in such claims. The standard objection that such views encounter are precisely the Humean one: how can a mere cognitive attitude, such as a belief — even a belief about what is desirable— constitute a motivating reason to act? How can the mind be *moved* simply by beliefs? Beliefs are not the proper thing to constitute motivations, for conceptual reasons. The point can be formulated in terms of a familiar metaphor, initially proposed by Anscombe (1958) and popularized later by Searle (1981) and others: beliefs are states which purport to represent the world, that is to *fit* the world— they have the "world to mind direction of fit", whereas desires are states which purport to make the world appropriate to

them— they have the "mind to world direction of fit". To say that valuing just is a species of believing would be to reverse their direction of fit, and this seems just (conceptually) impossible.

But we need not understand the desire as belief thesis in the full cognitivist sense. We could understand it in a second sense, as the thesis that *in addition* to a desire the source of our motivation can be a belief that something is good. In this case, the desire is identified, or necessarily connected, to the belief in question. Such a view can find some help from the fact, already noted above against the simple Humean view, that desires, after all, share some caracteristics with beliefs, in particular the characteristic of having propositional content, and hence of representing in certain ways certain states of affairs (precisely the desirable ones).

This seems promising. But it does not cease to be mysterious by Humean standards, for we still have to understand how such beliefs, or *quasi-beliefs*, can have a motivating force if they are essentially cognitive states. And the beliefs-as-thesis thesis faces a difficulty which Lewis and others (Collins 1987) have noticed. I cannot here spell out completely Lewis's argument. (See also the discussion by Price, and Lewis 1995) But in a nutshell, it is the following. Suppose, as Bayesian decision theorists do, that beliefs as well as desires, are not full or categorical states, but that they can have degrees, which are degrees of subjective probability and of utility. Suppose further, with the Bayesians, that change of belief goes through conditionalisation upon evidence. Lewis's argument is that if there were mixed states such as "beliefs as desires" (or, as they are sometimes called, "besires") which are *both* beliefs and desires, then these states would not obey the rules of Bayesian decision theory nor the conditionalisation rule. For when a system of attitudes changes under the impact of new information, beliefs evolve in one way, and desires in another. But the "besire" thesis would mean that people could change both their opinions and their desires in the same way. But they don't. I may change my opinion on the basis of a certain piece of evidence, and my desires on the basis of something different from that that piece of evidence. Suppose for instance that I believe, to degree *n*, that there is beer in the refrigerator, and that I desire, to degree *n*, to drink beer. Upon inspecting the contents of refrigerator, I come to believe, to degree *n*, that there is no beer in the refrigerator. I may, of course, change my desire for beer and not desire to dring beer any more. But I need not have such a desire. I may still desire to drink beer to degree *n*. There is no reason why I should adapt always my desires in the same way as the way by which I adapt my beliefs on the basis of evidence. So the thesis is bound to

collide with decision theory in its current form. The argument is powerful only in so far as one accepts the idea that practical reasoning as well as theoretical reasoning go by change in degrees of beliefs and desires. There are many theorists which doubt it, and I am myself tempted to think that the radical Bayesian thesis (e.g. Jeffrey 19) that we always act always on the basis of partial, rather that full, beliefs and desires, is incorrect (for reasons similar to those given by Harman 1986). However, be it as it may, Lewis's argument raises a serious challenge to the belief as desire thesis.

V. Rational desire and the idealised Humean view

Let us take stock, by representing the difficulties that we have encountered about motivation in the following way (inspired by the discussion in Smith 1989, p.90). The following propositions seem to be plausible, but they also seem to be inconsistent:

(1) Value judgments of the form "It is valuable for me to do A" express beliefs, in this case a belief that doing A is good.

(2) There is some sort of necessary connexion between being in the state that the judgment "It is valuable to do A" and having a motivating reason to do A.

(3) Motivating reasons are constituted, at least, by desires.

There is an inconsistency between (1) on the one hand, and (2) and (3), on the other. The Humean view, simple or revised, accepts (2) and (3), and rejects (1). The moral realist or cognitivist accepts (1) and (2), but rejects (3). There also some theorists who accept (1) and (3), but who reject (2). They claim that the connexion between valuing and desiring is only contingent, not necessary. I have left out such views here, and I have concentrated only upon the conflict between the Humean and the cognitivist, or the rationalist who holds that desire is neither sufficient nor necessary for motivating action.

We have granted that for having a motivating reason to do A, it is sufficient to desire to do A, simpliciter, but that it is not necessary. Something more is needed, which would account for the fact that the agent can have rational reasons to do A, rather than simply reasons which may fail to be rational by his own lights. So we come back to the argument already spelled out above that what is missing in the Humean view is the normative element contained in the concept of a reason. The revised Humean view certainly tries to account for

this element, by including, so to say, the normative reasons in the motivational ones. It thus grants proposition (2). But, as we saw, it fails to account for it. So what the Humean needs seems to be another revision, or another sophistication of his theory, which accounts for (2) in a better way. I have already suggested above (in § II) such a revision. It is that we should say not only that an agent who rationally acts upon a reason desires to do A, but also desires to desire to do A. This is Lewis's proposal (Lewis 1989). This seems, on the face of it, to capture the proper meaning of "having rational desires", understood has desires about one's desires. And it can account for the failures of rationality where we (second order) desire to desire that *p*, but fail to (first order) desire that *p* (or conversely). But consider the following case (Smith 1992, p.340). Suppose someone values A (say being a philosopher). Then he not only desires to be a philosopher, but also desires to desire to be philosopher. But suppose also that he desires to be a musician. If he is supposed to be rational in the intended sense, he should get rid of the desire to be a musician. But is he irrational if he *also* desires to be a philosopher? He is irrational only in so far as the two desires are, let us suppose, impossible to satisfy (for instance because the amount of time needed for both activities is not available to the agent during a certain span of time). Let us suppose, then, that our agent realises this. Should he drop his desire to be a musician, if he desires to desire to be a philosopher? But why would he be irrational in keeping the former? Why should he not drop the latter? The proper Humean response would seem to be here that he should adjust his set of desires, and value *more*, or desire more the one rather than the other. But this seems to beg the question, by identifying valuing to desiring to a degree, and not to desiring to desire. As Smith (1986,p. 342) points out, the problem which those who want to identify valuing with desiring to desire, is to spell out at *what level* of higher-order desires the identification is to be effectuated. For I may desire to desire that *p*, and still not value my desire to desire. Then we ascend to the third order: I value *p* if I desire to desire to desire that *p*. But suppose that I do not value my desire to desire to desire. Where should we stop?

The problem exists because there always seems to be, even on the view that valuing is desiring to desire, *further* desires which may defeat our original ones. The obvious suggestion at this point is to say that an agent who really values something and has appropriate desires of the higher-order about what she values should not let further desires defeat her previous ones. In other terms, valuing must be desire to desire *up to a limit*. The limit is fixed by the coherence of the set of desires that the agent has, and by her normative, rational reasons.

Thus we do not need to reach the higher order desires. It suffices to say that what we value is what we would desire *if we were rational*.

What does "rational" mean here? It cannot mean "rational according to our own standards" , nor "rational according to what we desire", for this would amount just to the simple Humean view that whatever we desire constitutes for us a reason for acting, and a good, rational reason. The rationality of our reasons has to be non subjective, and non-relative to a given subject. It must be a reason which is transsubjective, and such that our desires are those of an agent who is ideally placed, that is who has a maximally consistent set of desires.

According to Michael Smith (1986, p.344), the connexion between belief and desire in practical reasoning is this :

> If an agent believes that he has a normative reason to do X he rationally should desire to do X.

This, as he points out, amounts to a requirement of what is called, in moral theory, a form of *internalism* in the sense of (2) above: there is a necessary, internal connexion between what we *believe* to be valuable, and what we *desire* to do in a given circumstance. Therefore our actions are governed, as (1) says, by our beliefs. But these are beliefs about what we rationally should desire. Hence this view, according to Smith, is also compatible with (3), the Humean view that at least desires must figure within our motivating reasons. We may call this *the idealised theory of Humean motivation*: we must be disposed to act according to our best beliefs about what we should desire. As Smith (1986, p.358) says: "When we deliberate, we concern oursleves with our normative reasons, and, to the extent that we are rational, our underlying desires will match our beliefs about the normative reasons that we have." It is essential, in such a view, that the rational desires that we have be *dispositional*, i.e that they concern our dispositions to act in certain ways, and not our present actual desires. This view is a sort of development of a platitude: a rational agent is one who has rational control over his desires, and who acts according to the best possible view of what he should desire, not only by his own lights, but but also by the lights of an idealised agent.

It seems to me that there is much to say in favour of such a view, for it purports to reconcile the conflicting intuitions (1)-(3) that we have about motivation. But it also faces obvious difficulties. One is that it is not easy to

spell out what "rational" means. Another is that it is not easy either to spell out what "ideally rational" means. Let us, however, suppose that the view is correct, and that we can spell out what such an idealised rationality can be. The question is: will it be enough to give us the appropriate motivation for acting? In other terms, even if we suppose that an agent has the best motivating reasons (normative, rational ones) to do X , will it follow that he will do X ?

It is not obvious that he will. To see this consider a practical analogue of Lewis Carroll celebrated parable of Achilles and the Tortoise. Achilles proposes to the Tortoise two premises of the form:

(1) A
(2) If A, then B

But the Tortoise refuses to infer the conclusion

(3) B.

Then Achilles proposes her to accept the truth of

(4) If A, and if A then B, then B

which she does. But she still does not accept the conclusion. She does even accept it when Achilles proposes her to accept the truth of :

(5) if (1) and (2) and (4) are true, then (3) true

and the regress never stops. We can, as Blackburn (1995) points out, construct a similar case for practical reasoning.

Suppose I say :

(1') I prefer A to B
(2') the moment of decision is at hand.

Will I infer

(3') let me choose to do A ?

No. Suppose then that I am presented the following extra premise:

(4') It is rational for me to prefer A to B.

Will it be enough for me to infer (3')? No. Suppose I am presented the extra premise:

(5') It is *ideally rational for me* to prefer A to B.

This will not move me any more. The regress is the same as in (1)-(5).
Logic cannot make the mind move. Rational reasons cannot either.

I do not present this as an argument, but as an illustration of the difficulty: reasons, even rational, and even ideally rational, do not by themselves make us move, nor act. The idealised Humean view still does not show how our best beliefs about we should best desire could have the internal and intrinsic power to make us act. We are faced with a choice. Either we revert to the Humean simple view, by arguing that something else is needed, which acts on us a brute force. But this amounts to renouncing the very notion of a *reason* for our actions in a sense which would be non causal. Or we abandon the Humean view altogether, and reject the idea that what motivates us has to be a desire. This amounts to adopting a form of cognitivism, and reject the idea that reasons have to be causal and based on desires.

References

Blackburn, S. 1995 "Practical Tortoise Raising", *Mind*, 104 (416):695-711
Collins, J. 1987 "Belief, Desire, and Revision", *Mind*, 97: 333–42
Engel, P. 1983 "Hume et le commencement de la philosophie", *Critique* 439, 960-981.
Engel 1998 "Le rôle de la croyance dans l'explication de l'action", in J.L. Petit, ed. *Les neurosciences et la philosophie de l'action*, Paris, Vrin, 327-339
2015 « Retour à la raison, *Revue philosophique*, 3, 2015, 365 - 456
A paraître, « Le désir comme croyance » , *Klèsis* , *La philosophie de David Lewis* 2015
Frankfurt, H. 1970 "Freedom of the Will and the concept of a Person", repr. in Watson, G. *Free Will*, Oxford, Oxford University Press
Jackson F, and Pettit, P. 1995 "Moral functionalism and moral motivation", *Philosophical Quarterly* 45: 20–40
Le Jallé, E. 2014 Hume et la philosophie contemporaine, Paris , Vrin.

Lewis, D. 1987 "Desire as Belief", *Mind* 97 (418): 323-32.
1989 "Dispositional Theories of value", *Proceedings of the Aristotelian Society*
1996 "Desire as Belief II", *Mind 105 (418):303-13.*
Nagel, T. 1970 *The Possibility of Altruism*, Oxford: Oxford University Press
Pettit, P. 1987 "Humeans, Anti-Humeans and Motivation", *Mind*, 96: 530–33.
Platts, M. 1990 *Moral Realities*, London: Routledge
Railton, P. 1992 "Non Factualism about normative Discourse", unpublished
Schueler, G. 1995: *Desire*, MIT Press, Cambridge Mass.
Smith, M. 1987 "The Humean theory of motivation", *Mind 96 (*381):36-61
1987a "Reason and Desire", *Proceedings of the Aristotelian Society*, 88: 243–58
1988 "Humeans, Anti-Humeans, and Motivation", *Mind* 97 (388):589-595
1989 "Dispositional theories of value", *Proceedings of theAristotelian Society*, 63:89-174
1992 "Valuing, Desiring or believing?", in D. Charles & K. Lennon, eds, *Reduction Explanation and Realism*, Oxford.
1992 *The Moral Problem*, Blackwell, Oxford.
1995 "Internal Reasons", *Philosophy and Phenomenological Research, 55 (1):109-131*
Snare, F. *Morals and Motivation and convention*, Hume's Influential Doctrines, Cambridge, Cambridge University Press
Williams, B. 1979 "Internal and External Reasons", in his *Moral Luck,* Cambridge, Cambridge University Press.

Post scriptum 2015

This paper was read under the title "Is desire necessary for the explanation of action?" at the 4th meeting of the Académie du Midi (Gesellschaft für Philosophie) on "Desire", held in the castle of Nyer, in May 1996, and at the University of Rouen in December 1996. I thank D. Farrell, Helmut Pape, and the participants in the Nyer conference for their remarks. The text has never been published before.

The view defended here, which is Michael Smith's revised version of Humeanism, is no longer the one which I hold. I have now much more sympathy for a realist and cognitivist account of reasons, along the lines of Parfit in On What Matters *(Oxford 2011, which I have reviewed in Engel 2015), and I take the second horn of the dilemma suggested at the end of this article. On besires and belief as desire, see Engel to appear.*

My reason for publishing, after many years this old article is that I thought it might still be useful as a presentation of these issues. And many thanks to Hamdi Mlika.

الإفلات من النمط
البارادايم و تكوُّن العلوم

Ismaïl Nouri **AL RABYI**
(Ahlyia University, Bahrein)

(تبلغ النظرية مرتبة البارادايم ، عندما يتم الحصول على مرشح بديل لها)

توماس كون

Résumé. On raconte qu'un homme avait su qu'il y avait une île habitée uniquement par des borgnes et avait songé de ramener avec lui une personne de cette population pour gagner de l'argent en l'exhibant en public. Mais dès son arrivée dans l'île, il a été capturé par ses habitants qui lui ont fait subir le même sort en tant que modèle pour une personne ayant deux yeux. Cette histoire nous apprend à faire la distinction entre les modèles communs de la pensée, dans une certaine activité épistémologique et les pratiques sociales des événements dominants et leurs méthodes d'interprétation. Le paradigme est interprété comme un modèle de pensée dans une discipline scientifique ou dans tout autre contexte épistémologique. L'origine de ce terme est liée à l'utilisation spécialisée dans l'étude de la langue de la rhétorique, en particulier dans l'étude de la comparaison, que même le linguiste suisse Saussure a utilisée quand il fait la différence entre les composantes linguistiques et analogiques.

Mots-clés : paradigme, modèle, méthode d'interprétation.

ملخّص. يحكى أن رجلا سمع بجزيرة يقطنها بشر من أصحاب العين الواحدة. ففكر أن يستجلب واحدا منها، ليجعل منه نموذج عرض يكسب من خلاله المال. لكن ما أن وطأت أقدام الرجل الجزيرة، حتى جعلوا منه نموذجا للعرض ، وصاروا يكسبون المال من عرضهم لنموذج يملك عينين لا واحدة! الواقعة هنا تقوم على حدود الفصل بين نمط التفكير السائد ، ضمن نشاط معرفي و إنتاج للممارسة الاجتماعية حول الأحداث السائدة، وطريقة تفسيرها. حين انطلق كل من طرفي الحكاية من نموذجه الذي يعيه ، أو (طابعه أو مثاله) بحسب تعريف قاموس أوكسفورد، ، حيث الـ Paradigm . وهو المصطلح الذي يمكن أن تتم ترجمته على أنه؛ (نموذج تفكير يسود في بيئة معينة أو حقل تخصص علمي، له علاقة بالنظرية المعرفية). وتعود الأصول المعرفية لهذا المصطلح، إلى

الاستخدام المتخصص في مجال بلاغة اللغة ، لا سيما في التشبيه. حتى أن عالم اللغة السويسري دي سوسير De Saussure كان قد استخدمه في مجال تمييز العناصر اللغوية المتشابهة.

كلمات مفتاحية: براديم أو نموذج إرشادي، نموذج، منهج تأويلي.

Abstract. It is said that a man learnt that there was an island inhabited by people with one eye in the forehead so he decided to bring one of them to his city so he could make profit from displaying that creature. Once the man stepped in the island, he was put into display and made profit from because he had two eyes. This story distinguishes between the common patterns of thinking within a certain epistemological activity and social practices of the dominant events and their method of interpretation. Each man of this story thought according to the model that he understands or we can say according to his (pattern or example) as it is mentioned in Oxford dictionary. Paradigm is interpreted as a thought pattern in any scientific discipline or other epistemological context. The origin of this term is related to the specialized use in the study of rhetoric language, especially in studying simile, a mechanism used even by Saussure when differentiating between linguistic and analogic elements.

Keywords: paradigm, commun patterns of thinking, method of interpretation.

البارادايم يقارب موضوعة الأحجية Puzzle، ليكشف عن كم المفارقة القائمة في التفكير النمطي. تفكير يقترب كثيرا من المزحة، فيما تكون الإجابة قريبة ويسيرة. إنه التفكير الذي يبعث على الحيرة والارتباك، مثاله يقع في السؤال عن؛ سميرة بنت سعاد، فما اسم أم سميرة؟ أو السؤال الصدمة حول؛ الزرافة أطول أم النمر أسرع؟ أو حين تسأل أحدهم عما تبقى من **عدد** الطيور، وليس **الطيور** على غصن الشجرة، بعد أن أطلق الصياد نيران بندقيته؟ إنها حكاية التحدي لخبير فتح الأقفال، حين تطلب منه فتح خزانة، وتتركها مفتوحة، ليعجز عن فتحها بعد أن وضعته في وضع خارج التوقع، وبعيدا عن الاحتمال. إنه حقل النقطة صفر من التفكير Zero Point Field[1]، أي لحظة اللقاء بين الخبرات الحسية والمادية للإنسان، وطريقة تعاطيه مع موقف ما.

[1] Frank Columbus (Editor) 2004, *Developments in Quantum Physics*, Nova Science, New York, p.7.

ينطلق الإنسان في طريقة تعاطيه مع العالم، بناء على النمط والمثال الذي يتمثله ويعيشه. فعلى سبيل المثال؛ القراءة مفيدة، لكنّ الكسالى يقولون بأنها تؤذي النظر. والهاتف المحمول مفيد في عملية الاتصال، لكنّ المختبرات العلمية تشير إلى الأذى الذي يسببه على الدماغ. والتدخين يضر بصحة الإنسان، لكنّ المدمنين على التدخين يزعمون بأنه يساعد على التركيز الفكري. تلك الأمثلة تحدد مجال النمط السائد في التفكير حيث المحاججة التي لا تصل إلى نتيجة نهائية، كل ينظر إلى العالم من خلال مثاله.

إنه التمثيل للإحالة العقلية المباشرة، حيث ارتباط الذهن بنموذج محدد، فحين يتم وصف أحدهم بجيمس دين نجم السينما الهوليودية في الخمسينات، فإن الإحالة العقلية تفترض الوسامة اللافتة في الشخص الموصوف. وكم تكون الصدمة ظاهرة للعيان حين يكون هذا الشخص، صاحب تقاطيع عادية. وهكذا الحال حين تصدم الجماهير بتصرفات نجمها المحبوب، حيث صورة المثال الذي رسمتها له، وطريقة تعاطيه مع الواقع حيث الإنسان العادي القابل للخطأ والصواب. إنها صورة العريس الأنيق واللطيف والمهذّب والرومانسي، لكنه ينقلب، إلى متذمر وعابس وغير مهندم بعد الزواج.

هو البارادايم الذي تتحصن فيه العقول حول مقولة تقليدية أو فكرة محددة، فمن طلب العلا .... عاش في الطابق الأعلى من البناية، بدلا من سهر الليالي! و من لم يطل العنب أكيد أنه قصير القامة ! وليس حامضا عنه يقول!! وإن كان صديقك في لحظة هياج، حاول أن تتجنب ارتداء ثوبا أحمرا، وليس أن تواسيه وتهدئ من روعه! إنها ممارسة الحيلة في تمرير مقال على جهاز الرقابة الصارم. إنها مقولة هيراقليطيس،(**لا يمكن عبور النهر مرتين**)[1]، بدعوى أن مجرى الماء في تغير مستمر، حيث يفسر الفيلسوف الدنمركي كيركيغاد هذه المقولة، بأن التجربة الإنسانية غير قابلة للتكرار[2]، إنها **الديمومة** التي لا يمكن أن تعود إلى الوراء بحسب تعليق الفيلسوف الفرنسي برغسون[3].

[1] Bllagirathi Sahu, 2002, *The New Educational Philosophy*, Sarup and Sons, New Delhi, p. 134.

[2] Niels Jorgen and Hermann Deuser, 2006, *Kierkegaard Studies*, Soren Kierkegaard Research Center, New York.p 129.

[3] Eduard Roy, 2005, *A New Philosophy: Henry Bergson*, Cosimo Classic, New York . p. 50.

البارادايم قوانين ورؤى وتصورات وقواعد وقيم صادرة عن نظرية علمية، يمارسها مجموعة من العلماء والباحثين (المتحد العلمي)، ضمن حقل أو تخصص معين، يطلق عليه (العلم العادي). إنه الانقطاع غير الخاضع للمقارنة، حيث اللاقياسية Incommensurability ، بين نمط وآخر، هي الثورة البارادايمية التي ينتجها النمط الجديد، الذي يعمد إلى وضع لغته وممارساته و تصوراته، تلك التي تفصله عن النمط العادي أو القديم. بعد أن تتبدى للعيان ظاهرة غير متوقعة Anomaly، يعجز نمط العلم العادي عن وضع الحلول لها حتى تتحول إلى أحجية عصية على الحل، بناء على ما هو متوفر ومتاح من قوانين[1] . لتظهر معالم الأزمة داخل النمط، حيث الوعي بوجود الخلل والخطأ ، ليصار إلى إحداث ثورة تتبنى تصورا جديدا، يتم من خلاله تقديم برادايم جديد يحل محل العلم العادي القديم.

البارادايم الذي صمم له توماس كون لا ينفصل عن العالم، ولا يعمد إلى تجزئة الظواهر، بل هو يقر بالارتباط والموازاة والتشابه Parallelism بين الظاهرة العلمية والإنسانية. إنطلاقا من رصد أحوال الأزمة التي تظهر داخل الحقل، ومن واقع عجز النظام عن التصدي لها ومعالجتها. لا تلبث تلك الأزمة عن التفاقم والتوسع. هنا يتبدى دور النخبة الإجتماعية أو المتحد العلمي في الحقل العلمي، من التطلع نحو القيام بالثورة. عبر تبنيها رؤيا وتصورا جديدا، يمثل عنه في الحقل السياسي والاجتماعي والاقتصادي **بالنظام الجديد**، ويوصف في الحقل العلمي **بالبارادايم الجديد.** لينجم عن هذا ظهور النموذج الجديد من العلاقات و التفكير والممارسة والتقاليد. و صولا إلى ظهور أزمة قادمة عصية على الحل تستدعي ثورة جديدة.[2] و هكذا يخلص توماس كون إلى أن العلم لا يعرف التطور إلا من خلال البارادايم.

إنّه التمثيل لزخم التجارب التي لا يمكن أن تتوقف عند حادث، بل أن التجربة لا بد أن يضاف لها المزيد من التجارب والخبرات. إنه التحديد الذي يجعل من النموذج مؤثرا في

---

[1] توماس س . كون ، 2007 ، بنية الثورات العلمية، ترجمة حيدر حاج إسماعيل ، المنظمة العربية للترجمة ، بيروت ، ص 26.

[2] Alain Touraine, *A New Paradigm for understanding today world*, 2007, English Translated by Polity Press, Molden USA, p. 5.

قابلية الظاهرة على الملاحظة والنقد. و قدرته على استفزاز الأسئلة العميقة والدالة، والبحث في الطريقة التي يتم من خلالها تفسير الظاهرة العلمية. وما هو المتاح من أجل إنجاز التجربة العلمية، تجارب تم الاتفاق على النهج وفقها، فهو النموذج الرائج، الذي يتم من خلاله تحديد تصور الواقع، وما يمكن أن يتيحه من عمل علمي مستقبلا. من خلال تطبيق القواعد المعترف بها، وفقا للذهنية العامة السائدة، حيث الحضور الطاغي لنموذج العقلية التي تقود مسيرة البحث العلمي. و تضع معايير وقواعد تشجيع هذا التيار أو ذاك، لا سيما على صعيد تمويل الأبحاث، أو الاعتراف الرسمي من قبل مراكز البحوث والجامعات العريقة، بفرع معرفي جديد. البارادايم تمثيل للتصور الفكري الذي تم الاتفاق عليه من قبل الجميع، وصار بمثابة المثال المتفق عليه في نطاق اجتماعي، حتى صار يعبر عن النمط الذي يميز عمل الأشياء. باعتبار الإطار النظري الذي يميز طريقة التفكير والممارسة السائدة .

العلم بوصفه حكاية

كيف يمكن تمييز طريقة النظر حول العلم ؟ العلم القديم والعلم الحديث، وهل ثمة فاصل بين النموذجين، وهل يمكن النظر إلى العلم كوحدة واحدة، باعتبار منطق التراكم، والذي يشير إلى أن العلم الراهن ما كان له أن يحقق فتوحاته، لولا استناده إلى الفروض والنظريات التي قدمها العلم القديم. هذا التصور يندرج ضمن الشائع والمألوف. فلو ركزنا النظر في طريقة النظر إلى النظريات التي قدمها علماء الإغريق حول تصورهم للعالم على سبيل المثال. لوجدنا أحوال التناقض والتقاطع بين النظرة القديمة الرائجة و السائدة، حول مركزية الأرض. تلك التي وضع لبناتها أرسطو، مشيرا فيها إلى أن الأرض ثابتة، وأن الشمس والقمر والكواكب تدور حولها بحركة دائرية. وجاء بطليموس ليطور تلك النظرية، حيث التركيز على الفكرة المستندة إلى المركزية. حتى جاءت الثورة الكوبرنيكية 1543، تلك التي قضت على فكرة مركزية الأرض، والتأكيد بالدليل العلمي على أن كوكب الأرض ما هو إلا جرم يدور حول الشمس. ليكون الفتح الأكبر في مسار تاريخ العلم، و تغيير طريقة النظر إلى الكون والعالم. ليبرز جيل الثورة المعرفية من العلماء من أمثال؛ كيبلر 1630، والذي

قيض له أن يضع نظرياته بناء على فكرة مركزية الشمس، و التي من خلالها وضع قوانينه الثلاثة القائمة حيث يشير القانون الأول إلى أن الحركة الإهليليجية وليس الدائرية، أما القانون الثاني فيقوم على الخط الواصل بين الكوكب والشمس يشكل مساحة متساوية في زمان متساو. ويستند القانون الثالث إلى؛ مربع زمن دورة الكوكب حول الشمس، يتناسب طردياً مع مكعب نصف المحور الكبير. وجاء غاليلو غاليلي 1643 ليؤكد على دوران الأرض بناء على الحسابات الرياضية الدقيقة. فيما قدم نيوتن 1727 علم الديناميكا Dynamics، حيث قوانين الحركة الثلاثة [1]. ويقوم القانون الأول على القصور الذاتي باعتبار الجسم يبقى ساكنا، والمتحرك متحركا، ما لم تؤثر عليه قوة خارجية. و الثاني قانون التسارع يقوم على أن القوة المؤثرة على جسم، تساوي معدل تغير حركته بالنسبة إلى الزمن. والثالث قانون الفعل ورد الفعل، باعتبار أن لكل فعل رد فعل يساويه في المقدار ويعاكسه في الاتجاه.

إلى أين يمكن أن تقودنا المقارنة المباشرة بين نموذجي العلم القديم والجديد ؟ فإذا كان العلم لا يقوم على التراكم المعرفي، باعتبار القطائع المعرفية التي تحدث فيه، انطلاقا من رصد الثورات العلمية الكبرى، مثل الثورة الكوبرنيكية التي أسقطت الفرضيات السابقة، ولكن هذا الحال لا يعني إسقاط سمة العلمية عن النتاج العلمي القديم، و وسمه بالحماقة و الخرافة. الأمر هنا يقود إلى فتح إشكال أوسع يتعلق، بمضمون العلم ذاته. الذي أنتج العلمين القديم والجديد. العلم كمضمون يبقى واحدا. في حين أن طريقة التعاطي مع مفرداته، هي التي تتغير، وبهذا فإن العلم لا ينتج خرافات، بل أن سمة العلمية للعلم القديم لا يمكن إسقاطها عنه، لمجرد تجاوز النموذج القديم بآخر جديد، توماس كون يقترح معالجة هذا الإشكال، انطلاقا من التأكيد على أن العلم لا يمثل عملية تراكم. بقدر ما هو قطائع معرفية، ونماذج تقوم على التجديد، لتزيح النموذج القديم، من دون أن تلغيه. [2]

[1] Philip Adler and Randall Pouwels, *World Civilization*, 2012, Volume 2, Wads Worth, Boston, p. 409.

[2] توماس كون ، المصدر السابق ، ص 53.

تاريخ العلم والسؤال

تتبدى قيمة السؤال، في كونه يتيح مجال القدرة على التفحص في العلاقات القائمة بين العناصر السائدة. الأمر يتعلق لا بطرح السؤال فقط بل بطريقة صناعة السؤال، القدرة على صياغته. السؤال هنا لا يقوم على البحث عن الإجابات، بقدر ما يتركز حول خلق السؤال الجديد، النائي بنفسه عن النمطية والشيوع، وبهذا راح السؤال يتطلع نحو الكشف عن الجوانب التي ظلت مخفية في حقل العلم. حيث البحث عن مرتكز جديد يقوم على اعتبار (**وحدة العلم التاريخية ضمن مجال زمني محدد**)[1]. إتجاه يسعى إلى تفسير الظاهرة وفقا لمتطلبات العصر الذي ظهرت فيه، من دون الوقوع في متاهة الإسقاط التاريخي. هو البحث عن العصر الذي ظهرت فيه النظرية والظروف الحاكمة لها، والشروط والقياسات السائدة، والإمكانات المتاحة. إذ لا يمكن أن تتم مقارنة الجهد العلمي الذي قدمه بطليموس، بما قدمه كيبلر، حول طريقة النظر إلى الفلك.

بالتأكيد أن الأسئلة التي يطرحها عالم الفيزياء والرياضيات الإنكليزي ستيفن هوكينجز، تختلف عن الأسئلة التي كانت تدور في رأس آينشتاين. وهكذا هي الحال في طرح السؤال. الذي تقوم وظيفته الأصلية على الرغبة في أن تعرف؛ **الحقيقة والمعنى**. و على هذا كان السؤال القديم (**السقراطي- الاستنباطي**) ابن عصره ونتاج علاقاته والقوى السائدة والمهيمنة فيه، حيث جاء مستندا إلى علاقات التوليد، حيث السؤال الذي يولد سؤالا سعيا إلى الاكتمال المنشود، من خلال الاستنطاق والاستجواب. فيما جاء السؤال الحديث (**الكانطي – النقدي**)[2] قائما على النقد في صلب المعرفة، سؤال يبحث في الإمكانات التي يقوم عليها العقل وحدوده .

نقع في مغالطة تاريخية لافتة، حين نعمد إلى مقارنة أفكار نيوتن بالعلم الراهن، الواقع يشير على أن أهمية دراسة أفكار نيوتن بناء على الظرف العلمي الذي عاش فيه، وأمكنه أن ينتج نظرياته من خلاله. هذا الحال يقودنا إلى خلق متاهة معرفية بقوام، أنك تفترض

[1] المصدر نفسه، ص 54.

[2] Marc Djaballah, 2008, *Kant, Foucault and Forms of Experience*, Routtlege, New York, p

اعتماد المنهج العلمي في دراسة ظاهرة تقع خارج دائرة التخصص. سيقود هذا الحال إلى ظهور نتائج غير متوقعة باعتبار أحوال التداخل القائمة في طريقة التعاطي مع المنهج، الذي لا يخل بعلميته، ولكن الاختلاف يقوم على عاملين يتركزان في؛ (**التصور، الممارسة**). فلكل حقل تصوره ورؤيته إلى العالم، تلك التي يتوافق عليها أصحاب التخصص الواحد في حقل معرفي، ليشكل لهم،المجمل من التوجهات والتفضيلات والرؤى والاتجاهات والمصالح ضمن فترة زمنية محددة. وهذا ما يطلق عليه كون؛ (**المتحد العلمي في زمن معين**)[1]. لقد أثمر **السؤال الاستنباطي** حول سقوط التفاحة، إلى أهمية العناية بالشجرة ومراقبة مواسم القطاف واستمرار هذا النوع، والفوائد التي يمكن الحصول عليها وتطوير المنتج، فيما أثمر **سؤال الاستقراء** حول سقوط التفاحة عن قانون الجاذبية.

الممارسة

تترسخ عرى العلاقات داخل (**المتحد العلمي**)، بناء على القواعد والبراهين والمعايير المتفق عليها حول طريقة النظر إلى العلم. علاقات تقوم على تجهيز الإجابات المتعلقة بتفسير العالم، تلك الجاهزة للتطبيق المباشر، حيث الآليات المعتمدة، والاكتمال الذي يشير عادة على القدرة والكفاءة والمهنية العالية المتمكنة من إدارة العملية العلمية، ووضع التفاسير المقنعة المتعلقة بها، نموذج يقوم على مواجهة الطارئ الذي يعمل على زحزحة اليقينيات الثابتة والتقاليد المهنية الواحدة، التي قامت عليها الجماعة أو المتحد العلمي. لكن هذا الطارئ الذي يبتدئ خطوه وئيدا، سرعان ما يتمكن من التقطع مع ثوابت الممارسة، ليفرض أشكاله الجديدة على المنظومة العلمية القديمة، تلك التي يدعوها كون بـ (**العلم العادي**). من خلال قيام (**ثورة علمية**) تسعى نحو تقديم علاقات مهنية جديدة، لا تلبث أن تفرض سيادتها على الواقع. أو لم يشر باشلار إلى أن (الحقيقة العلمية هي تصحيح تاريخي لخطأ طويل).[2]

بتقدير توماس كون أنه لا سبيل إلى توضح الملامح الثورة العلمية، من دون رفدها بتوافق (**المتحد العلمي**) حولها. باعتبار البحث في ماهيتها ومكوناتها، وقدرتها على إحداث

---

[1] توماس كون، المصدر السابق، ص 55.

[2] Gaston Bachelard, *The New Scientific Spirit*, 1984

التحول في طريقة النظر إلى المجال والحقل الذي حدثت فيه الثورة ضمن تخصص محدد. ومن هذا فإن الثورة العلمية لا تتوقف عند حال إنتاج المعرفة الجديدة، بقدر ما تتضمن في داخلها، أهمية التطلع نحو إعادة النظر في النظرية العلمية السابقة.

العلم العادي Normal Science

البارادايم يمثل النمط أو النموذج المكتمل. النموذج هذا يعيش أحوال النجاح والقوة والتأثير باعتبار اتفاق المتحد العلمي عليه، لتوفيره الإجابات الشافية على حل المشكلات. ومن هذا يتبدى موقف علماء النموذج من النظريات الجديدة التي تحاول أن تخرج عن السياق الذي يفرضه النموذج. بل أن التطلع يتركز في محاولة احتواء هذه النظريات، التي تحاول الخروج عن النسق السائد، والعمل على إعادة صياغتها وفقا لما يقرره النموذج السائد. لكن تفاقم الأحوال يتبدى حين يعجز البارادايم عن توفير الإجابات على الأسئلة المحيرة، عندها يتطلع العلماء للتعامل وفقا إلى (**سلوك ونظرة**) مختلفة حول النموذج السائد. تبرز تلك الأحوال انطلاقا من طبيعة العلم العادي (**الذي يضم في بنيته الآليات التي تخفف من غلواء الحصر والتحديد**) [1]. يوضح كون مفهوم العلم العادي بمعنى العلم الواقعي السائد المتعارف عليه، وهو بهذا يرسم ملامح البارادايم، لا بوصفه تنميطا أو خضوعا، بقدر ما هو وسيلة منهجية يتم من خلالها إحداث الحراك والتفاعل داخل الحقل أو المجال. هو لا يشكك بالعلم وأهميته، ولا يعلي من شأن العلم الجديد، ضد العلم القديم. بقدر ما يؤمن بأن العلم هو العلم المبتكر المستند إلى عامل الخيار الذي يميز توجهات الباحث في مجال العلم. و من هذا فإنه يحدد عناصر رئيسة يقوم عليها مفهوم العلم العادي – الواقعي السائد، انطلاقا من :

1. نوع **المشكلات** التي يقوم البارادايم بوضع الحلول لها.
2. مستوى **التنبؤ** الممكن الحصول عليه من خلال تطبيق البارادايم.
3. القدرة على تمييز الحقل بالوضوح ومعالجة **الغموض**.

[1] توماس كون ، المصدر السابق ، ص 83.

حلال الأحجية

غالبا ما تواجه طلبة الدراسات العليا، عند إعداد اطروحاتهم العلمية، في الماجستير والدكتوراه، السؤال الأثير، ما هو الجديد الذي ستعالجه الأطروحة؟ باعتبار أن الحقل العلمي يسعى نحو الكشف عن الطرح الجوهري والعميق والجديد. لكن رسوخ التقاليد في معالجة مشكلة البحث، والتطلع نحو الحصول على النتيجة التي يأمل فيها المتحد العلمي، يجعل من البحث في العلم العادي يقوم على ما يطلق عليه كون (**تحقيق المتوقع بطريقة جديدة**). حيث الرغبة في الحصول على الباحث والدارس القادر على وضع الحلول لجميع الأحجيات والمعضلات التي يقوم عليها هذا الحقل العلمي، مما يعني توافر القدرة لدى الباحث في أن يكون عضوا، ضمن المتحد العلمي الذي يخضع للمفاهيم والمصطلحات والتقاليد والعلاقات التي يفرضها البارادايم.

يقوم العلم على التطلع نحو تحقيق **الفائدة** من خلال العمل على حل مشكلة، وتوفير القدرة على التكيف مع الطبيعة. إنه الوسيلة التي يتم عبرها **الكشف** عن المناحي الجديدة من الطبيعة والواقع والعلاقات [1]. باعتبارالخضوع **لنظام** محدد من العلاقات والرؤى والتصورات، يكون له القدرة على **اختبار** جميع الأفكار السائدة ضمن النموذج. و على الرغم من قوة العلاقات وصلادتها داخل العلم العادي المستند إلى (**الفائدة، الكشف؛ النظام، الاختبار**)، إلا أن بروز أحد العاملين في العلم ، يكون مسعاه في العمل على حل أحجية أو معضلة، داخل الحقل، لم يسبق لأحد من المتحد العلمي أن يضع حلا لها، تكون بمثابة المفتاح نحو إحداث التغيير.

الضمني والصريح

لكل علم بارادايماته الخاصة به، تلك التي تؤصل لمجمل الممارسات والعلاقات والتطبيقات المقبولة لدى المتحد العلمي. لكن البارادايم لا يمكن تمييزه و الإشارة إليه بطريقة مباشرة. فهو يبقى يدور بين (**الصريح والضمني**).حيث يتبدى واضحا في الممارسة العلمية والتقاليد والمناهج والتجارب، وكتابة البحوث وطرق التدريس. لكن الدور الأهم يبقى متفاعلا من

[1] Ahmed Zewail, *Voyage Through Time*, World Scientific Publishing Co, Pre. Ltd, 2002, p 151

قبل البارادايم، في صميم الحقل العلمي، حتى و إن لم تتضح ملامح الفعل عنه. و هذا ما يطلق عليه كون الأسباب المباشرة المتعلقة بعمل البارادايم، حيث الصعوبة التي تتبدى في طريقة الكشف عن القواعد التي تقوده. وأن النظرية الجديدة لا يتم الإعلان عنها [1]، إلا متصاحبة مع التطبيق الخاص بها. وأن البارادايم الذي يقود العلم إنما يقوم على الصورة المثالية والقواعد النظرية. وأن الثورة العلمية إنما تصدر عن مجموعة صغيرة أو أحد أفراد المتحد العلمي.

الإكتشاف والتكيف التام

يتطلع الحقل المعرفي إلى تطبيق المهارات والتقاليد الخاصة به، من خلال العمل الذي يندرج عليه المتحد العلمي، حيث الهدف المتوجه نحو توسيع آفاق العلم. إلا أن اللافت للنظر أن النظريات الجديدة لم تكن لتأت من الفراغ، بل إنها تصدر من صميم تلك الحقول والتخصصات المعرفية. إنها طريقة التعامل مع القواعد السائدة، والسعي نحو تبني قواعد جديدة وطريقة العمل على صياغتها. الفاصل هنا يتعلق بفاصلة القواعد، تلك التي تحدد مسار الفصل بين النموذج القديم والجديد.

إنها الثنائية القائمة على (**الاكتشاف و التكيف**)، الاكتشاف بوصفه الوسيلة التي يتم من خلالها، ملاحظة أن البارادايم لم يعد قادرا على معالجة مشكلات خارج التوقع. فيما يتبدى الدور المناط بالتكيف بناء على، تبني العالم نظرة جديدة، تقوم على جعل غير المتوقع متوقعا. عبر التكييف التام للحادثة العلمية، برؤية وتصور جديد.

هنا يترصد توماس كون لحظة ولادة البارادايم، عبر المكونات القائمة على (**الوعي، الإدراك،التغيير**)[2]، الوعي بظهور المشكلات التي لم النموذج العلمي السائد قادرا على معالجتها. و الإدراك الذي يتم من خلال الملاحظة والتصور الذي راح يعم حقل التخصص، والتغيير الذي لا يتم بغتة، بقدر ما يواجه المزيد من الرفض و التشكيك والحاجة إلى المزيد من البراهين والشواهد والأدلة والوقت.

1 Robert Butts and Jaakko Hintikka, *Foundational Problems in the Special Sciences*, Volume 1, REIDEL Publishing Company, Boston, 1977, p. 131.

[2] توماس كون، المصدر السابق ، ص 138.

نشوء النظرية الجديدة

متى يتغير البارادايم؟ الإجابة شديدة المباشرة، حيث تتمثل في؛ عند ظهور اكتشاف جديد. ومتى يتحقق للاكتشاف أن يتصدر المشهد ؟ عندما يتم التخلي عن النمط والتصور والإجراءات والممارسات السابقة، والتوجه نحو تبني الممارسات والتصورات الجديدة. إنه الانتقال في نمط التفكير النظري داخل الحقل، والذي ينجم عنه مجال الإبداع والابتكار، عبر التفكير في أسئلة وحلول غير مألوفة سابقا. وطالما تظهر النظريات الجديدة، فإن التأثير المباشر، سيلحق آثاره بـ البارادايم، باعتبار الفشل الذي طال القواعد التي كان يقوم عليها. يختصر توماس كون الأمر برمته، حين يعلق قائلا؛ (**النجاح المدهش للنظرية العلمية، لا يعتبر نجاحا كاملا لها**)[1]. ويبقى الإدراك بفشل البارادايم في وضع الحلول للمشكلات العالقة، بمثابة الطريق الرئيس نحو تغيير البارادايم السائد، والبحث عن آخر جديد. بالإضافة إلى ما تفرزه المؤثرات التاريخية والثقافية والاجتماعية، كعوامل داعمة في الكشف عن مستوى الإدراك حول الإخفاق والفشل، وأهمية السعي نحو استلهام النموذج الجديد.

المراجع :

Frank Columbus (Editor) 2004, *Developments in Quantum Physics,* Nova Science, New York.

Bllagirathi Sahu, 2002, *The New Educational Philosophy*, Sarup and Sons, New Delhi.

Niels Jorgen and Hermann Deuser, 2006, Kierkegaard Studies, Soren Kierkegaard Research Center, New York.

Eduard Roy, 2005, *A New Philosophy: Henry Bergson*, Cosimo Classic, New York.

توماس س . كون ، 2007 ، بنية الثورات العلمية، ترجمة حيدر حاج إسماعيل، المنظمة العربية للترجمة، بيروت.

Alain Touraine, 2007, *A New Paradigm for understanding today world*, English Translated by Polity Press, Molden USA.

[1] المصدر نفسه، ص 146.

Philip Adler and Randall Pouwels, 2012, *World Civilization*, Volume 2, Wads Worth, Boston.
Marc Djaballah, 2008, *Kant, Foucault and Forms of Experience*, Routtlege, New York.
Gaston Bachelard, 1984, *The New Scientific Spirit*.
Ahmed Zewail, 2002, *Voyage Through Time*, World Scintific Publishing Co Pre.Ltd.
Robert Butts and Jaakko Hintikka, 1977, *Foundational Problems in the Special Sciences*, Volume 1, REIDEL Publishing Company, Boston.

THEOREME DE BERNOULLI ET EQUILIBRE ECONOMIQUE

Réflexions épistémologiques

Moulay Brahim **SEDRA,** Hassan **ELBAHI,**
Mohammed **LAGHRAIB,** Mohammed **BOUSSETTA,**
Abdellah **HOUSSAINI**
(Université Ibn Tofail, Kenitra)

Abstract We propose in this work an epistemological reflection dealing with the use of Bernoulli's theorem of Newtonian physics focusing to approach the economical concept of Supply-Demand equilibrium and their underlying mechanisms. This proposal consists, firstly, to observe certain aspects of the economical thought from the physical point of view and consolidate, on the other hand, the universalization attempts of this economical field of research by means of exact Sciences. We will refer here to the well known contributions of founders of the neoclassical school of economy during the 19th century namely Walras, Jevons, Marshall and Pareto.

Keywords: physics, economical equilibrum, universalization.

ملخص. نقترح في هذا المقال تأملات إبستمولوجية متعلقة بمقاربة فيزيائية لمفهوم التوازن الاقتصادي للعرض و الطلب والآليات المرتبطة بهما، من خلال استحضار نظرية برنولي لميكانيكا نيوتون. ويهدف هذا العمل العلمي، من جهة، الى ملامسة بعض جوانب الفكر الاقتصادي من منظور القوانين الكونية للفيزياء و،من جهة أخرى، تعزيز كل البحوث والمجهودات العلمية الرامية لإضفاء الطابع العلمي على بعض جوانب الفكر الاقتصادي. نشير في هذا الصدد إلى المساهمات الرائدة لمؤسسي المدرسة النيوكلاسيكية في الفكر الاقتصادي منذ القرن التاسع عشر ونخص بالذكر كلا من والراس، جيفونز، مارشال وباريتو.

كلمات مفتاحية : فيزياء ، توازن اقتصادي ، طابع علمي.

Résumé Nous proposons dans cette contribution des réflexions épistémologiques par l'usage du théorème de Bernoulli de la mécanique newtonienne pour approcher le concept économique de l'équilibre Offre-Demande et les mécanismes sous-jacents. Cette proposition consiste, d'une part, à observer certains volets de la pensée économique sous l'angle des lois universelles de la physique et consolider, d'un autre côté, les tentatives d'universalisation de certains volets de la pensée économique par les sciences exactes. Nous faisons référence dans cet article aux apports des fondateurs de l'école néoclassique du 19e siècle à savoir Walras, Jevons, Marshall et Pareto.

Mots-clés : physique, équilibre économique, universalisation.

1. Introduction

Le but de l'individu dans toute société est la satisfaction d'un certain nombre de besoins dépendants de son environnement spatiotemporel et culturel. En langage économique, cet individu cherche toujours à minimiser l'effort (ou l'énergie) et à amplifier le taux des satisfactions.

Pour atteindre son objectif, l'individu a dû faire usage et développer, tout au long de son existence, des moyens basés essentiellement sur ses capacités naturelles d'apprentissage, son travail, ses forces, sa coexistence avec l'entourage et essentiellement sur l'exploitation des ressources naturelles. Pour des raisons sécuritaires et pour se protéger en permanence contre les dangers divers et ceux de la nature, le recours à la vie en groupes, tribus et sociétés était un déterminisme.

L'installation des sociétés et nations a engendré au fil du temps un patriotisme concurrentiel et une tendance, par tous les moyens offerts, à se stabiliser en interne et s'imposer en externe. Une stabilité en interne ne pouvait s'établir naturellement qu'à travers une certaine satisfaction et un certain équilibre appliqués à toutes les composantes internes de la société ou la nation. S'imposer en externe s'avère intimement lié à l'existence de plusieurs facteurs dont nous citons :

- La préservation des acquis en matière de biens et satisfactions.
- L'expansion à la recherche des biens (rares) et des satisfactions.

- La recherche des marchés externes pour s'enrichir.
- L'établissement d'un équilibre interne-externe basé sur les intérêts communs.
- ….

Toutes ses considérations justifient la naissance de la pensée économique depuis l'antiquité et qui a pu définir pour l'économie les principales fonctions suivantes [1-10] :

- La satisfaction des besoins des individus et des sociétés.
- L'exploitation rationnelle de ressources.

Nous proposons dans cette contribution, à caractère épistémologique, une réflexion concernant un des aspects importants de l'usage de la mécanique newtonienne dans la compréhension des mécanismes de l'équilibre économique [4, 6]. Nous l'aborderons à partir du principe ou théorème de Bernoulli, très célèbre en physique par les diverses applications qui lui sont associées [11, 12].

2. **Parenthèse Physique:** Théorème de Bernoulli

Le théorème de Bernoulli est une loi très célèbre en mécanique des fluides de la physique newtonienne. Il nous informe de la diminution de la pression d'un fluide avec l'augmentation de sa vitesse.

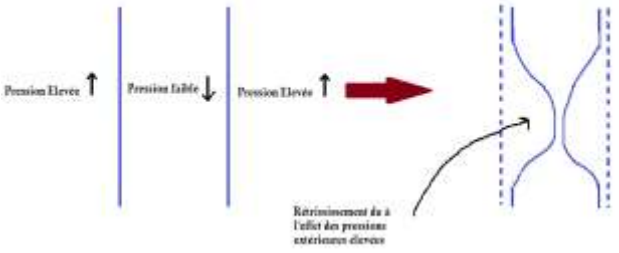


Fig.1: Représentation de l'effet de variation de pression selon Bernoulli.

Il y a toujours déplacement du côté où la pression est faible. Ce théorème de Bernoulli fait appel aussi à l'Effet-Venturi : la pression chute dans des zones rétrécies où la vitesse augmente [11]

3. Parenthèse Economique : L'offre et la demande

Le concept d'équilibre de façon plus générale en économie est défini comme étant l'égalité entre l'offre et la demande [5, 6]. Une question pédagogique consiste à définir ce que signifient ces deux notions d'offre et de demande.

Ces deux notions sont définies comme étant les quantités de biens ou de services que les agents économiques peuvent vendre ou acheter, respectivement, dans un marché en fonction de certains prix. Ajoutons que le marché est un lieu où l'offre et la demande interagissent en fonction de prix et c'est aussi un groupe d'acheteurs ou de vendeurs d'un bien ou d'un service comme le précisent [5, 6].

L'offre est la quantité d'un bien économique offert par les producteurs à la vente pour un prix donné. En parallèle, la demande, se confondant avec la consommation [5, 6] et ayant pour seul facteur de production le travail, n'est autre que la quantité d'un bien économique ou d'un service que les consommateurs (acheteurs) décident d'acheter à un prix donné. La représentation graphique est donnée par [5, 6]

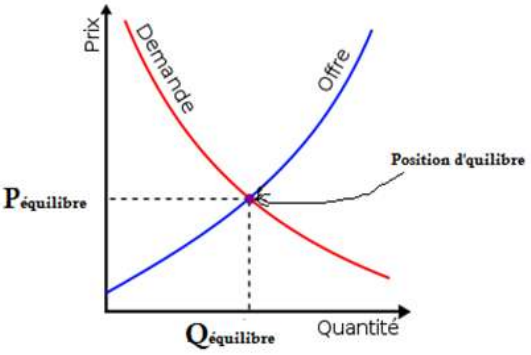


Fig.2 : Représentations des lois d'offre et de demande en fonction des prix.

Lecture du graphe :

- L'offre évolue en parallèle avec les prix :
  - ✓ Si les prix augmentent, l'offre augmente. Ceci explique le comportement des producteurs qui sont dans l'obligation de produire plus de biens consommables.

- ✓ Si les prix baissent, l'offre baisse. Ceci explique le comportement des producteurs qui ne sont pas motivés à produire plus de biens consommables.

❖ La demande évolue en opposition avec les prix :

- ✓ Si les prix augmentent, la demande baisse. Ceci explique le comportement réticent des consommateurs vis-à-vis de l'achat des biens trop chers.
- ✓ Si les prix baissent, la demande augmente. Ceci explique le comportement des consommateurs à acheter plus de biens qui sont moins chers.

❖ Au point de rencontre des deux courbes de l'offre et de la demande, ces deux quantités sont égales pour un prix donné: c'est l'équilibre.

4. Adaptation à la dualité offre-demande

On se donne un ensemble E (considéré être une société ou un état ou autre…). Nous désignons par production ou consommation la totalité des biens produits ou consommés respectivement au sein de l'ensemble E. On note au passage que l'offre et la demande sont en correspondance avec la production et la consommation.

La production est l'opération de produire un bien et la consommation est de consommer un bien. Les acteurs de la production et la consommation sont respectivement les producteurs et les consommateurs. Entre les deux opérations s'établit un équilibre que nous allons essayer de comprendre par l'intermédiaire des lois et propriétés physiques.

S'appuyant sur la physique newtonienne et plus particulièrement sur le contenu physique du théorème de Bernoulli, nous présentons dans ce qui suit une simulation de l'équilibre qui s'établit entre la consommation (comme demande) et la production (comme offre). Pour cela, commençons par introduire les conventions suivantes :

- La production a pour objectifs de :
  - Gagner plus.
  - Générer des richesses.
  - Produire plus de biens utiles et consommables.
- La consommation a pour objectifs :
  - Avoir plus de satisfaction.

- Dépenser moins.
- Minimiser le travail et l'énergie.

- Le chemin parfait qui mène le consommateur à ses objectifs nous le baptisons: *Chemin de consommation*

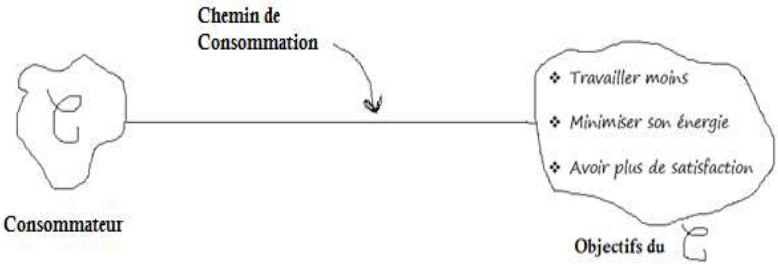


Fig.3 : Représentations du chemin du consommateur.

- Le chemin parfait qui mène le producteur à ses objectifs nous le baptisons: *Chemin de production.*

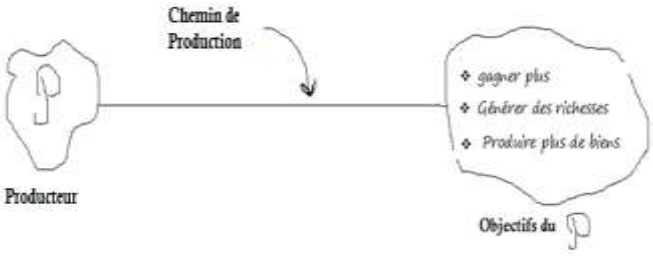


Fig. 4 : Représentations du chemin du producteur.

Nous introduisons le concept de "chemin" pour décrire "la distance" qui sépare le producteur et le consommateur de leurs objectifs cibles respectifs. Il ne s'agit pas d'un chemin ou distance à caractère spatiale physique mais plutôt de distances temporelles. En effet le seul paramètre qui pourra décrire le

processus de production et de consommation jusqu'à l'atteinte des objectifs escomptés par chacun des acteurs économiques est le paramètre temps.

Les deux composantes du mécanisme économique, la consommation et la production, ne peuvent réellement avoir lieu sans l'existence d'une troisième composante indispensable à savoir : le marché. Ce dernier est défini comme étant le lieu réel ou fictif au sein duquel s'échange un bien, traduisant en quelque sorte la main invisible [1]. Par adaptation du principe de Bernoulli à notre contexte, nous supposons que dans la zone du marché délimitée par les lignes de production et de consommation la pression soit faible comparée aux zones au-delà des deux lignes de consommation et de production où la pression est supposée être élevée.

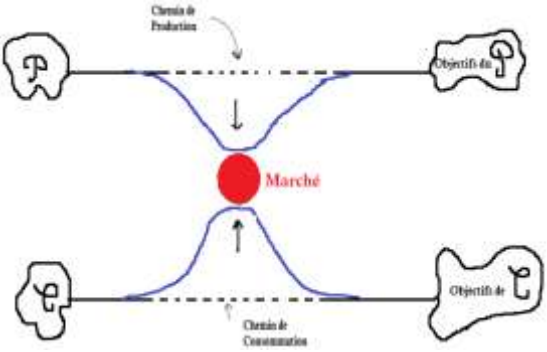


Fig. 5 : Représentations de l'équilibre du marché.

Quelle signification pour ces hypothèses? Le schéma que nous avons proposé dans Fig. 5 illustre clairement ce qui se passe au sein du triplet: (***Consommation*** (Demande), ***Production*** (Offre), ***Marché***)

Le marché ressemble à une "masse" qui exerce une force sur les lignes de production et de consommation pour les ramener, des zones de fortes pressions, à la zone d'équilibre à faible pression. L'effet de cette masse ressemble au phénomène de gravité qui cause une courbure à l'espace temps [13].

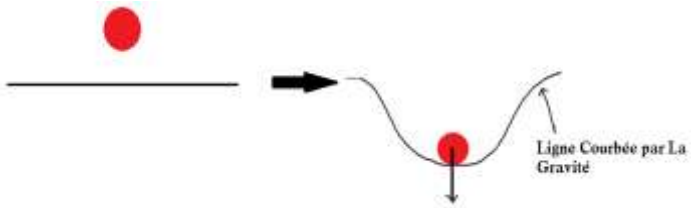


Fig. 6 : Effet Gravitationnel du Marché.

L'équilibre, conformément à la configuration que nous proposons dans Fig.5 est établi une fois que la demande et l'offre entre consommation et production est égalisée, ce qui correspond au positionnement sur le chemin d'équilibre.

Pour illustrer davantage ce qui se passe, nous ajoutons que l'établissement de l'équilibre Offre-Demande (Production-Consommation), s'accompagne de la création de courbure des lignes de production et de consommation. Ces courbures sont dues à l'attraction "gravitationnelle" exercée par la masse du marché. Cette configuration ressemble à l'effet de Bernoulli pour lequel la zone délimitée par les lignes de production et de consommation tend à se rétrécir sous l'effet de décalage de pression. On a la figure suivante :

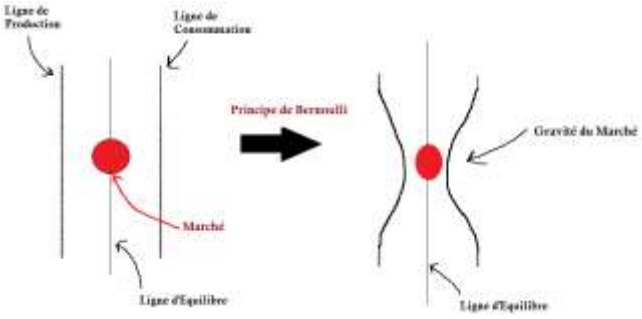


Fig. 7 : Effet du Marché sur l'Offre et la Demande.

Ajoutons que l'analogie avec le principe ou théorème de Bernoulli que nous proposons ici dans cette réflexion n'est que formelle. Toutefois ce théorème permet de montrer la similitude remarquable existante entre les faits physiques et économiques et donne plus d'assurance que les réflexions des fondateurs de l'interface mécanique newtonienne et économie depuis les Walras n'étaient pas insignifiantes [4,7].

D'autres aspects épistémologiques concernant l'interface Physique-Economie feront l'objet de futures contributions.

Bibliographie

[1] SMITH A., 1776, *Recherches sur la nature et les causes de la richesse des nations*. Réédition chez GF-Flammarion, 1991
[2] RICARDO D., 1817, *Des principes de l'économie politique et de l'impôt*, Réédition, Flammarion, 1977.
[3] SAY J-B, (1828-1829), *Cours complet d'économie politique*, Réédition, GF-Flammarion, 1996.
[4] WALRAS A., 1831, De la nature de la richesse et de l'origine de la valeur, Paris : Félix Alcan, 1938
[5] COURNOT A.A., 1838, *Recherches sur les principes mathématiques de la théorie des richesses*
[6] MARSHALL A., 1890, *Principles of Economics,* Macmillan, London, 8ème édition publiée en 1920.
[7] WALRAS Auguste et Léon., Œuvres économiques complètes; Editées sous la responsabilité de Pierre Dockès, Centre Auguste et Léon Walras, Paris, Economica 14 volumes (1987-2005)
[8] PARETO V., 1896, Cours d'économie politique, Tome 1; LAUSANNE, F. ROUGE, ÉDITEUR Librairie
[9] ROBBINS, L, 1937, An Essay on the nature and significance of economic science, London : Macmillan.
[10] KEYNES J. M 1969, *Théorie générale de l'emploi, de l'intérêt et de la monnaie*, Payot.
[11] BRUHAT, G., 1967, *Mécanique*, 6e édition, Masson,
[12] PEREZ J. P., 1997, *Mécanique*, Masson.
[13] EINSTEIN A., 1915, *Théorie de la relativité générale*.

SOME IDEAS ON LOGIC

Colin **MCGINN**
(Auteur indépendant)

Résumé. Les systèmes logiques classiques ne sont pas à vrai dire les seuls systèmes. A côté de la logique modale, la logique déontique, la logique épistémique et d'autres systèmes bien connus, nous devons laisser la place à une logique dévouée aux prédicats. Cela peut être réalisé en traitant les prédicats comme des constantes logiques et en rendant compte de tout autre expression au moyen de lettres schématiques. Le résultat est une logique inversée dans laquelle ce qui est une constante logique dans un système devient une lettre schématique dans un autre. La logique est vraiment l'étude de tout type d'inférence, sans préférence pour une catégorie d'expressions en particulier. Ce papier fait valoir que la logique ne doit pas être conçue comme l'étude des relations logiques entre les propositions. La logique est plutôt l'étude de la structure logique de la réalité objective, telle qu'elle existe en dehors des propositions. Néanmoins, il peut y avoir une logique des propositions, si cela est dérivé en premier lieu d'une logique de la réalité. Le réalisme des universaux joue un rôle clé dans l'argument. L'objectif général est de mettre à nu le fondement métaphysique de la logique. L'auteur cherche à répondre à une question négligée: d'où vient notre amour pour la logique? On fait valoir que la logique représente l'esprit humain dans sa correspondance essentielle avec la réalité logique objective, ce qui affirme que nous sommes des êtres rationnels. La question est de savoir si « est » possède deux significations (comme le mot anglais « Bank »). On fait valoir que contrairement aux idées reçues il n'y a pas une bonne raison de discerner une ambiguïté entre le "est" de la prédication et le "est" de l'identité. Il est assez facile d'offrir des paraphrases des propositions pertinentes selon lesquelles « est » a un sens unifié. L'analyse montre que le « est » signifie toujours la prédication. Il est très commun de parler des nombres comme s'ils possédaient des parties composées d'autres nombres. Mais il s'avère qu'une fois nous aurons mis au clair la nature de la relation partie-tout, il s'agira bien là d'une erreur qui résulte de la confusion entre les nombres et les marques que nous utilisons pour nous référer à eux.

Mot-clés : logique classique des prédicats, lettres schématiques, logique inversée, structure logique, proposition, être rationnel, fondement métaphysique, réalisme, « est », prédication, nombres.

ملخّص. لا يعتبر المنطق الكلاسيكي على نحو حقيقي النسق المنطقي الأوحد، فبالإضافة الى منطق الجهات والمنطق التوجيهي والمنطق المعرفي وبعض الأنساق الأخرى المعترف بها، يجدر بنا أن نخصّص مجالا لمنطق خاص بالمحمولات يقوم على معالجة هذه الأخيرة باعتبارها ثوابت منطقية و استصفاء كلّ عبارة أخرى بواسطة أحرف التمثيل. و تكون النتيجة عندئذ منطقا معكوسا يكون فيه ما يعتبر ثوابت منطقية في نسق ما أحرف تمثيل في نسق آخرا، فالمنطق هو حقّا دراسة أيّ ضرب من ضروب الإستلزام بغضّ الطرف عن ماهية مقولة التعبير. تحاول هذه الورقة إثبات أنّه لا يمكن اعتبار المنطق دراسة للعلاقات المنطقية بين القضايا، إذ هو بالأحرى دراسة البنية المنطقية للواقع الموضوعي كما يوجد خارج القضايا، و مع ذلك فإنّه بالإمكان وجود منطق للقضايا (مع أنّه في ذاته مستلّ من منطق سابق للوقائع). تلعب النزعة الواقعية في الكلّيات دورا مركزيا في هذه المحاججة، و هدفنا العام هو بيان الأسس الميتافيزيقة للمنطق. ويسعى المؤلّف للإجابة عن سؤال مهمل : من أين ينبع حبّنا للمنطق ؟ إنّه من الواضح أنّ المنطق يصوّر الذهن البشري في مطابقته المركزية للواقع المنطقي الموضوعي ممّا يثبت أنّنا كائنات عقلانيّة. ومن بين الاسئلة التي تطرحها الورقة نجد السؤال التالي :ماذا لو كان لكلمة "يوجد" معنيان (على غرار كلمة "بنك" في الانجليزية)، فمن الواضح أنّه دون اعتبار غاية البحث عن الصواب ، فإنّه ما من سبب وجيه لرفع اللّبس فإنّ الوجود في كلمة "يوجد" غير ذلك الحادث بين كونها آداة للحمل أو آداة لمبدأ الذاتية أو الهويّة بالمعنى المنطقي. إنّه من السهل تماما تقديم جمل تفسيرية متمّمة للجمل التي تكون فيها لكلمة "يوجد" دلالة واحدة. و قد أظهر التحليل أنّ المعنى المقترن دائما بكلمة "يوجد" هو عمليّة الحمل. وينتهي ماكقين عند السؤال المتعلّق بالوضع الانطولوجي للأعداد. إنّه من العاديّ جدّا القول بأنّ الأعداد تعتبر جزءا مكوّنا لاعداد أخرى ، غير أنّ ذلك يكون خاطئا متى وضّحنا طبيعة الجزء و الكلّ. يظهر الخطأ من جرّاء الخلط بين الأعداد و العلامات الدّالة على تلك الأعداد.

كلمات مفتاحية : منطق كلاسيكي للمحمولات، أحرف تمثيل، منطق معكوس، بنية منطقية، قضية، كائن عقلاني، أسس ميتافيزيقية، "يوجد"، واقعية، حمل، أعداد.

Abstract. It is argued that classical logics are not the only genuinely logical systems. In addition to modal logic, deontic logic, epistemic logic, and other recognized systems, we must make room for a logic devoted to predicates. This can be done by treating predicates as logical constants and rendering every other expression by means of schematic letters. The result is an inverted logic in which what are logical constants in one system are schematic letters in another. Logic is really the study of any

kind of entailment, no matter what the category of expression is. This paper argues that logic should not be conceived as the study of the logical relations of propositions. Rather, logic is the study of the logical structure of objective reality, as it exists outside of propositions. Nevertheless, there can be a logic of propositions, though this is derivative from a prior logic of reality. Realism about universals plays a key role in the argument. The general aim is to provide the metaphysical basis of logic. The author seeks to answer a neglected question: whence our love of logic? It is argued that logic depicts the human mind in its essential correspondence with objective logical reality, thus demonstrating that we are rational beings. The question is whether "is" has two meanings (like "bank"). It is argued that contrary to received wisdom there is no good reason to discern any ambiguity in "is", as between the "is" of predication and the "is" of identity. It is quite easy to offer paraphrases of the relevant sentences according to which "is" has a unitary meaning. Analysis reveals that "is" always means predication. It is common to speak as if numbers have parts consisting of other numbers. But it turns out that this is a mistake, once we are clear about the nature of part-hood. The error appears to arise from a confusion of numbers with the marks we use to refer to them.

Keywords: predicate classical logic, schematic letters, inverted logic, logical structure, proposition, rational being, metaphysical basis, realism, "is", predication, numbers.

Inverted Logic

The standard logical systems of propositional calculus and predicate calculus include two sorts of symbols: logical constants and schematic letters. Thus we have the constants "and", "or", "not", "if", "for some *x*", "for all *x*"; and the schematic letters "*p*", "*q*", "*F*", "*G*", "*a*", "*b*". A formula will contain a mixture of these symbols: for example, "*p* and *q*" and "for some *x*, (*Fx*)". What such formulas say can be expressed informally as follows: "the conjunction of any two propositions" and "something is such that it has a property *F*". When stating the entailments of formulas in these logical systems (i.e., propositional calculus and predicate calculus), we say things like: "No matter what the two propositions *p* and *q* you conjoin are, you will have each of *p* and *q* as an entailment", or "No matter what *F* you choose is, if everything is *F*, then a particular thing is *F*". The aim is to express the generality of the entailments that depend on the logical constants in these systems; this is achieved by employing a combination of schematic letters ("placeholders") and expressions

with a constant meaning ("interpretation"). Hence we say that any argument of a certain general form is valid, where the form is fixed by the logical constants and the schematic letters. Logical form is the residue left when ordinary interpreted expressions of certain categories are replaced by schematic symbols, leaving only the designated logical constants.

Different logical systems may treat different expressions as logical constants with characteristic entailments. Modal logic adds new symbols: □ and ◊, which represent the constants of "necessarily" and "possibly" respectively, to standard systems and investigates the entailments thereby generated. Similarly for epistemic logic, deontic logic, tense logic, indexical logic, mereology, and so on. It is a question whether the expressions treated as logical constants in these various systems have anything interesting in common—is there a well-defined notion of a logical constant that transcends what we are *treating* as a constant in various systems. Is it merely arbitrary what we call a logical constant? Could any expression be a logical constant in *some* system? It may seem that the answer to that last question, at least, must be no, since no existing system treats sentences and predicates as logical constants. But *could* we construct a logical system that treats predicates, say, as logical constants, with other expressions treated as schematic letters? That is, can we invert the roles of the two sorts of expression in standard logic? Can we coherently treat predicate expressions as logical constants and connectives and quantifiers as schematic letters? Can we thereby investigate the entailments of predicates, in particular, by generalizing over other semantic categories? If we can, the question of what counts as a logical constant becomes completely system-relative; at any rate, predicates will be seen to possess a "logic", as much as connectives and quantifiers.

It is actually quite easy to construct systems of this kind. I will call such a logical system a "predicate logic", contrasting it with what are better called "truth-functional logic" and "quantifier logic". The question is what category of expressions are we constructing a logical system for—what entailments are we seeking to capture? Once we select such a category, we formulate the entailments by generalizing over the other semantic categories, by use of suitable schematic letters. So consider a system containing two interpreted predicates, "is a vixen" and "is a lioness"--the logical constants of the system--along with associated schematic letters. There are two cases to consider: a truth-functional system and a quantifier system. To deal with the former, add a pair of symbols, "*a*" and "*b*", which can stand for particular animals. Then we can form conjunctions, disjunctions, and negations of whole sentences, like "Not (*a* is a vixen and *b* is a lioness)". But suppose we don't use particular interpreted

connectives; instead we use schematic letters that hold a place for *any* connective. For example, let us use "*C*" to stand for either conjunction or disjunction (a schematic letter for two-place truth-functional connectives). A formula of this language will then look like this: "*a* is a vixen *C b* is a lioness", where "*C*" functions as a schematic letter replaceable by particular connectives. Now we ask about the entailments of such a formula. Since the predicate "is a vixen" entails "is a female fox" and "is a lioness" entails "is a female lion", the entailments of the complex sentence follow simply from these two entailments; so we obtain, "*a* is a female fox *C b* is a female lion". We may infer this formula from the previous formula, based on the entailments of the two predicates. *We don't need to worry about what C is*. If *C* is conjunction, then the entailed sentence is a conjunction that follows logically from the first sentence (by virtue of the meaning of the predicates), while if C is a disjunction, then the disjunctive sentence also follows logically. No matter how we interpret the connective schematic letter, the inference goes through, because the entailments depend purely on the predicates involved. The connectives don't interfere with *these* entailments, just as the identity of the predicate doesn't affect the entailments due to the connectives in classical logic. We can generalize over connectives by replacing them with schematic letters, thereby focusing on the logical properties of the predicates in the formulas. Thus we treat the predicates as logical constants in this system of "predicate logic" and the connectives as mere placeholders. (We can do the same for one-place connectives like negation, but there is only one to consider, since standard logic contains only negation as a one-place connective—still, the distinction between constant and schematic letter applies also with respect to the class of one-place connectives.)

Now we move to languages with quantificational structure, so we will need an apparatus of individual variables to go with the quantifiers. A typical formula would be this: "For some *x*, *x* is a vixen" or "For all *x*, *x* is a lioness". Now we introduce a schematic quantifier letter "*Q*", to be read "any quantifier", so that we can write, "*Q*x, x is a vixen". The letter can be read disjunctively—either existential or universal quantification—as the schematic predicate letters of standard logic can be read as disjunctions of interpreted predicates (either "is white" or "is red" or "is a man", etc). What are the entailments of a formula containing the letter "*Q*" in this system? There are none to speak of in virtue of *that* letter, since the entailments of quantifiers depend on the particular quantifier, not the general category of being *a* quantifier. But the predicates in the formula have their usual entailments. Thus we can say: anything of the form "*Qx*, *x* is a vixen" will entail "*Qx*, *x* is a female fox", no matter what quantifier we substitute for "*Q*" is (existential or universal). We can also, of course,

deduce "*Qx*, *x* is a fox" from "*Qx*, *x* is a vixen". Again, we have generalized over quantifiers to tease out an entailment due solely to a specific predicate. It is easy to see that the same principles will apply once we start constructing complex formulas using connectives and embedded quantifiers. We will be able to write things like: "*Qx*, *Qy* (*x* is a vixen *C y* is a lioness *C x* is smaller than *y*"), which has such substitution instances as: "For all *x*, there is a *y* such that *x* is a vixen and *y* is a lioness and *x* is smaller than *y*", which we obtain simply by substituting on the schematic letters "*Q*" and "*C*". We can obviously make other substitutions--say, by inverting the initial quantifiers or using disjunction not conjunction. It is easily seen that, no matter what we replace the schematic letters by, we will derive the same consequences in virtue of the meaning of the constant predicates "vixen" and "lioness". The validity of the inference does not depend on the choice of quantifier or connective, but solely on the meaning of the specific predicates.

Thus we have inverted the usual procedure of standard logic by treating different expressions as logical constants and schematic letters. What is going on here can be seen by considering an ordinary sentence like, "Every vixen is smaller than every lioness and some lionesses are nimbler than some vixens". Here we have quantifiers, connectives, and predicates combined to produce a sentence. That sentence has various entailments in virtue of expressions in each semantic category. We can decide to focus on certain of these entailments by making logical generalizations. We do this by treating some expressions as logical constants and replacing others by placeholders. Thus we say that any conjunction of propositions entails each conjunct, or that if everything has a given property then each thing has that property. But we can *also* say that if anything is true of vixens it must be true of female foxes—whether involving quantifiers or connectives. We can express this in a logical system by generalizing over other types of expressions while keeping the predicate fixed. If we are interested in the logic of zoological taxonomic terms specifically, we can construct a system that focuses on their entailments alone, by replacing everything else with schematic letters. Another way of putting it is this: standard logic looks at the analytic entailments of connective concepts and quantifier concepts; an inverted logic looks at the analytic entailments of predicate concepts. To take a very simple example, we can investigate the logical properties of a sentence like "*a* is a vixen". There are no connectives or quantifiers in this sentence, so the logic of connectives and quantifiers need not be invoked; but we can spell out the logical properties of the contained predicate, noting that it entails "*a* is a female fox" and "*a* is a fox". Here we will say that it doesn't matter what object you refer to in a simple sentence like this,

the predicate entailment still holds. We might also note that the sentence entails "Something is a vixen" and is entailed by "Everything is a vixen", focusing on the subject term and generalizing with respect to the predicate. Either procedure is acceptable and simply depends on what kind of entailment we want to highlight. Every word in a sentence has entailments of some sort, so every word has a logic associated with it. Standard propositional calculus and predicate calculus single out certain words for logical attention, but we can single out other words and not be accused of arbitrariness or error, as in the inverted logic. We can therefore add predicates to the list of words that can coherently be treated as logical constants, such as modal, epistemic, deontic, or mereological words.

It is true that the predicates I have selected do not occur as often in speech or writing as other words, so that their logic is not as pervasive as that of other words (e.g. "and" or "not"). But that is a merely statistical fact, with no bearing on logical questions. Should we say that epistemic logic isn't really logic because "know" does not occur as often as "and" and "not"? Doesn't it depend on the kind of speaker you are and the kind of subject matter that most occupies you? You may have an intense and exclusive interest in simple subject-predicate propositions about knowledge, not caring to conjoin or disjoin such propositions or insert quantifiers into them. It is the logic of epistemic concepts that preoccupies you, not the logic of conjunction, disjunction, and quantification. Then it will be natural to construct logical systems based around the concept of knowledge, ignoring systems that focus on truth-functional compounding and quantifiers. Similarly, you may be gripped by the logic of zoological nouns like "vixen" and "lioness", because of your frequent interactions with such animals as foxes and lions, being quite indifferent about those other constructions. You may find connectives and quantifiers logically *boring*. Then you will put your efforts into fashioning logical systems that formalize predicate entailments, maybe expanding your logical interests beyond your initial zoological preoccupation. You will leave connective and quantifier logic to those with different predilections. And it is noteworthy that such logics sprang up among mathematicians interested in formalizing the sentences of mathematics, in which quantifiers play a central role. But zoologists with little interest in general laws might have different logical interests: they may want to know how words for animal groups are logically related. They might then naturally develop a side interest in words for kin relations: "bachelor", "spinster", "widow", "brother", and so on. They thrill to the logical proposition that a brother is a male sibling, or that no one can be both a widow and a wife, or that husbands cannot avoid being married. What fascinate these logicians are

the logical relations between classes of predicates; and such words occur most frequently in their speech. To them our favored logical systems, with their chosen logical constants, may appear perverse—inversions of the natural and universal logical order. They wonder why we are so interested in such bland logical material (what is so fascinating about "or"?). It might even be that they worked out our logical systems long ago, finding them trivial as well as boring; they find "predicate logic" systems far more intellectually challenging. This is what they teach in university logic courses, not our preferred systems (everybody would get an easy A in *our* systems).

Inverted logic is thus really a species of logic. Formally, it works in the same way orthodox logic works, with selected logical constants and general schematic letters. If this is right, then the question of whether the standard logical constants have any special status becomes particularly pressing. Maybe the right thing to say is that every word has a meaning that carries certain characteristic entailments, so that every word *can* be treated as a logical constant relative to other words, depending on interests. The word "and" is no more *absolutely* a logical constant than is the word "vixen". Every word can be *either* a logical constant or *not* a logical constant, depending on the system. Logic is simply the theory of entailment, and entailment is a trait of every word. Any system that formally captures entailments deserves to be called a logical system.

Logic without Propositions (or Sentences)

The way logic has been presented for a hundred years or so is as a theory of the logical relations between propositions. Propositions have entailments and figure as the premises and conclusions of arguments. Not much is said about the nature of propositions in the standard explanations of logic, but we are to assume that they correspond to the meaning of sentences—declarative sentences. So logic deals with representational entities—things that stand for states of affairs in the world. It does not deal with states of affairs themselves—with objects and properties. Sometimes talk of propositions is "eschewed" (Quine) and sentences are made the subject matter of logic, construed as marks and sounds, or some such. Then we hear what is called "propositional logic" described as "sentential logic". If we wanted to go one stage further in the direction of concreteness, we could re-describe propositional logic as "statement logic" or "utterance logic", where these are conceived as actual speech acts. Thus we would investigate the logical relations between speech acts. It is the same for what is called "predicate logic": logic investigates the logical relations between predicates, especially as they interact with quantifier

expressions. We are still investigating sentences, but we analyze them into predicates and quantifiers. If we don't like the talk of predicates (bits of language), we could re-name this branch of logic "concept logic": then proposition logic and concept logic would both deal with what is *expressed* by language, while sentential logic and predicate logic address themselves to linguistic expressions. No matter how we formulate it, logic is conceived to operate at the level of representational entities, with logical relations defined over these entities. Logic is essentially concerned with the discursive. So conceived, modern logic is "the logic of (discursive) representations". Consequence, consistency, and contradiction are all regarded as relations between sentence-like discursive entities (propositions, sentences, statements, assertions, utterances, speech acts). Premises and conclusions of arguments are precisely such entities. The laws of logic are the laws of the logical relations between these entities.

But there are two points about logical laws that call this representational conception into question. The first is that we presumably want logical laws to apply to worlds in which there are no representations. Suppose that no representational beings had ever evolved in the universe, so that there are neither sentences nor propositions (I will ignore Fregean Platonism about propositions)--there is no language and no thought. Then logical relations defined over representations will not exist in that universe; there will be no logical laws of *this* kind. But will there be no logical laws of *any* kind? Surely not: the universe will still be governed by the laws of logic, as they are traditionally conceived. Contradictions will still be impossible, by the laws of logic: but they will not be defined over anything propositional. Logical laws like this are no more language-dependent than natural laws, such as the law of gravity. We can *state* logical and natural laws by means of propositions, but the laws themselves don't *concern* propositions. The laws can exist without the existence of any statement of them. So logical laws are not *inherently* propositional: they can hold in a world in which there are no propositions (*a fortiori* for sentences and speech acts). The universe would be subject to the laws of logic even if no thinking beings ever came into existence.

The second point is that the traditional way of formulating logical laws does not make them about propositions or sentences. Thus: "Everything is identical to itself"; "Nothing can both have a property and lack it"; "Everything either has a given property or lacks it". In stating these logical laws no mention is made of propositions or sentences; the subject matter consists entirely of objects and their properties. There is thus no *need* to invoke propositions when

stating logical laws; and such laws can clearly hold in a world without representations—you just need objects and properties, with logical relations defined with respect to them. Then are there two kinds of logical law—laws of propositions and laws of objects and properties? That seems unappealing: one would like a uniform account of what a logical law is. The same goes for non-standard logics, like modal or deontic logic: they also hold in worlds that contain no propositions (or sentences). If we add to the traditional three laws of logic so as to include further logical truths, such as Leibniz's law of identity or the logical relations between colors, then again we have logical laws that are not defined over propositions—they concern the logical nature of the identity relation and of color themselves. They deal with logical necessities that are not formulated by reference to propositional entailments: it is a logical truth about identity, say, that (in addition to being reflexive, transitive, and symmetrical) if *a* is identical to *b*, then *a* and *b* have all properties in common. Again, we talk here only of objects and properties (or relations), not of propositions *about* them. These are *de re* (referential) necessities, not *de dicto* (non referential) necessities. Identity *itself* entails that identical objects are indiscernible, not propositions *about* identity; just as having a particular property *itself* entails not having the negation of that property, not propositions *about* the property. Logical facts obtain independently of discursive entities like propositions or sentences.

Rather than accepting that there are two kinds of logical laws, it would be better to demonstrate some kind of relationship of dependence between them. It seems too much simply to *deny* that propositions enter into logical relations, since that would be to condemn standard logic as completely misguided, based on an outright falsehood. Instead, we could try to see its entailments as *derivative* from deeper logical laws that are not inherently propositional: thus propositions have "derived logicality". But how do we set about doing that? I propose that we re-conceptualize the matter along the following lines. Suppose we accept an ontology consisting of particulars and universals (objects and properties); then we can distinguish the following three areas of investigation: (i) which particulars instantiate which universals, (ii) what the nomological relationships are between universals, and (iii) what the logical laws governing universals are. That is, there are three sorts of fact about universals: first, which objects fall under them, how many, and so on; second, what laws of nature apply to universals (e.g. the laws of motion); third, what logical characteristics universals have. Each of these questions is about universals themselves, not about propositions or concepts. We are interested here in the third question, but it is worth observing how it relates to the other two questions, which are clearly not at all concerned with propositions or sentences. And the answer we would give

will reflect the nature of the question: we will refer only to universals and their inherent logical relations (though of course we will be *using* propositions or sentences to do so).

These relations, I suggest, will be of four basic kinds: identity, exclusion, consequence, and combination. Logic is then fundamentally about these four basic logical relations—with proposition-centered logic depending on the more basic logical facts. The logical relation of *identity* is captured in the law of identity for universals (also objects): every universal is identical to itself, and to no other universal. Then we will detail the logical properties of identity, noting also that identity is a necessary relation. None of this concerns propositions or sentences about identity, though there will be consequences for identity statements of familiar kinds. By *exclusion* I mean the way one universal excludes others from being instantiated in the same object—any which is incompatible with the first. Thus being square will exclude being not square, say by being triangular or circular. Every universal necessarily (logically) excludes other universals—that is a logical law. This is a *de re* necessity, not a truth about concepts or predicates: it could obtain without there being any concepts or predicates. By *consequence* I mean the way one universal can be sufficient for another: it is sufficient for being an animal that something is a cat, sufficient for being a man that someone is a bachelor, sufficient for having a successor that something is a number. One universal necessitates another, and perhaps another in turn. Logic (in a broad sense) traces out these consequence relations. By *combination* I mean logical properties of collections of universals: for example, if an object x instantiates a collection of universals U, then x instantiates each member of U; and if an object x instantiates a given universal F, then x instantiates F *or* any other collection of universals (these laws are intended to correspond to the standard rules of conjunction elimination and disjunction introduction). The idea here is that we can move from facts about collections of universals to facts about specific universals, and from facts about specific universals to facts about collections of them. Intuitively: if x instantiates F and G, then x instantiates F; and if x instantiates F, then x instantiates F or G. Here we logically link objects with universals considered as members of collections. Objects can be in the intersection of two universals (F *and* G) and be in the union of two universals (F *or* G).

All these logical laws are stated over objects and properties. The claim then is that this is the metaphysical basis of logical laws as they are stated over propositions. It is in *virtue* of the former laws that the latter laws hold. It is fairly obvious how this goes: we just need to make a step of semantic ascent. Thus: if

being *F* necessitates being *G*, then "*x* is *F*" entails "*x* is *G*"--and similarly for exclusion. The logical laws of "and" and "or" fall out of logical laws concerning objects and properties, as just outlined. The law of existential generalization is based on the fact that if a *particular* object instantiates a universal then *something* does; and the law of universal instantiation is based on the fact that if *everything* instantiates a given universal then any *particular* thing does. In the case of "not", used as a sentence operator, we can take negation as applicable to universals themselves, so that *not-F* is itself a universal. Then we can interpret "*not-not F*" as meaning "the negative of the negative of *F*", i.e. *F*. Alternatively, we can construe negation as equivalent to "belongs to the complement of *F*" (e.g. "*x* is not red"). What we are doing is simply taking negation to apply to properties, not concepts or words; and similarly for conjunction and disjunction. An object can have the *property* of being *F* and *G*, or the *property* of being *F* or *G*, or the *property* of being *not*-F. All the standard so-called sentence operators have a more fundamental interpretation as operations on universals, forming complex universals from simpler ones. There are then logical relations between these universals, and hence logical laws. This allows such laws to obtain in worlds that lack language or anything representational. It makes them *de re* not *de dicto*—about reality not our description of it.

We could express all this by speaking of states of affairs, but I think we get the basic ontology right by sticking to talk of objects and properties (particulars and universals)—these being what states of affairs are all about. Objects and properties have logical laws governing them, on this conception, as they have natural laws governing them, and as they form particular facts about the distribution of properties in the universe. None of these facts depends on propositions or concepts or words. Of course, we can formulate propositions *about* these laws and facts, but they are not themselves constituted by anything internal to propositions. A logical principle stated at the level of propositions is thus derivative from the more basic level of the logic of universals. Predicates entail other predicates *because* the universals they denote or express themselves necessitate other universals—this being an entirely non-linguistic matter. So-called predicate logic is really property logic, seen through the prism of language. Strictly speaking, predicates don't *have* logical relations, except derivatively on properties. If there were no properties obeying logical laws, then there would be no predicate logic. If there were no universals that inherently exclude each other, then there would be no law of non-contradiction at the level of propositions or sentences. *Words* cannot inherently exclude one another, and neither can concepts, construed independently of properties (as, say, dispositions to assent, or bits of syntax in the language of thought). The

things that stand in logical relations at the most fundamental level are objects and properties; any other logical relations are transmitted upward from that basis. It is *meaning* that transmits logic from its original home in the world to language. If we try to view meaning as cut off from objects and properties, then we lose logic defined at the discursive level. Objects and properties are "logic-makers" as well as "truth-makers"—they are ultimately where logical truth and truth in general come from. Nothing is true but reality makes it so, as Quine said—even logical truth.

Frege described logic as "the laws of truth", thus locating it at the level of truth *bearers* ("thoughts" in his terminology). But this very formulation points to a different conception, since truth turns on the condition of the world beyond representation—and likewise for logical relations. Just as a proposition is true in virtue of the way the world is, so its entailments hold in virtue of the way the world is—specifically, the logical relations between universals. The truth-makers are also the logic-makers. The laws of logic are not fundamentally laws *of* truth but laws of what *make* truths true—that is, the logical matrix in which universals are embedded: identity, exclusion, consequence, and combination. Logic does not exist independently of the world, as if confined to the level of propositions—as if it reflected the structure of human *thought*—but rather is immanent in the world, part of what constitutes it. It is not that we impose logic on the world, having first found it in thought; rather, logic imposes itself on thought, having its origin in the world beyond thought. The propositional calculus and the predicate calculus, as they exist today, are really encodings of a mind-independent logical reality, which exists outside of sentences and propositions; they are not the primary bearers of logical relations (the same goes for modal logic, etc).

This way of looking at things clearly depends on a robust ontology of properties or universals—they cannot be identified with predicates or even concepts in the mind, or else the contrast I am insisting on would collapse. The logic of universals would simply *be* the logic of predicates or concepts. Perhaps this kind of nominalism or psychologism about universals is part of the motivation for the view of logic I am rejecting; but I take it such views should not be accepted uncritically, and indeed are very implausible—for how then could objects have properties in a world lacking words or human concepts? Once we accept the reality of universals, fully and unapologetically, the approach I am defending begins to look attractive, indeed unavoidable.

This incidentally implies that the usual separation between first-order logic and second-order logic is philosophically misguided (though technically correct): we are essentially concerned with properties and their relations even at the level of first-order logic, because we need to interpret the predicates as denoting universals that form the basis of logical laws. Particulars and universals are the foundation of the whole logical edifice, even when we are not quantifying explicitly over the latter. Universals are ontologically basic and enter into all our thought: they are the original ground of logical laws, even when dealing with first-order logic.

Frege opposed psychologism about logic—the idea that logical laws have to do with the mind (apart from being apprehended by the mind). To this end he fashioned his ontology of objective "thoughts"—a clear oxymoron. These thoughts were taken to exist independently of the mind and to precede the existence of the mind. I won't argue against this position here, merely noting its extravagance; but I will say that I agree with the motivation behind it—we don't want logic to depend on human constructions, whether psychological or linguistic. When logic is conceived as the deductive science of propositions there is a distinct danger of psychologism, but the way to avoid it is not to objectify propositions; rather, we should locate logic at a deeper level—in the world beyond thought. There is nothing at all psychological about universals, for a realist about universals—they exist quite independently of minds. They are the building blocks of reality, since there is no particular that precedes universals—there are no property-free objects. Thus psychologism is avoided by locating logical laws in the non-psychological world of objects and universals, not (*pace* Frege) in a supposed realm of objective transcendent "thoughts".

It is a consequence of the position advocated here that some knowledge of extra-mental reality is a priori: for we know the laws of logic a priori, and yet these laws characterize the world beyond the mind. Again, this consequence may be part of the motivation for a propositional view of logical laws, because then we can confine a priori knowledge to the contents of the mind (with language reckoned to the mind). If we think of logical necessity as analytic, and construe analyticity as arising from language and concepts, then we will be inclined to suppose that logical laws arise from the inner nature of mental representations or words. But again, such views must not be accepted uncritically or assumed without acknowledgment—and upon examination they are very problematic. I won't undertake a criticism here, merely noting that we need to take seriously the possibility that some a priori knowledge just *is*

knowledge of the structure of extra-mental and extra-linguistic reality. We know from our grasp of the nature of universals that they have certain kinds of exclusion and consequence relations—however jarring that may sound to certain kinds of empiricist or positivist assumptions. We have a priori knowledge of logical laws, and these laws characterize the objective nature of universals—*so* we have a priori knowledge of the general structure of mind-independent reality. This is just the way things are, like it or not. Sorry!

Finally, does the notion of logical form rest on a mistake? Philosophers and logicians have been apt to speak of the logical form of propositions or sentences, but an astute follower of the logical realism defended here might protest that this is a category mistake, since logical form properly belongs to states of affairs not to sentences or propositions *about* states of affairs. I agree with the spirit of this protest, and admire its extremism, but I think it goes a bit too far. We can agree that universals themselves exhibit logical form, in the sense that they are arranged in a logically determined totality, as defined by identity, exclusion, consequence, and combination. But there is nothing to stop us from supposing that this form is reflected in the structure of propositions themselves. The subject-predicate form, say, is a reflection of the object-property form: two complementary elements in a relation of mutual entanglement (predication and instantiation, respectively). Nor is there any objection to selecting a class of expressions designated as logical constants, and then defining a notion of logical form on that basis (though this may be more arbitrary than has been recognized). What is mistaken is the composite idea that logical relations depend on logical form and that logical form is an intrinsic feature of propositions, considered independently of reality. That is just the dogma of logical representationalism (to give it a name) stated another way. Logical relations, to repeat, cannot be defined purely over representations, as a matter of their very nature: so they cannot result from the logical form *of* representations. Any logical form that propositions have must be derivative from a more basic logical reality—the logical form inherent in the underlying universals.

If the position of this paper is correct, we should stop talking of propositional and predicate logic (though we may still speak of the propositional and predicate *calculus*—this being a type of notation). For that gives the metaphysically misleading impression that logic is *grounded* in propositions or predicates, not in the logical order of the world itself. We have different symbolic systems for representing (a fragment of) natural languages, but logical reality itself has nothing essentially to do with these systems. Logical

reality is external to such systems, being essentially not a matter of symbols at all (so "symbolic logic" is misleading too). Logical laws *per se* exist in the world outside of all representation, and it is the job of our systems of representation to reflect their nature as best we can. They may do so without claiming to be constitutive of logical laws. The laws of logic stand outside of any notation for representing them, though they can be stated in a system of notation, more or less perspicuously.

Love of Logic

Why do we love the predicate calculus?[1] Because it is a diagram of thought as it reflects the logical order of the world. It depicts thought in its essential relation to logical reality. So it does not depict thought as a psychologist might; it depicts thought as it conforms to the objective logical order. That order is not itself a matter of psychology: it pre-exists the human mind. It would not be wrong to say that the predicate calculus depicts this logical order, since it records objective logical truths. But that is not why we love it: we love it because it depicts *us* as logical, as bound to the logical order. Predicate calculus is the proof that we are a rational species; it is not merely a means to formulate proofs concerning logical reality. It diagrams the logical scaffolding of our thought—it pictures human reason (physics does not do that). Its symbols and structures remind us of our inherent rationality (*res cogitans*), and thus enhance our self-love. We love logic because it confirms our elevated self-image, and rightly so ("proper narcissism"). If we had never invented logic, we would be able to doubt our power of reason; but logic assures us that we swim in the medium of reason--that we occupy logical space as well as physical and temporal space. The formulas of predicate calculus are the precise expression of our nature as logical beings. As we gaze at great paintings and recognize our status as aesthetic beings, so we gaze at logical formulas and recognize our status as rational beings—that is, as beings that reflect the logical order of the world. Love of logic is bound up with love of ourselves: but this love of ourselves is a rational love, being the love of rationality.[2]

[1] I choose the predicate calculus as an example; other logical systems can be loved too, e.g. modal logic. I am raising the question of our logical affections because it is never raised in the philosophy of logic—yet it is surely a familiar fact of human psychology. We have emotions about logic, positive ones: we find logic adorable, beautiful, "sexy". I am asking why we have such emotions.

[2] Our love of logic is thus not like our love of other subjects, such as geology or astronomy, which do not depict *us*. Logic is special in that it depicts us as reflective of the objective order of logical relations—it is a kind of ideal psychology. It tells us how we think (in one sense), as well as what is logically correct.

Is

The standard view, enunciated by Russell, is that "is" is ambiguous between the "is" of predication and the "is" of identity (we might also add the "is" of composition, as in "this state is bronze"). Thus we have, "the cup is red" and "Hesperus is Phosphorus", where the two occurrences of "is" have different meanings. To claim that "is" has the same meaning in both occurrences would produce absurd consequences. If the "is" in "the cup is red" expressed identity, then the sentence would mean that the cup is identical to redness, which is false and absurd. If the "is" of "Hesperus is Phosphorus" expressed predication, then the sentence would mean that Hesperus has the property of Phosphorus, which verges on the meaningless and is certainly not true—"Phosphorus" is not a predicate but a singular term. So "is" must be ambiguous between the two cases, sometimes meaning identity and sometimes meaning predication. That would be a serious failing in natural language, requiring linguistic reform: our language systematically confuses two very different concepts.

But this conclusion is far too hasty; there is no need to adopt the ambiguity thesis in order to account for the meaning of "is". For, first, it is not difficult to construe the "is" in identity statements as simply the predicative "is", by expanding such statements in the obvious way, viz. "Hesperus is identical to Phosphorus". Here we have a predicate expression, "identical to Phosphorus", coupled with the "is" of predication, so that the sentence is saying "Hesperus has the property of being identical to Phosphorus". We don't need a separate meaning for "is" to account for its use in identity statements; we just need to fill out the predicate in the obvious way. Clearly "is" cannot express identity in the expanded version, or else the sentence would be saying that Hesperus is identical to identity with Hesperus, which is nonsense. The point is even clearer if we add a sortal term to statements of identity, as in "Hesperus is the same planet as Phosphorus": here "same planet" carries the attribution of identity, with "is" just acting as the predicative copula. When we use "is" alone in an identity statement this is just a shorter version of the explicit expansion that employs the identity concept directly. There is no "is" of identity.

Can we enforce uniformity of meaning from the other direction? That is, can we claim that "is" always expresses identity? It would certainly be difficult to do that if we read the sentences in question naively, as saying (for example) that the cup is identical to redness; but a simple paraphrase can resolve this problem. What if we rephrase "the cup is red" as "the color of the cup is (identical to) red"? That is a straightforward identity statement, and it is

straightforwardly true. The same trick can be applied to all predicative uses of "is", as in "the species of Felix is cat" or "the job of John Smith is philosopher". Put in stilted philosopher's language, we are paraphrasing "*a* is *F*" as "among the attributes of *a* is *F*-ness", where "is" expresses simple numerical identity. We can take this as a quantified statement along the following lines: "there are attributes *F* that *a* instantiates and one of these *F's* is identical to *G*-ness". Thus: "there is a (unique) color *C* such that the cup has *C* and *C* is identical to redness". This sounds rather ponderous, no doubt, but it corresponds quite well with the intuitive meaning of the original statement, more colloquially expressed as, "the color of the cup is red". (As to "the statue is bronze", this comes out as, "the material composing the statue is (identical to) bronze". Equally, we could paraphrase the sentence as, "the statue is composed of bronze" where the "is" here is just the usual "is" of predication, not a special "is" of composition.)

So there is nothing compulsory about finding ambiguity in "is"; in fact, it is quite easy to provide paraphrases that employ "is" in one meaning for all sentences that contain "is". And surely that is the preferable position, since it is hard to believe that natural language could harbor such a disreputable ambiguity—why not simply have two words for such very different concepts? There is the question which of the two theories we should prefer, given that both appear adequate. I incline to a mixed position, combining both types of paraphrase. The second type offers a convincing expansionary analysis, spelling out the underlying meaning of the sentence; but the first type makes it clear that the so-called "is" of identity is really short for "is identical to" or "is the same as", which contains the "is" of predication. Thus "the cup is red" has the same meaning as, "the color of the cup is identical to red". We turn the original sentence into a statement of identity, but that statement itself contains in its expansion a predicative use of "is", with identity conveyed by the attached predicate "identical to red". Predicative sentences turn out to be identity sentences, but identity sentences turn out to contain the "is" of predication. So in the final analysis "is" is always predicative, but ordinary predicative sentences are equivalent to identity sentences.

How then should we analyze "Hesperus is Phosphorus"—what is its underlying logical form? It turns out to mean the same as, "Among the attributes of Hesperus one of them is that of being identical to Phosphorus". We quantify over attributes and declare one of them to be identical to identity with Phosphorus—where "is" occurs in its predicative meaning. Thus: "There are attributes that Hesperus has and one of them is identical to identity with

Phosphorus". This sentence expresses an identity proposition concerning the attribute of identity with a given object, but in order to state that identity we need to use "is" predicatively. Given that the "is" in an identity statement so clearly means, "is identical with", this seems to be just what we would expect on the assumption that identity is at the root of all predication. All propositions are really identity propositions, on this view, formed by quantifying over attributes or properties. The recipe for constructing the underlying identity proposition is simply to refer to a property and declare it one of the properties an object has, as in "the color of the cup is (identical to) (the color) red". If the cup has many colors, it would be better to say, "*a* color of the cup is red", so as to avoid falsely imputing uniqueness, which can then be expanded into, "there are color properties that the cup has and one of them is identical to the property of being red". Second-order quantification plus identity therefore enter even into ordinary subject–predicate sentences—which is not what we have been taught to expect. But, as we know from Russell's theory of descriptions, language can be more complex than it seems on the surface when it is properly analyzed. First-order logic really embeds second-order logic (with identity) in underlying logical form. Still, "is" remains uniformly a device of predication, even as it occurs in second-order identity sentences. The impression that "is" is ambiguous disappears once we carry out the requisite analysis.

Mereological Arithmetic

The way we talk about numbers resembles the way we talk about physical objects in one respect: we talk as if numbers have parts. This is written into the language of arithmetic. Just as we say that a cake can be divided into parts, so we say that a number can be so divided. We also speak of adding and subtracting in relation to numbers, as we speak of adding and subtracting in relation to a physical thing or collection of things. You can subtract a slice from a cake or some marbles from a pile of marbles, or add to the cake or the marbles, as you can add or subtract numbers. Thus we think mereologically about numbers.

Pursuing this mereological way of thinking, we can (and some do) push it further. Take the number 15: this number can be divided by 3 to give 5, so we can say that 15 divides into three equal parts of 5. These parts are traditionally called "aliquot parts", meaning that 5 divides into 15 exactly three times, where 3 is a whole number (an aliquot part of a number is defined as an exact divisor of that number). This notion is also used in chemistry, where it means dividing a chemical sample into parts of equal quantity. Mathematicians also speak of

"aliquant parts", which do not divide to produce whole numbers—8 divides into the aliquant parts of 5 and 3. The numbers into which a given number divides can themselves be divided, ending in the whole number 1. Thus every whole number can be divided by 1, which is thus a part of every number. But these are not the smallest parts, because whole numbers can be divided—hence fractions. In the limit each number has infinitely many parts, as we keep dividing. The picture here is that a number is like a physical object in that it can be divided successively into smaller and smaller parts, the sum of which add up to the number in question. Thus there are part-whole relations between numbers, as there are part-whole relations between chemical quantities.

But there is a crucial disanalogy here, which undermines this whole way of thinking. Suppose I divide a cake or chemical sample into thirds: none of these third parts are identical to the others—we have three separate physical entities, which together compose the original object. But if I divide 15 into thirds I get the number 5, which *is* identical to the other (alleged) parts. The parts are identical to each other, being just the number 5. If we call the parts "P1", "P2" and "P3", we have "P1 = P2 = P3". It actually makes no sense to speak of combining 5 with itself--all that could ever give is 5. If it did make sense, we would have to conclude that 15 = 5. Similarly, if each number divides into 1 when divided by itself, we would have to say that every number is identical to 1, since every number would resolve into a collection of 1's, i.e. the number 1. It is of course true that *adding* 5 to itself three times gives 15, but adding is not mereological combining—combining 5 with itself can only give 5. What are called aliquot parts are not *parts* at all: 5 is indeed a divisor of 15, but it is not literally a part of 15. By contrast, aliquot parts of a chemical sample are genuine parts of that sample, being numerically distinct from each other, and combinable into the whole sample. If we think about it in terms of set theory, the set {5, 5, 5} is really just the set {5}, since 5 = 5; but the set {five molecules of C, five molecules of C, five molecules of C} is not identical to {five molecules of C}, since the former set specifies fifteen molecules of C. The set {5, 5, 5} is just like the set {Aristotle, Aristotle, Aristotle}—a peculiar way to represent the set whose only member is 5 or Aristotle. Combining Aristotle with Aristotle gives you only Aristotle, and similarly for the number 5. Numbers really don't have other numbers as parts, not literally.

How could this error have arisen? I suspect confusion between use and mention lurks behind it. I can certainly write down fifteen tokens of the numeral "1", and the set or aggregate of these tokens is not identical to a set or aggregate consisting of a single token of "1". We can rightly view these inscriptions (physical marks) as wholes with parts: the aggregate of the tokens is

composed of each token or sub-aggregates of tokens. A collection of written tokens of a given numeral does indeed have aliquot parts, just like a chemical sample. The set {"5", "5", "5"} is not the set {"5"}, since each token is distinct from the others. But we must not confuse tokens of numerals with numbers, which do not form aggregates in this way. Of course, to claim that a number like 15 *is* an aggregate of numeral tokens is both highly implausible and also not what those who speak mereologically of numbers intend. But if we fall prey to a use-mention confusion we could easily slip into the error I have identified. Then we will find ourselves saying things like, "Consider three occurrences of the number 5", which is really quite meaningless. In short: fifteen tokens of "1" are not fifteen parts of 15. And the number 1 is not a *part* of 15 at all, but simply one of its divisors.

Another source of potential confusion is that numbers can be attached to collections and the collections can be distinct from each other. Thus a collection of fifteen dogs can be divided into three collections of five dogs, where these collections are not identical with each other. We could reasonably assert that the fifteen-dog collection is made up of three five-dog collections. But again, it doesn't follow that the number 15 is itself made up of three fives; and there is really no such thing as "three fives" (unless that means "three *times* five"), since 5 is just itself and no other thing (there is only *one* five). If we confuse numbers with collections that numbers number, then we will be prone to misplaced mereological thinking about numbers themselves. To repeat: numbers cannot be composed of their divisors because the divisors don't aggregate in the right way. The number 5 is a divisor of 15, but there are not three of these numbers that aggregate to give 15. Aggregates of physical objects have part-whole relations, but numbers are not like that.

Finally, we must not confuse arithmetic with geometry. Abstract geometrical figures can be conceived in mereological terms, as when we divide a triangle into two parts by drawing a line from one angle to the midpoint of the opposite side. Here the two parts really are parts that aggregate to form a whole, neither being identical to the other. But we cannot likewise say that 10 can be divided into two non-identical equal parts, since 5 is simply identical to 5. We cannot think of 10 as literally composed of two halves both consisting of 5, because those halves would simply *be* 5. It is quite true that 5 is a half of 10, but it is not true that 10 is composed of 5 twice (whatever that may mean). It is really a category mistake to describe numbers in part-whole terms. But it is a very tempting category mistake, being embedded in the very language we employ to describe arithmetic relations, and abetted by perennially tempting confusions,

particularly the use-mention confusion. At best talk of part and whole in relation to numbers is a metaphor, and a highly misleading one.

قيمة الصدق المنطقي بين الحداثة وما بعد الحداثة
تحليل لإبستمولوجيا التطور

Zoubeida Mounya **BENMISSI** (ENS Constantine)
Samia **MERABTINE** (Université Constantine 2)

Résumé. La logique a connu et connaît encore de nombreuses révolutions et développements ainsi que l'émergence de nombreuses nouvelles logiques qui ont changé notre attitude envers la valeur de vérité chez Aristote en rapport avec les nouvelles réalités chargées de contradictions, ainsi qu'avec les perspectives de la philosophie. Si nous acceptons les traits qui spécifient la pensée moderne avec ses interprétations de la vérité, et substitue la différence à l'identité en comptant sur une logique de la déconstruction plutôt que sur celle de l'accumulation et de la construction, cela nous obligera à faire une nouvelle lecture épistémologique des transformations qu'a connu la logique et qui ont introduit un grand nombre d'interprétations sur la valeur de vérité au sens d'Aristote. Pour toutes ces raisons, cet article cherche à mettre au clair les développements de la logique dans le langage du modernisme et du postmodernisme, donc la question qui sous-tend cet article est : peut-on considérer ce qui est arrivé à la logique comme un renouvellement quant à la valeur de vérité, une sorte de prolongement du sens révolutionnaire du modernisme et du postmodernisme ? ou bien s'agit-il tout simplement d'un autre tournant critique et neutre, ou pour le dire autrement, d'une construction et d'un développement et non pas d'une transformation et d'une déconstruction ?

Mots-clés : logique, révolution, modernisme, postmodernisme, interprétation, valeur de vérité, Aristote, construction, déconstruction.

الملخّص. عرف المنطق ولا يزال العديد من الثورات والتطورات أنتجت الكثير من النظريات المنطقية الحديثة التي غيرت النظرة إلى قيمة الصدق الأرسطية وفق ما يتناسب مع منطق العلم الحديث ومستجدات الواقع المليء بالمتناقضات وكذا مع المطارحات الفلسفية التي مافتئت تعكس تطورات كل عصر تولد فيه. فإذا سلمنا أن ما يطبع فكر مابعد الحداثة هو رفض التفسير الشمولي والدوغمائي للحقيقة وإحلال الاختلاف محل الهوية، والاعتماد على منطق التفكيك والتحويل لا التراكم والاستمرارية، فإن هذا يتطلب منّا إقامة قراءة إبستمية جديدة لما عرفه المنطق من تحولات أدخلت الكثير من التأويلات على قيمة الصدق الأرسطية، لهذا جاء هذا المقال ليكشف موقع المنطق

وتطوراته في قاموس الحداثة وما بعدها، لذا فإن التساؤل الذي يرتكز عليه هذا المقال: هل يمكن اعتبار ما حدث في المنطق من تجديد على قيمة الصدق امتدادا لثورة الحداثة وما بعدها؟ أم أنه مجرد منعطف نقدي محايد يهدف إلى البناء والتطوير لا التحويل والتفكيك؟

كلمات مفتاحية : منطق، ثورة، حداثة، مابعد حداثة، تأويل، أرسطو، قيمة صدق، بناء، تفكيك.

Abstract. Logic has passed and still passes through many revolutions and developments, as well as the emergence of many new logics that changed our attitude towards the notion of truth-value in Aristotle's perspective in relation with new realities plain of contradictions and also with respect to philosophy perspectives. If we accept the specific features of modern thought concerning interpretations of the truth, substituting identity with difference trough a logic of deconstruction instead of a logic of accumulation and construction, we will be forced to make a new epistemological reading of the transformations known by logic, transformations that also introduced a great number of interpretations of the truth-value since Aristotle. For all these reasons this article aims at clarifying the developments of logic in the language of modernism and post-modernism. The question underlying the article is then: can we consider what logic has passed trough as a renewal of truth-value, as an extension of the revolutionary sense of modernism and postmodernism? Or is it simply another critical and neutral turning point – or, in other words, it is a construction and a development and not a transformation and a deconstruction?

Keywords: logic, revolution, modernism, postmodernism, interpretation, Aristotele, truth value, construction, deconstruction.

مقدمة :

يعدّ مبحث القيم أو الأكسيولوجيا من المباحث الفلسفية الكبرى التي كانت ولا تزال إلى اليوم محايثة لواقع الفكر الفلسفي ومشكلاته، ولا يختلف اثنان في أنه أضحى ميدانا خصبا لاختلاف القراءات والتأويلات الفلسفية خاصة في ظل الثنائية الجدلية المعروفة بالحداثة وما بعد الحداثة.

إذا كان هذا المبحث القيمي قد تعرّض للتحليل والنقد بين الحضور والغياب والعدمية لقيمتي الخير والجمال فإن قيمة الصدق (الحقيقة) بدورها لا تنأى بعيدا عن هذه

التحليلات، خاصة وأن المنطق عرف، ولا يزال، العديد من الثورات والتطورات أنتجت الكثير من النظريات المنطقية الحديثة التي غيرت النظرة إلى قيمة الصدق الأرسطية، وفق ما يتناسب مع منطق العلم الحديث ومستجدات الواقع المليئ بالمتناقضات، وكذا مع المطارحات الفلسفية التي مافتئت تعكس تطورات كل عصر تولد فيه.

فإذا سلمنا أن ما يطبع فكر ما بعد الحداثة هو رفض التفسير الشمولي والدوغمائي للحقيقة وإحلال الاختلاف محل الهوية، والاعتماد على منطق التفكيك والتحويل لا على التراكم والاستمرارية، فإن هذا يتطلب منّا إقامة قراءة إبستمية جديدة لما عرفه المنطق من تحولات أدخلت الكثير من التأويلات على قيمة الصدق الأرسطية، لهذا، فإن الهدف من هذه الدراسة الكشف عن مكانة المنطق وتطوراته في قاموس الحداثة وما بعدها: **هل يمكن اعتبار ما حدث في المنطق من تجديد على قيمة الصدق امتدادا لثورة الحداثة وما بعدها؟ أم أنه مجرد منعطف نقدي محايد يهدف إلى البناء والتطوير لا التحويل والتفكيك؟**

1. في مفهومية الحداثة وما بعد الحداثة

لقد أصبحت الحداثة وما بعدها من بين أهم التيارات الفكرية الغربية التي تركت بصماتها وتأثيراتها واضحة على مفكري العالم الغربي المعاصر، ونظرا لتباين كل مرحلة عن الأخرى كان لزاما علينا تحديد الإطار المفاهيمي لكل مرحلة وخصائصها.

توصف الحداثة بأنها من بين أكثر المفاهيم المستعصية على التعريف والرافضة لكل نمذجة، وعدم القابلية للانطواء تحت أي مفهوم جاهز، وهي في الحقيقة مدلول زمني نعني من خلاله الفترة الحديثة بصفة عامة والقرن العشرين بصفة أخص[1]، فالحداثة بهذا التحديد تعبر عن حالة ثقافية حضارية ومجتمعية جاءت لتعبر عن حالة المجتمعات الغربية في القرنين 19م و20م، وهي في نفس الوقت استمرار لجهود حثيثة بدأت منذ القرن 16م في أوروبا، فكانت بذلك أسلوب عمل وليست مجرد أفكار وحاولت بكل الوسائل تحقيق تصور مجتمع يخضع لنظام كوني واحد. فالحداثة هي إذن العقل الذي أعلن

[1] محمد سبيلا : في الشرط الفلسفي المعاصر،دار إفريقيا الشرق،المغرب،2007،ص69.

سلطانه في جميع الميادين، والدعوة إلى مركزية الذات الإنسانية ومرجعيتها وفعاليتها وعقلانيتها بغية الترشيد الاقتصادي والديمقراطي والسياسي والعقلاني.

تتجلى الحداثة في المستوى الفكري بتطويرها لأساليب جديدة قوامها الانتقال من المعرفة التأملية إلى المعرفة التقنية، فكانت بذلك معرفة شاملة عالية وعقلانية رافضة لكل ما يعيق التقدم وذلك بالثورة على كل تفكير ميتافيزيقي، ومحدثة القطيعة مع ثقافة العصور الوسطى. لكن سرعان ما دخلت هذه الأخيرة في أزمة بدأت تبرز إلى السطح مظاهر الاختناق والتأزم، فرغم ما أحدثته من إنجازات إلا أنها ساهمت في انهيار الجانب الإنساني الروحي والاجتماعي مقارنة بالتزايد المفرط للجانب المادي داخل الحضارة الواحدة بسبب العقلانية المفرطة واستخدام التقنية بشكل مفرط. وكان من نتائج هذه الأزمة أن فقدت الحداثة مبرر وجودها، ونادى الكثير من المفكرين بنفيها والدعوة إلى مرحلة جديدة وهي"ما بعد الحداثة".

وعلى غرار الحداثة فإن مصطلح ما بعد الحداثة يوصف بأنه هيولى يستعصي تحديد تعريف لها، إلا أن المتفق عليه أنها مجرد ثورة ثقافية ومعرفية وإدراكية بالإضافة إلى كونها تغييرا سياسيا جذريا، وهي بذلك تبذل كل أفكارها في سبيل تجاوز الحداثة ونقدها من منطق أكثر جذرية محققة قطيعة عملية وفكرية في آن واحد. ولقد كان للتحولات التكنولوجية تأثير عميق على المعرفة، فلم تعد هذه الأخيرة غاية في ذاتها، بل أصبح الهدف منها أسلعتها من أجل التنافس والسلطة. لذا فإن ما بعد الحداثة أولا وقبل كل شيء"أسلوب في الفكر يبدي ارتيابا بالأفكار والتصورات الكلاسيكية كفكرة الحقيقة والعقل والهوية والموضوعية والتقدم أو الانعتاق الكوني والأطر الأحادية"[1].

وتعود نشأة هذه المرحلة إلى العديد من الفلاسفة والمفكرين، وعلى سبيل الذكر لا الحصر نجد كلا من أفكار فرويد (1856-1939) ونيتشه (1844- 1900) أطرت لخصائص هذه المرحلة بصفة مخالفة تماما لمميزات الحداثة. حيث أكد فرويد أن أهمية الإنسان لا تكمن في كونه عقلا ولا ذاتا قاصدة وهادفة متحكمة في نفسها، لكن في وصفه كائنا حيويا له حاجاته المرتبطة بدوافع الغريزة ودوافع اللاوعي، ففرويد استهزأ من الحداثة ومشروعها

[1] تيري إيغلتون: أوهام ما بعد الحداثة، دار الحوار للنشر والتوزيع، دمشق، ط1، 2000،ص 07.

القائم على العقلانية والأنسنة عندما ردّ العقل نفسه إلى دوائر اللامعقول باعتباره أحد منتجاته ومفاعيله، فالمعقول بهذا المنطق أصبح طريقا إلى اللامعقول.

أما نيتشه فقد انتقد في نصه *إنسان مفرط في إنسانيته* القيم العليا للحضارة الغربية، معلنا هرم الحداثة وشيخوختها الزمنية والتاريخية وحتى المفهومية، رافضا ما آل إليه الفكر الفلسفي الغربي من تقويض للمعرفة وجعلها إنتاجا عقليا محضا، لذا فإنه لا يوجد أساس للمعرفة ما يؤدي إلى تلاشي مفهوم الحقيقة وهو ما جعل الكثير ينعتون فلسفته بأنها "عدمية'و"فوضوية'.

ما يجعلنا نحكم على ما بعد الحداثة بأنها مناقضة لكل ادعاء باليقين ومؤكدة على اللامعقولية واللايقين و التفكيك والتشظي والنسبية، كونها تخضع لمنظومة ديناميكية متحركة ومتغيرة بعيدا عن الحساب العقلي والتواتر الدقيق. وإذا كانت الحداثة قد أعلنت موت الإله والمرجعيات الدينية مرتهنة برهان الإنسان كمرجعية أولى للمشروع الذي حددته لنفسها، فإن ما بعد الحداثة قد أعلنت عن الموتين الأكبرين الإله والإنسان على حد سواء، وذلك بالتحالف مع التفكيكية وإلغاء الذات من أجل الوصول إلى العدمية واللايقين. وبعد هذا الموت للإنسان ماذا يبقى للمنطق من معنى في فضاء اللامعقولية والعدمية؟

2 . قيمة الصدق في المنطق الأرسطي

يعتبر مبحث الأكسيولوجيا من أهم مباحث الفلسفة وأكثرها خصوبة في البحث والدراسة خاصة في الفكر المعاصر، يهتم بدراسة ما ينبغي أن يكون في الأخلاق والجمال وفي الفكر، فظهرت بذلك ثلاث قيم مختلفة : قيمة الخير وقيمة الجمال وقيمة الصدق (الحق). فإذا كانت الأولى تهتم بدراسة معايير السلوك والثانية بمعايير الجمال، فإن قيمة الصدق تهتم بدراسة ما ينبغي أن يكون عليه الفكر حتى يصل إلى الصواب واليقين.

ولقد اهتم الفيلسوف اليوناني أرسطو(385- 322 ق-م) بهذه القيمة فأسس علم المنطق معتبرا إياه أورغانون العقل، لأنه يمده بالقواعد والمبادئ التي ترشده إلى التفكير السليم

وتعصمه من الوقوع في الخطأ والزلل فكان بذلك علم الاستدلال ومعيارا للعلم وميزانا للصدق[1].

فقد أسس أرسطو نظرية القياس في منطقه على قيمتي الصدق والكذب، مستبعدا كل تصور ممكن لقيمة ثالثة، فكان منطقه ثنائي القيمة وذلك من خلال الارتكاز على جملة من المبادئ الأساسية للتفكير التي يعتمد عليها العقل ويتحرّك وفقها طلبا للمعرفة الصحيحة والمعقولية البناءة، فهي التي تضمن إمكان التفكير السليم وتنسق أفعال العقل في بحثه عن الحقيقة، ومن بين هذه المبادئ نجد:

أ-مبدأ الهوية : والذي مفاده أن الشيء هو هو، ولا مغايرة بينه وبين ذاته،أي أن كل موجود يكون مطابقا لذاته.

ب-مبدأ عدم التناقض : ومفاده أنه "من المحال حمل صفة بالذات وعدم حملها على موضوع بعينه في الزمن نفسه بالمعنى عينه "[2]، فالشيء لا يمكن له أن يتصف بالصدق والكذب بالمعنى نفسه وفي الآن عينه، وهذا المبدأ ليس إلا تعبيرا عن ثبات حقيقة الشيء التي يعبر عنها مبدأ الذاتية في صورة إيجابية.

ج-**مبدأ الثالث المرفوع أو الوسط الممتنع** : والذي يظهر من تسميته أنه ليس هناك وضع ثالث ممكن بين العدم والوجود، وبين الصدق والكذب.

وعليه فالقوانين أو المبادئ الثلاثة تقرر عدم تغير الحقيقة أي ثباتها وعدم تناقضها، وهو أمر ينبغي مراعاته والالتزام به عند القيام بأي استدلال.

ولقد احتل قانونا عدم التناقض والثالث المرفوع مكانا مرموقا في تحديد مفهوم قيمة الصدق في النسق الأرسطي، وعدم الإقرار بهما يجعل الفكر حسب أرسطو يفشل في تقديم أي حكم محدد، ويمنع الإنسان من الخوض في حديث ومن قول أي شيء معقول، بل يجعله أكثر من ذلك غير قادر على القيام بأي شيء، وباختصار فإنه يقضي على كل شكل من أشكال المعرفة.

[1] عبد الرحمن بدوي: المنطق الصوري والرياضي، مكتبة النهضة، ط3، ص3،4.

[2] علي سامي النشار: المنطق الصوري منذ أرسطو، دار المعارف بمصر، ط5،ص79.

ففي الوقت الذي كان فيه هيراقليدس يجمع في الشيء الواحد وفي الوقت الواحد بين الوجود" l'être "واللاوجود"le non être"، لأنه لما كانت الأشياء عنده في تغير مستمر كان بالإمكان أن تلتقي الأضداد في شيء ما بعينه أو يجتمع الشيء ونقيضه، مما جعل أرسطو يذهب إلى القول أن نفي هيراقليدس لمذهب عدم التناقض يترتب عليه تعريض المعرفة إلى نتائج خطيرة، لعل أبرزها هدم فكرة الجوهر[1].

وفي الحقيقة لا يمكن فهم مبدأ الثالث المرفوع الذي أنتج التصور الثنائي للقيمة في ظل التفكير العقلاني، إلا من خلال جملة من المفاهيم الأخرى المتعلقة بفلسفة أرسطو كمفهومي الوجود بالقوة والوجود بالفعل ومفهوم الجواز والضرورة واللانهاية، ما جعله - هذا المبدأ- يعتبر عصب نماذج البرهنة في جميع العلوم وبالتحديد ما يصطلح عليه البرهنة بالخلف، فكل موضوع حسب أرسطو سواء كان موضوع تفكير استدلالي أو موضوع حدس، فإن الفكر إما أن يثبته وإما أن ينفيه.

وانطلاقا من هذا التصور الأرسطي أصبح محكوما على الفكر الإنساني أن يظل متناسقا منسجما محتكما إلى عدم تناقض النتائج مع المقدمات وعدم تناقضها مع الواقع، ما جعل منه فكرا ثابتا وشاملا لا يحيد عن الصواب، وظل هذا التصور شائعا ومستخدما في جميع مراحل الفلسفة التي تلته وصولا إلى الفكر المعاصر، ما انعكس إيجابا علي قيمة الصدق، فظلت بدورها ثابتة وعالمية لا تعرف التغير والكثرة والتنوع، لكن مع تطور العلم ومستجدات العصر تغيرت صورة قيمة الصدق المنطقي واكتست أثوابا جديدة مخالفة تماما للتصور الأرسطي، فما فحوى هذا التغير؟

3 . تطور قيمة الصدق في المنطق الحديث والمعاصر

بما أن الفكر الإنساني لا يعرف الثبات والجمود ولا يتقولب في إناء واحد،فإن التصور المنطقي كذلك قد عرف تطورا وتغيرا جذريا في جميع مستوياته ومضامينه، وذلك وفق ما يتلاءم والمستجدات العلمية والفلسفية وحتى الثقافية والسياسية.

وفي ظل هذا التطور تفطن المناطقة المحدثون إلى جملة من العيوب والمآخذ التي تحسب على المنطق الأرسطي، ومن جملة هذه الانتقادات النظرة الضيقة لقيمة الصدق المحصورة

[1] جراح سليمة: التصور الحديث لمنطق أرسطو،ديوان المطبوعات الجامعية، 2005، الجزائر،ص.6.

في تصور ثنائي أقرب إلى المثالية منها إلى الواقعية لا يتناسب مع التغير العلمي، ضف إلى ذلك أنها نظرة استاتيكية جامدة تنأى بعيدا عن منطق الكثرة والتغير والتنوع والاختلاف الذي يميز الواقع الفعلي للفكر الإنساني. ولقد عبر راسل عن هذا الموقف قائلا: "في الحاضر نحن نجهل إن كانت هناك حياة في موضع آخر في العالم، لكننا محقون في كوننا متأكدين من وجودها أو عدم وجودها،فنحن إذن بحاجة إلى "الصدق" حاجتنا إلى "المعرفة"، لأن حدود المعرفة غير متعينة، ولأنه دون مبدأ الثالث المرفوع لا يمكننا أن نطرح على أنفسنا الأسئلة التي منها تولد الاكتشافات"[1].

1.3 المنطق الثلاثي والمتعدد القيم

إذا كان راسل قد أقرّ بأهمية مبدأ الثالث المرفوع، فإن الكشف عن المفارقات أو المتناقضات ومحاولة حلها وفك طلاسمها أدى إلى إيجاد قيمة أو قيم تقع بين قيمتي الصدق والكذب أي بين الصفر والواحد (0-1)، يطلق عليها قيمة الاحتمال، وهو ما نتج عنه منطق جديد وهو المنطق المتعدد القيم الذي يتخذ مع الصدق و الكذب قيمة أو قيم أخرى تقع بينهما، ويذهب أصحاب هذا المنطق إلى أن الأنساق التي يتوصلون أو توصلوا إليها هي بديل للمنطق الكلاسيكي. فالمنطق المتعدد القيم يشبه المنطق الكلاسيكي إلا أنه يخلو من بعض قوانينه كقانون الثالث المرفوع، وهذا ما يثبت عدم إلغائه لقيمتي الصدق والكذب بل الإبقاء عليهما وإضافة قيم أخرى إليهما.

ومن أمثلة التصورات الجديدة لقيمة الصدق التي تم استحداثها نذكر المنطق الثلاثي القيمة. وتعود جذوره إلى الفيلسوف والمنطقي البراغماتي الأمريكي تشارلز بيرس(1839-1914) الذي تجاوزت أعماله ما توصل إليه راسل وفريجه ووايتهد، وذهب إلى إمكانية إقامة قوائم صدق أخرى تتجاوز ثنائية الصدق والكذب من خلال منطق ثلاثي القيم Triadic logic، فعرفه :"هو ذلك المنطق مع أنه لا يرفض كلية مبدأ الثالث المرفوع يعترف بأن كل قضية (أ)هي (ب) إما أن تكون صادقة أو كاذبة، أو أن (أ) بخلاف ذلك لها نمط أدنى من الوجود بحيث أنها لا يمكن أن تكون (ب)على نحو محدد و لا غير(ب) على نحو

[1] جراح سليمة: التصور الحديث لمنطق أرسطو، مرجع سابق، ص 184.

محدد، و لكنها في منزلة ما بين(ب) و نفيها"[1]، إلا أن بيرس لم يكمل البناء المنطقي وإسهاماته لم تتخط مسوداته، فجاء لوكازيفتش الذي قام بتوسيع النظرة الأرسطية الضيقة للقيمة، وذلك بإمكانية تأسيس منطق جديد ثلاثي القيمة يتخلى تماما عن التمسك بالصحة الكلية لمبدأ الثالث المرفوع، وهو ما أدى إلى نشوء أنساق منطقية جديدة تتميز بالدقة والصرامة الصوريتين.

وبعد إقامة صرح النسق الثلاثي صار بالإمكان إنشاء نسق رباعي وخماسي متعدد القيمة، بل وحتى نسق يحتوي على مالا نهاية من القيم، وهي في حقيقة الأمر أنساق تتناسب مع التطور الحاصل في العلوم خاصة في الفيزياء المعاصرة (ميكانيكا الكم التي تضم قضايا لا يمكن البتّ فيها بالصدق أو الكذب)، وكان لوكازيفتش وغيره من المناطقة يعتقدون أن كلا من النسق الثلاثي القيم والنسق اللاّمتناهي القيم هما أكثر أهمية واستخداما في الأنساق الفلسفة لكونهما منفتحان على جميع الإمكانات و الاختلافات.

2.3 المنطق الجدلي

أدّى ظهور المنطق الجدلي مع هيجل إلى تغيير النظرة الثنائية للقيمة لأن الجدل عنده حركة عقلية تؤدي إلى زوال الحدين المتعارضين واندماجهما في وحدة أعلى، وبهذا يصبح الجدل لديه علما وفنا لاستخلاص كل ما هو حقيقي في الأفكار والعقل والتاريخ[2] . ومادامت كل فكرة في التاريخ وفي العقل الإنساني تحيا وتتطور، لأنها تتضمن تناقضا بين طرفين متعارضين: فهي من جهة تحمل في طياتها مبدأ تأكيدها وإبقائها على ذاتها وهذا ما يسمّى ب"النظرية"، ومن جهة أخرى تحمل أيضا مبدأ نفيها وهذا ما يسمّى ب"النظرية المناقضة"، إذ تثير فيها أزمة باطنية ومعارضة لنقيضها، مما يجعلها تحدد ذاتها أكثر فأكثر وتتحقق ماهيتها على نحو أقوى[3].

وبهذا يكون هيجل أول من تنبه إلى أن النفي أو التناقض -لا الذاتية- هو المقولة المحرّكة للفكر والتاريخ، لكن هذه الحركة لا تقف عند الانتقال من فكرة إلى أخرى بمقتضى النفي،

[1] صلاح عثمان: المنطق المتعدد بين درجات الصدق وحدود المعرفة، الإسكندرية، منشأة المعارف، 2002، ص46.

[2] محمد ثابت الفندي: أصول المنطق الرياضي،دار النهضة العربية،بيروت،1976،ص84.

[3] المرجع نفسه، ص 84.

بحيث لا يجد العقل مخرجا من هذا التناقض بل لابد أن يأتلف الضدان في حد ثالث يسميه هيجل"المركب" لتسير الحركة الجدلية قدما إلى الأمام وإلى الإخصاب، لأن الجدل يصبح عندئذ طريقة للتجديد والتقدم حين ينتقل بالفكرة إلى نقيضها ثم إلى ما يجمع النقيضين في حد ثالث، ثم يسير الجدل قدما من هذا الحدث الثالث إلى حدود أخرى وفقا للقانون ثلاثي الحدود، فتؤدي تلك الحركة إلى النمو والتقدم من جديد بدل الجمود في نطاق الهوية المتكررة التي هي خاصية المنطق الصوري.

يتضح لنا أن المنطق الجدلي طريقة في التفكير أو منهج لفهم حقيقة الكون كله، وهو منطق محرك للتفكير يهدف إلى التطور والتغيير والديناميكية ما يؤدي إلى تعدد القيم وكثرتها ونسبيتها واختلافها بعيدا عن الجمود والثبات ومطلقية القيمة في المنطق التقليدي.

3.3 المنطق المرن

أما المنطق المرن ويطلق عليه أيضا إسم المنطق الغائم أو الضبابي أو الضلالي والرمادي أو منطق المتضادات المتوازنة.....Fuzzy Logic هو نوع خاص من أنواع المنطق المتعدد القيم، هو آلية نستطيع من خلالها معالجة أنواع مختلفة من عدم الدقة لبعض المصطلحات اللغوية مثل "حار , واسع , ربما ,أظن، أعتقد..." والتي يطلق عليها اسم المتغيرات اللغوية أو المتغيرات المرنة، فعند قولنا "شاب طويل" فلا يمكن أن نحكم على هذه القضية في المنطق الكلاسيكي بالصدق أو بالكذب لأنها قضية مهملة، أما في المنطق المرن فنحكم عليها بالصدق الجزئي أو الكذب الجزئي وهذه القيمة تقع بين الصدق الكامل والكذب الكامل،أي بين الصفر والواحد، فهي قيمة احتمالية أو لنقل رمادية.

فالمنطق المرن يوفر طريقة للتعامل مع اللادقة ويقرّ بقيم صدق لا متناهية، والتي يمكن أن تكون أي عدد ينتمي إلى المجال المغلق [1، 0].فالعالم الفيزيائي الذي نعيش فيه بما فيه المجتمع الإنساني وعالم الأفكار مؤلف من قضايا مختلفة وقابلة للتعبير عن عناصر وقوى،ونظم وسلوك وقيم وهذا ما يؤدي إلى عدد كبير من الأنساق الممكنة في المنطق والعلوم. فأي نسق في أي علم هو نسق مستقر بنسبة م %، وغير مستقر بنسبة غ%، حيث م + غ = 100%، و 0 ≤ م وغ ≤ 100%، وبذلك هو منطق يتناول طرق التفكير التي تتسم بالتقريب ويقلل من غموض اللغات الطبيعية.

يستخدم الكثير من الباحثين في مختلف الميادين العلمية المنطق المرن ولنقل النظرية المرنة التي صاغها لطفي زاده والتي تأخذ بعين الاعتبار الذاتية واللاتحديد[1]، ولكن هذا لا يعني أبدا أنها نظرية غير محددة، إنها نظرية رياضية صارمة تطبق على ما هو ذاتي وما هو غامض، وترتكز على مفهوم القياس، فكيف يمكن تمثيل الحدود المستعملة في اللغة العادية؟ خاصة أن الإنسان في حياته اليومية يستخدم الوصف اللغوي وعادة ما يكون هذا الوصف عاما مع التأكيد أن المرن أو الغائم هو ممكن، فإذا كان معطى غير محدد بدقة فيمكن التعبير عنه بمجال موثوق فيه، هذا المجال هو مجموعة القيم الممكنة للممكن.

فالإنسان يدرك ويبرهن ويفترض ويقرر انطلاقا من نماذج أومن تمثلات، فتفكيره ليس ثنائيا وفكرة المنطق المرن أو الغائم هو تحديد أو حصر اللاتحديد أو الغائم المميز للفكر الإنساني[2]، والتعبير عنه يكون بواسطة وسائل رياضية مناسبة ومن خلال البحث عن نموذج يكون أكثر موضوعية وممكنة. فالمنطق المرن أو الغائم إذن هو وسيلة لنمذجة لايقين اللغات الطبيعية ويمكن أن يعبر عن الحدود اللغوية ب: ربماكان كاذبا، وصادقا نوعا ما ...

أ. عوامل نشأة المنطق المرن

إن جذور المنطق المرن تتمثل في مبدأ اللايقين أو الاحتمال لهيزنبرغ في العشرينات من القرن الماضي[3]، إذ أضاف الفيزيائيون القيمة الثالثة ½ في النسق المنطقي الثنائي القيم لماذا ½؟ لأنها قيمة صدق كل المفارقات.و هذا ما أكده بارت كوسكو (1960-... Bart Kosko) الذي يرى أن المنطق المرن هو استمرارية لأبحاث لوكازيفتش حول المنطق المتعدد القيم و كذا منطق راسل، فالمنطق الغائم هو إجابة لفشل المنطق الكلاسيكي وفشل قاعدة الثالث المرفوع في مواجهة المفارقات اليونانية [4]، فحسب كوسكو فيلسوف

[1] Jelena Godjevac: *Idées nettes sur la logique floue*, Presses polytechniques, France, 1999, p.1.
[2] *Ibid*, p. 3.
[3] *Ibid*, p. 4.
[4] Claude Rosental, "Histoire de la logique floue. Une approche sociologique des pratiques de démonstration", *Revue de Synthèse*, Vol 4 Octobre-décembre 1998, p. 580.

الميكانيكا، رسم ماكس بلانك المخططات الأولى الغائمة كاستمرارية لتطوير المنطق المتعدد القيم حوالي 1920.كما ألقى جيمس برول James Brule محاضرة في ملتقى بالولايات المتحدة الأميركية سنة 1992 أكد فيها على وجود ترابط وصلة من هيرقليدس إلى أفلاطون إلى زاده مرورا بهيغل وماركس وانجلز. فهيرقليدس أثبت أن بعض القضايا يمكن أن تكون صادقة ولاصادقة بل وتتغير باستمرار،وأفلاطون أشار إلى المنطق الغائم على أساس أنه يشير إلى عالم ثالث ما وراء الصدق و الكذب أين يمكن للمتناقضات أن تتعايش، أما لطفي زاده طور المنطق المرن كمنطق يحتوي على لاتناهي من القيم على نفس خطوات لوكازيفتش.

ب. أهداف المنطق المرن

و بناءا على ما سبق يمكن تحديد أهداف المنطق المرن أوالغائم في النقاط التالية :

- تحديد المعارف المرنة أو الغائمة وتعريفها.
- تفسير الاختبارات.
- احترام واقع الاتجاهات.
- صورنة اللاتحديد واللادقة الناتجة عن المعرفة الشاملة لنسق مركب، والتعبير عن نمط الأنساق من خلال الكلمات.
- تنظيم المفاهيم المرنة أو الغائمة للغة العادية- الطبيعية- حتى تجعلها متسقة وملائمة.
- اختيار النماذج بفضل مرونته في صورنة اللغة الطبيعية.
- البرهنة انطلاقا من المعارف الناقصة المتناقضة للمنطق الكلاسيكي، فيعوض المتغيرات المرنة أو الغائمة بالمتغيرات البوليانية.
- حلّ كل المسائل الناتجة عن المعرّفات غير المحددة وغير الدقيقة والغائمة والاحتمالية، ويمكن تطبيقها في شتى المجالات.

ج. المنطق المرن والمفارقات

لقد أدى الكشف عن المفارقات إلى التشكيك في يقين الرياضيات واهتزاز الثقة بالمنطق الكلاسيكي، والمقصود بالمفارقة أن الرياضي يمكن أن يبرهن على صدق وكذب القضية في آن واحد أي استبعاد كلي لمبدأ عدم التناقض، ومن أشهر هذه المفارقات مفارقة الكريتي الكذاب[1] الذي قال: كل الكريتيين كاذبون، فلو كان يقول الحقيقة بشأن الكريتيين فإنه في هذه الحالة يكذب، لكن لو كان يكذب فهو يقول الحقيقة، ولهذا " فإن كان يكذب فهو كذب صادق، وهو إذن لا يكذب، وإذا لم يكن يكذب فهو حين يقول إني أكذب فهو يكذب، ومن كلا الفرضين يلزم التناقض "[2]، وكذا مفارقة راسل التي اكتشفها سنة 1901، وتتعلق بمجموعة جميع المجموعات " ...وقد كان اكتشافي أحد هذه المتناقضات في ربيع 1901...واهتديت إلى هذا التناقض عندما كنت أتأمل برهان كانتور والذي يثبت به أن ليس ثمة عدد أصلي (عاد) أكبر من سائر الأعداد"[3].

ويوضح راسل هذه المفارقة بقوله: "الفصل الشامل الذي نبحث أمره والذي يجب أن يشمل كل شيء يجب أن يشمل نفسه كواحد من أعضائه، وبعبارة أخرى إن وجد مثل هذا الشيء الذي نسميه كل شيء، إذن كل شيء " شيء ما، وعضو من الفصل " كل شيء " ولكن عادة لا يكون الفصل " عضوا من نفسه " فالإنسانية ليست إنسانا"[4] .فهذه المفارقة تطرح سؤالا جوهريا: هل مجموعة الكل هي عنصر من ذاتها ؟ فإذا أردنا تكوين جماعة كل الفصول التي ليست أعضاء فهذا فصل: هل هو عضو من نفسه أم لا؟ فإن كان هو أحد تلك الفصول التي ليست أعضاء من أنفسها، أي ليس عضوا من نفسه، وإن لم يكن فهو ليس أحد تلك الفصول التي ليست أعضاء من أنفسها، أي أنه عضو من نفسه، وهكذا كل من الفرضين - أنه عضو وليس عضوا من نفسه - يستلزم تناقضا، وفي هذا تناقض .

---

[1] راسل: أصول الرياضيات: ، ترجمة محمد مرسي أحمد وفؤاد الأهواني، ، دار المعارف بمصر ، ط2 (د.ت).الجزء1، ص 18.

[2] المصدر نفسه ، ص50.

[3] برتراند راسل: مقدمة للفلسفة الرياضية، ترجمة محمد مرسي أحمد، مؤسسة سجل العرب، 1962.ص 199.

[4] روبنسون جروف: رسل، ترجمة أمام عبد الفتاح إمام، المجلس الأعلى للثقافة، القاهرة، ط1، 2005، ص 38.

مثال: فهرس جميع الفهارس هل يكون عضوا أولا يكون في ذاته ؟ إذا كان فهرس جميع الفهارس يشمل ذاته كعضو فهو حينئذ سيكون فهرسا زائدا بين جميع الفهارس، ومن ثم لا يكون فهرسا لجميع الفهارس أما إذا كان الفهرس لا يشمل ذاته؟ فهل هذا ممكن: وهنا نجد أنفسنا أمام " مجموعة جميع المجموعات" هل تشتمل على ذاتها أم لا؟ إما أن المجموعة تحتوي على ذاتها، وحينها لا يمكن أن تكون ضمن المجموعات التي لا تحتوي على ذاتها، ومن ثمّ لا تنتمي إلى مجموعة جميع المجموعات التي لا تشتمل على ذاتها، هذا في حين أنها هي نفسها [مجموعة جميع المجموعات التي لا تحتوي على ذاتها]، وهنا تناقض فيجب إذن ألا تحتوي على ذاتها. إذا لم تحتو المجموعة على ذاتها، فهذا يعني أنها إحدى المجموعات التي لا تحتوي على ذاتها، وبالتالي يجب أن تنتمي إلى [مجموعة جميع المجموعات التي تحتوي على ذاتها]، وبما أنها هي هذه المجموعة بالذات فيجب أن تنتمي إلى نفسها، أي تحتوي على ذاتها: وهذا تناقض.

ولهذا فالرياضي يجد نفسه أمام إشكال صعب: إذا انطلق من فرضية أن " مجموعة جميع المجموعات التي لا تحتوي على ذاتها فهي مجموعة تشتمل على نفسها كانت النتيجة هي أنها لا تشمل على نفسها، وإذا انطلقنا من الفرضية المضادة وقلنا إنها " مجموعة " لا تشتمل على ذاتها كانت النتيجة أنها تشمل على ذاتها[1]، فإثبات القضية ونقيضها يؤديان إلى تناقض.

فمثل هذه المفارقات تمثل حالة استثنائية شاذة عند أرسطو، بينما في المنطق المرن هي القاعدة وليست استثناء، إذن إن الكشف عن المفارقات المنطقية والناتجة عن ثنائية القيمة في المنطق الكلاسيكي هو الذي أدى إلى تأسيس منطق ثلاثي القيم و رباعي القيم ومتعدد القيم وهذا ما أكد عليه يان لوكازيفتش، إلا أن هذا المنطق لم يحل إشكالية المفارقات، لأن القيم المتعددة تقوم على وضع حدود واضحة بذاتها بينما المفارقات هي ناتجة عن عدم وجود مثل هذه الحدود، وهذا ما أدى إلى تدخل المنطق المرن لحلها .

[1] سهام النويهي: المنطق الغائم علم جديد لتقنية المستقبل، المكتبة الاكاديمية، القاهرة ،2001، ص.15.

4. القراءة الابستمية لتطور قيمة الصدق في ظل ثنائية الحداثة وما بعدها

لا أحد يستطيع أن ينكر أن الرياضيات اليوم كغيرها من العلوم الأخرى قد تخلصت من كل تفكير فلسفي، على خلاف المنطق الذي ظل في علاقة وطيدة مع الفلسفة في مختلف مراحلها، يؤثر الواحد فيهما على الآخر، وتختلف وظيفته باختلاف تصوراته الفلسفية الإيديولوجية وحتى العقدية، إلا أن هذه النظرة أصبحت مقصورة على المنطق الأرسطي أو التقليدي الذي ظل مرتبطا بآراء ميتافيزيقية، وهو ما انعكس كما لاحظنا على نظرية القيمة.

أما المنطق الحديث بجميع أنواعه فإنه وضعي يساير الروح العلمية، ولما كان أساس العلم صوريا أو تجريبيا مختلفا عمّا كان سائدا في الحضارة اليونانية، وجب أن يمتد هذا الاختلاف بين منطق العلم اليوم وبين المنطق الأرسطي الذي كان مرآة عاكسة لمعارف عصره التي كانت تهتم بالأشياء الأنطولوجية الفلسفية والكيفية، فأصبحت بذلك المعرفة الإنسانية تحتكم إلى تصورين مختلفين للمنطق هما: التصور الميتافيزيقي والتصور الوضعي، لذا تجدر الإشارة إلى أن نظرية القيمة المنطقية تختلف باختلاف الأساس الذي ينبني عليه التفكير العلمي أو الفلسفي لأي عصر من العصور. "ولا شك في أن موقف الإنسان من فكرة الحقيقة ومدى اليقين فيها، إنما يتأثر تماما باعتناقه منطقا دون آخر من أنواع المنطق العديدة الممكنة للإنسان"[1].

وإذا كانت نظرية القيمة المنطقية الأرسطية تحتكم إلى مبادئ العقل وبالتحديد مبدأ الثالث المرفوع، ما جعل من المنطق القديم ذو طابع فلسفي ينظر إلى هذه المبادئ على أنها مفاهيم بديهية بذاتها أي كلية ضرورية وبالتالي مطلقة، فإن المنطق الحديث لا يأخذ بعين الاعتبار هذه الخصائص ولا يحتفظ بها إلا لضرورة علمية.

وانطلاقا من الأساس الوضعي الذي ترتكز عليه أنواع المنطق الحديث، يمكننا القول أن التطور الحاصل في نظرية القيمة المنطقية ليس له أي صلة بالحداثة وما بعدها، وأنه لم يكن إلا انعطافا نقديا لأسس القيمة الأرسطية يرمي إلى التوسيع من مجالها من جهة،والقضاء على استاتيكيتها وضيقها وجمودها من جهة ثانية، رغم أن الحداثة مثلت

1 ثابت الفندي :أصول المنطق الرياضي،مرجع سابق،ص ص 20، 21.

ثورة وقطيعة مع الفكر القديم الأرسطي الذي خيّم على العصور الوسطى. ولكن بالارتكاز على الأساس الفلسفي للمنطق الحديث بكل أنواعه، يمكن الاستنتاج أن قيمة الصدق لم تنأ بعيدا عن الحداثة وما بعدها، بل تأثرت بالأنساق الفلسفية التي نادت بها كلا المرحلتين: وكدليل على ذلك ظهور منطق الوحدة في الحداثة و المنطق المرن في ما بعد الحداثة.

فمن المعروف أن الحداثة تميزت بإطلاقها للعديد من التيارات منها تيار العولمة، والتي تمثل تعميما كونيا لنموذج بلد ما (أمريكا بالتحديد) يُقدّم على أنه الوحيد العقلاني الممكن والأفضل و الأمثل إن في السياسة أو الاقتصاد أو الثقافة أو الفكر، وهو ما تطلب بناء منطق لا يؤمن إلا بقيمة واحدة هو منطق الوحدة الذي هو الآخر يتصف بالحركية والتعامل مع المتغاير والمتناقض، ولكنه في المجال الفكري يستوعب كل المحاولات والتصورات الفلسفية مهما كانت متنافرة ليصنع منها مبدأ واحدا، ولعل العولمة في مفهومها التعايشي المعاصر تشكل- أمام تشتيت المعارف وترامي أطرافها وتفتيت التخصصات العلمية والفنية واختلاف الثقافات المحلية بين الدول - فرصة سانحة لتوسيع الروح الفلسفية الواحدة وبناء نظرة موحدة في المعرفة والقيمة بعيدا عن الخصوصيات والإيديولوجيات.

أما ما بعد الحداثة فتميزت بالمنطق المرن الذي يهدف إلى إيجاد علاقة جدلية بين الصدق والكذب وما بينهما من مواقف حيادية تكشف طابع اللاتحديد في عالمنا، ينظر إلى الحقيقة نظرة براغماتية ويدعو إلى إلغاء الذات والتشتت والفوضى والإختلاف.

قائمة المصادر والمراجع:

باللغة العربية

برتراند راسل: أصول الرياضيات ، ترجمة محمد مرسي أحمد وفؤاد الأهواني، ، دار المعارف بمصر ، ط2 ، (د.ت).الجزء1.

برتراند راسل: مقدمة للفلسفة الرياضية، ترجمة محمد مرسي أحمد، مؤسسة سجل العرب، 1962.

تيري إيغلتون:أوهام ما بعد الحداثة،دار الحوار للنشر والتوزيع،دمشق،ط1، 2000.

جراح سليمة: التصور الحديث لمنطق أرسطو،ديوان المطبوعات الجامعية،2005،الجزائر

روبنسون جروف: رسل، ترجمة أمام عبد الفتاح إمام، المجلس الأعلى للثقافة، القاهرة، ط1، 2005.

سهام النويهي: المنطق الغائم علم جديد لتقنية المستقبل،المكتبة الاكاديمية، القاهرة،2001.

صلاح عثمان: المنطق المتعدد بين درجات الصدق وحدود المعرفة، الإسكندرية، منشأة المعارف، 2002.

عبد الرحمن بدوي: المنطق الصوري والرياضي،مكتبة النهضة،ط3.

علي سامي النشار: المنطق الصوري منذ أرسطو،دار المعارف بمصر،ط5.

محمد ثابت الفندي: أصول المنطق الرياضي،دار النهضة العربية،بيروت،1976.

محمد سبيلا : في الشرط الفلسفي المعاصر،دار إفريقيا الشرق،المغرب،2007.

باللغة الأجنبية

Jelena Godjevac : *Idées nettes sur la logique floue*, Presses polytechniques, France, 1999.

Claude Rosental, "Histoire de la logique floue. Une approche sociologique des pratiques de démonstration", *Revue de Synthèse*, Vol. 4, Octobre-décembre 1998, p 580.

LA LOGIQUE LINEAIRE ET LA QUESTION DES FONDEMENTS DES LOIS LOGIQUES (II)

Alain **LECOMTE**
(Université Paris 8 - Vincennes-Saint-Denis & CNRS)

Abstract. This is the second part of a paper the first part of which was published in *Al Mukhatabat*, n°5, in 2013, the aim of which is to study the question of the foundations of logical laws through the novelties which have appeared in the last decades in the field of Logic in contact with Theoretical Computer Science. The first part dealt with Girard's Linear Logic and its game-theoretical semantics. This part mainly presents Ludics, a formalism also invented by J-Y. Girard of which we can say it has two aspects: one is oriented towards Proof Theory (generalizing the concept of proof to the one of counter-proof and then of para-proof), and the other towards Game Theory (generalizing the concept of strategy to the one of design). The idea of a logical foundation in what Girard calls geometry of interaction comes from the strong geometrical framework of the concepts here presented.

Keywords: foundation, logical laws, theoretical computer science, Jean-Yves Girard, linear logic, game-theoretical semantics, geometry of interaction.

ملخّص. تمثّل هذه الورقة القسم الثاني من مقال نشر قسمه الأوّل في مجلّة *المخاطبات*، العدد 5، سنة 2013 و عرض لدراسة إشكالية أسس القوانين المنطقيّة من خلال الطروحات الجديدة التي ظهرت في العقود الأخيرة حول المنطق في علاقته بمنظور الإعلامية النّظريّة. وكان أن عالج القسم الأوّل أساسا المنطق الخطّي لجون ايف جيرار و تصوّره لعلم الدلالة. ويعرض هذا القسم للشّكلنة الّهوية التي أسّسها جون ايف جيرار، و بامكاننا القول بأنّ لها مظهرين : أحدها متّصل بنظريّة البرهنة (مع تعميم تصوّر البرهان ليشمل البرهان الضّديد و البرهان المفسّر)، والثاني متّصل بنظريّة الألعاب (مع تعميم تصوّر الاستراتيجية و تسميته بالتّصميم). إنّ أسس هذه التصوّرات المعروضة هي هندسية بالضّرورة تتّصل بفكرة تأسيس المنطق في إطار ما يسمّيه جيرار هندسة التّفاعل.

الكلمات المفتاحية : أسس، قوانين المنطقية، علم الحاسوب النظري ، جون ايف جيرار، المنطق الخطّي، علم الدّلالة النظري للألعاب، هندسة التفاعل.

Résumé. Ceci est la deuxième partie d'un article dont la première partie a été publiée dans la revue *Al Mukhatabat*, n°5, en 2013 et qui se propose d'étudier la question des fondements des lois logiques au travers des nouveautés apparues dans les dernières décennies dans la logique en contact avec la perspective de l'informatique théorique. La première partie traitait essentiellement de la logique linéaire de Jean-Yves Girard et de sa sémantique en termes de jeux. Celle-ci présente surtout la ludique, formalisme également inventé par Jean-Yves Girard, dont on peut dire qu'elle a deux aspects : l'un est tourné vers la théorie des preuves (généralisant le concept de preuve à celui de contre-preuve et de para-preuve), et l'autre vers la théorie des jeux (généralisant le concept de stratégie, sous l'appellation de dessein). Le soubassement des concepts présentés est fortement géométrique d'où l'idée d'une fondation de la logique dans ce que Girard appelle la géométrie de l'interaction.

Mots-clés : fondements, lois logiques, informatique théorique, Jean-Yves Girad, logique linéaire, géométrie de l'interaction.

1- Introduction

Dans la première partie de cet article, déjà ancienne (et publiée dans le numéro 5 de la revue *Al Mukhatabat*), nous avons décrit une évolution de la logique contemporaine qu'elle doit en partie à ses relations fortes avec l'informatique théorique. Cette évolution est issue des premières remarques faites par des auteurs comme Tait, De Bruijn, Curry et Howard ([Curry 58, Howard 69]) concernant la proximité entre *calcul* et *raisonnement*, qui devaient les conduire à ce que nous appelons désormais l'isomorphisme de Curry-Howard, lequel était conçu au départ dans le cadre de la logique intuitionniste. Les recherches à propos de l'extension de cet isomorphisme à un cadre qui aurait gardé de la logique classique ses symétries essentielles (traduites par l'involutivité de la négation et la loi de contraposition) ont conduit Girard ([Girard, 87, 95, 99, 06]) à inventer la logique *linéaire*. Cette logique s'est avérée alors surprenante en ce qu'elle a permis de mettre en évidence une caractérisation géométrique des preuves, sous l'aspect des réseaux de preuve, sortes de graphes qui sont associés à des preuves seulement lorsqu'ils vérifient certain critère de correction.

Dès ces découvertes, il est devenu patent que l'on pouvait inverser le chemin suivi et faire des preuves d'un système logique comme la logique linéaire une simple *linéarisation des réseaux*. On pouvait alors présumer que si les règles de la logique étaient ce qu'elles étaient, l'origine pouvait s'en trouver dans les contraintes liées à ces réseaux. Comme ces derniers représentaient aussi des

programmes (dans le même sens où l'on peut dire qu'un λ-terme est un programme), on pouvait voir à l'origine des systèmes des contraintes de type calculatoire (comme l'interdiction de certains cycles par exemple).

Nous avons vu aussi, dans cette première partie, que la logique linéaire s'était très tôt ([Blass 91]) prêtée à une sémantique en termes de *jeu*. Il ne fallait cependant pas y voir une conception des jeux à la Lorenzen, ni à la Hintikka. La sémantique proposée par Blass reposait sur des combinaisons de jeux, par exemple le produit linéaire (ou tenseur) s'interprétait comme combinaison de deux jeux où le joueur actif doit obligatoirement jouer dans la composante où son partenaire vient de jouer (il n'a pas le choix), à la différence de la disjonction multiplicative où le joueur actif a la liberté de choisir son jeu. Ce qui est mis en avant dans cette optique c'est donc *l'interaction en elle-même* plutôt que la visée d'un gain.

Cette prise en compte de l'interaction est encore plus manifeste dans un formalisme comme la *ludique* ([Girard 03, 06, 07]) dont le but initial était bien de retrouver les opérateurs fondamentaux de la logique à partir de la notion d'interaction.

Nous avons introduit, à la fin de la première partie, les notions de *contre-preuve* et de *para-preuve*. Dans un dialogue coopératif où deux actants tentent d'établir si une thèse peut être prouvée ou bien au contraire réfutée, l'un des deux est supposé construire une preuve tandis que l'autre tente d'établir une réfutation, la réfutation suivant pied à pied le déroulement de la preuve de sorte que celui qui arrive à une situation où l'autre ne peut plus accomplir de pas ``remporte la partie", autrement dit : le résultat est prouvé ou bien réfuté[1]. Cette conception de la recherche de preuve nous entraîne vers l'idée qu'un objet de la logique peut être caractérisé par l'ensemble de ses contre-objets: objets de même nature que lui mais qui interagissent avec lui de telle sorte que le résultat de l'interaction soit un objet particulier, prévu d'avance. Dans ce qui suit, nous appelons *para-preuve* un objet obtenu par applications successives de règles (comme dans le cas d'une preuve) dont nous ne savons pas encore s'il va déboucher sur une preuve (il peut être mis en échec si c'est l'autre objet, celui avec lequel il est confronté, qui est une preuve). L'idée de définir un objet par l'ensemble de ceux qui lui sont "orthogonaux" (dans un sens qui sera précisé plus loin) a des retombées intéressantes en philosophie du langage. On peut en

[1] Il peut aussi exister des situations non terminatives, où ni preuve ni réfutation ne peuvent être établis, on parle alors de divergence.

effet percevoir la signification d'une énonciation comme l'ensemble de celles à quoi elle répond ou bien qu'elle suscite de la part d'un interlocuteur. C'est considérer, comme le fait Brandom ([Brandom 94, 2000]), qu'une énonciation est toujours un noeud dans un réseau où se rencontrent les offres et les demandes de raisons pour la dire.

2- Vers la ludique

2-1 La polarisation des preuves

Nous avons aperçu ci-dessus la manière dont les concepts de preuve et de jeu en viennent à se rencontrer. Si, comme montré en première partie de cet article, preuve et contre-preuve se définissent par dualité via un processus de normalisation, la situation qu'elles créent ressemble beaucoup à celle qui prévaut entre deux partenaires d'un même jeu: chaque étape du jeu consiste en un changement de joueur, chacun répondant à tour de rôle au dernier coup avancé par l'autre[1]. Avec la co-construction envisagée de deux para-preuves, chaque pas dans l'une (autrement dit chaque application de règle dans la construction de la para-preuve) répond, de la même manière, au pas précédent de l'autre, et cela sera validé lorsqu'on procèdera à la normalisation de la confrontation. Cette normalisation aura donc le rôle d'une procédure "de calcul", cherchant à établir si oui ou non, on aboutit bien, après qu'elle ait eu lieu, à une "confrontation nulle", objet représenté par le séquent vide. Il y a ici analogie avec le produit scalaire qui, s'il conduit comme résultat au vecteur nul, établit que les vecteurs initiaux sont orthogonaux. Le thème de la *géométrisation* apparaît donc une nouvelle fois: après les considérations topologiques qui conduisent à identifier un réseau comme réseau de preuve, nous voyons surgir une notion *d'orthogonalité*.

Deux para-preuves sont orthogonales si et seulement si la normalisation agit sur elles de façon à terminer leur interaction sur le séquent vide. Pour arriver néanmoins à de tels résultats, il convient de définir précisément ce que l'on entend par cette procédure de normalisation, et surtout pourquoi les objets qu'elle met en dualité se comportent bien de la manière attendue. Or, pour que deux para-preuves entrent en situation de confrontation, il faut qu'elles aient des polarités qui s'opposent. Dans la normalisation d'une preuve, on élimine les pas de coupure qui correspondent à des situations où coexistent des formules

[1] Il peut aussi très bien répondre à des coups antérieurs à ce dernier coup, disons que, globalement, celui-ci a créé une situation dont il faut bien tenir compte dans la réponse qui est faite.

identiques mais de signe opposé (A et ¬A). De même, dans celle d'une confrontation entre deux para-preuves, on éliminera les pas qui correspondent à des polarités opposées, ce qui suppose, évidemment, que les para-preuves soient des objets *polarisés*.

Dans une perspective "jeu", on peut voir une para-preuve comme une suite de coups, les coups de l'une répondant à ceux de l'autre. Autrement dit, elle sera une alternance de deux types de pas: des pas *positifs*, par lesquels le joueur à qui c'est le tour de jouer *avance ses pions*, et des pas *négatifs*, au cours desquels ce même joueur ne fait *qu'enregistrer* (passivement donc) le coup de l'autre. Intuitivement, les deux processus s'accordent si les pas positifs de l'un correspondent bien aux pas négatifs de l'autre, autrement dit si, à chaque étape, ce que l'un est prêt à enregistrer correspond bien à ce que l'autre produit. Le lien avec la logique linéaire s'établit alors parce que nous pouvons effectivement observer en elle deux types bien particuliers de règles, que l'on peut caractériser comme *positives* ou *négatives*.

Dans le cas des opérateurs multiplicatifs par exemple, la règle du « $\wp$ » ne fait que réécrire une suite de formules sous la forme d'une seule formule en mettant des « $\wp$ » entre elles. Autrement dit, la règle associée peut se lire dans les deux directions sans perte d'information. Il n'en est pas ainsi pour le tenseur, pour lequel, dès que nous avons mélangé les contextes pour arriver à la conclusion, nous ne pouvons plus retrouver de manière déterministe les contextes qui figuraient dans les prémisses. L'application de la règle (droite) de « $\wp$ » peut donc être décrite comme "passive" (*négative*), alors que celle de « $\otimes$ » peut être décrite comme "active" (*positive*). Il en va de même chez les additifs: introduire un « & » se fait à partir d'un seul et même contexte, et il est donc facile de revenir en arrière après l'avoir introduit. La règle est donc passive. En revanche, l'introduction de « $\oplus$ » se fait toujours à partir du choix d'une formule particulière (l'un des termes conjoints par le « $\oplus$ ») et revenir en arrière après l'avoir introduit suppose de ``deviner" la formule en question, la règle est donc active.

Par convention, les règles actives sont dites introduire des connecteurs positifs et les règles passives des connecteurs négatifs, d'où la partition[1]:

positifs : $\otimes, \oplus$

[1] Cette classification justifie en partie les choix de notations: les positifs sont dans un cercle, les négatifs sont un même ``&", tantôt à l'endroit, tantôt renversé.

négatifs : $\wp$, &

On doit à J. M. Andréoli d'avoir démontré (théorème *de focalisation* ([Andreoli 92]) que toute preuve en logique linéaire peut être transformée en une preuve équivalente qui consiste en une alternance de séries de pas maximales: à chaque suite la plus longue possible de pas positifs (resp. négatifs) succède une suite, la plus longue possible, de pas négatifs (resp. positifs). Il ne reste plus, ensuite, qu'à condenser de telles suites de pas en de simples (méga)pas, quitte à utiliser des règles d'introduction simultanée de plusieurs instances de connecteurs à la fois (donc des règles qui ont un nombre arbitraire de prémisses), pour obtenir la représentation d'une preuve comme alternance de pas négatifs et positifs[1].

2-2 « Seul est le lieu »

Le stade suivant de la généralisation consiste à faire abstraction des formules pour ne retenir d'elles que leurs emplacements. Ce stade est motivé par le souci d'établir une fondation, non seulement des règles mais aussi des formules et des connecteurs par lesquels elles sont combinées. Qu'est-ce qu'une formule? Si nous sommes avertis des développements dans le cadre de l'isomorphisme de Curry-Howard, nous répondrons que cela ne se distingue pas d'un *type*, or un type est un comportement, c'est-à-dire, pour un objet, l'ensemble des manières de réagir avec un autre de ce même type, compte-tenu de lois qui le caractérisent (pensons au type entier par exemple). La notion de formule doit donc être retrouvée à partir de la notion de type que nous obtiendrons *in fine* lorsque la construction sera terminée.

Par ailleurs, la notion de réseau de preuve nous a appris que l'essence de l'objet preuve résidait moins dans les formules étiquetant les noeuds du réseau que dans ses propriétés géométriques qui, elles, n'ont nul besoin de lettres ou d'atomes pour s'exprimer. Partir de ces considérations géométriques nous installe au coeur des fondations et nous devons simplement trouver un système d'écriture pour les traduire: ce seront les lieux (*loci*), étiquetés par des suites arbitraires d'entiers.

Si nous tenons toutefois, à des fins pratiques, à partir de formules, si par exemple nous considérons la formule $(A_1 \otimes A_2) \oplus (A_3 \otimes A_4)$, nous admettrons qu'elle est arbitrairement située en un *lieu* λ et qu'alors $(A_1 \otimes A_2)$ est localisée en

[1] Le calcul obtenu est dit *hyperséquentiel* puisque ses règles généralisent le calcul des séquents.

un lieu λ_1 tandis que $(A_3 \otimes A_4)$ est localisée en un lieu λ_2[1]. A_1 est alors localisée en un lieu λ_{11}, A_2 en λ_{12}[2], A_3 en λ_{21} et A_4 en λ_{22}.

3- Ludique : règles, normalisation et dessins

3-1 Les règles de la ludique

En passant des formules aux lieux, nous passons également des para-preuves aux *dessins*. Girard a sans doute choisi ce terme parce qu'il renvoie à quelque chose de purement graphique, mais aussi pour jouer avec la proximité du mot *dessein*: nous verrons en effet qu'un dessin peut être vu, dans la perspective ``jeu'', comme une stratégie, autrement dit un dessein.

Les règles utilisées dans la construction des dessins, issues des règles du calcul hyperséquentiel mis en place par Andréoli, s'écrivent simplement en faisant totalement abstraction des notations syntaxiques usuelles concernant formules et connecteurs. L'une est dite positive (c'est le schéma d'une règle associée à un connecteur n-aire positif, dans le cas le plus simple à $\otimes$ et à $\oplus$), l'autre négative (c'est le schéma associé à un connecteur n-aire négatif, dans le cas le plus simple à $\wp$ et à &).

Règle positive

$$\frac{(\xi i \mid - \Gamma i)_{i \in I}}{\mid - \xi, \Gamma}\ (+, \xi, I)$$

où ξ et ξi désignent des lieux (c'est-à-dire des suites d'entiers servant à les repérer), I est un ensemble fini d'entiers, Γ et les Γi sont des suites de lieux tels que les Γi soient disjoints deux à deux et inclus dans Γ.

Règle négative

$$\frac{(\mid -(\xi i)_{i \in I}, \Gamma_I)_{I \in N}}{\xi \mid - \Gamma}\ (-, N)$$

[1] Les entiers 1 et 2 sont arbitraires, ce pourrait être 0 et 4 ou n'importe quelle autre paire d'entiers pourvu qu'ils soient distincts.
[2] Même remarque que ci-dessus.

où N est un ensemble (possiblement infini) d'ensembles finis d'entiers et où, pour tout $I \in N$, Γ_I est inclus dans Γ.

On vérifiera aisément que ces règles (plutôt à vrai dire des *schémas* de règles) peuvent être instanciées de différentes manières de façon à donner des règles (hyperséquentielles) correspondant à l'introduction de connecteurs. Par exemple, la règle positive peut donner lieu à[1]:

$$\frac{B_1 \vdash \Gamma_1 \qquad\qquad B_2 \vdash \Gamma_2}{\vdash (A_1^{\perp} \otimes A_2^{\perp}) \oplus (B_1^{\perp} \otimes B_2^{\perp}) \oplus C^{\perp}, \Gamma}$$

ce qui correspond à l'étiquetage (+, ξ, {1, 2}). Cette règle est bien entendu conforme à la règle du « ⊕ » : il suffit que l'une des composantes du « ⊕ » soit prouvée pour que le « ⊕ » dans son ensemble le soit. Ensuite, la composante choisie est décomposée. Comme il s'agit d'un « ⊗ », elle donne autant de séquents à prouver que de composantes de ce tenseur.
De son côté, la règle négative peut donner:

$$\frac{\vdash C\ A1, A2 \qquad\qquad \vdash B1, B2 \qquad\qquad \vdash}{(A1^{\perp} \otimes A2^{\perp}) \oplus (B1^{\perp} \otimes B2^{\perp}) \oplus C^{\perp} \vdash \Gamma}$$

ce qui correspond à l'étiquetage (-, ξ, {{1, 2}, {1, 2}, {1}}). Ici, le « ⊕ » qui correspond à un « & » s'il était transféré à droite, se décompose en autant de séquents à prouver que de composantes. Chacune correspond à un « ℘ » (là encore si les formules étaient transférés de l'autre côté du ⊢) lequel donne un simple séquent où sont énumérées les composantes.
A ces deux règles, on ajoute le *paralogisme* vu plus haut, qui sert à terminer éventuellement un dessin.

Règle du daimon

$$\frac{}{\vdash \Gamma}\ \dagger$$

[1] ξ est alors le lieu de la formule sur laquelle on se focalise, un choix est opéré quant au composant du ⊕, I est l'ensemble {1, 2}.

Par exemple:

---------- †
|- A, B

En principe, cette règle ne s'utilise que lorsqu'on ne peut pas faire autrement, elle correspond à un aveu d'échec, ou bien, si on compare avec la logique classique, au cas où, cherchant à prouver un séquent |- ϕ, on découvre en réalité qu'il existe une interprétation (par exemple, en logique propositionnelle, une distribution de valeurs de vérité) rendant vraie ¬ϕ.

On remarquera que cette représentation au moyen de lieux (ou *loci*) évacue complètement, avec la notion de formule, celle *d'atome*, et par conséquent... l'axiome d'identité entre les atomes. Dans les systèmes logiques usuels, exprimés en termes de séquents, l'η-expansion permet de ramener toute identité A|- A (où A est une formule quelconque) à l'axiome d'identité entre atomes, qui devient alors le point d'arrivée absolu, fondant la finitude du système. Faire abstraction de ces notions a donc deux conséquences fondamentales :

1) cela permet de prendre en compte la possibilité de "preuves" (ou para-preuves) infinies,
2) le processus d'η-expansion peut être lui-même infini, autrement dit l'identité entre formules[1] ne peut être établie que de manière procédurale[2].

3-2 La normalisation d'un réseau de dessins

Cette présentation évacue également, du moins en apparence, la règle de coupure: on dira simplement que le cas de coupure correspond à la rencontre de deux lieux identiques mais de polarités opposées (ξ en position positive, c'est-à-dire à droite du séquent, et ξ en position négative, c'est-à-dire à gauche). A partir de là, il est possible de définir la procédure de normalisation d'un *réseau* de dessins, en particulier (le cas le plus important) s'il est clos. On appelle

[1] Ou ce qui désormais, en tient lieu, à savoir un dessin - éventuellement inclus dans un autre dessin - qui essaie d'établir une preuve de cette formule.
[2] On peut donner un sens à la notion d'identité de formules *jusqu'à un certain point*, ce point étant fixé arbitrairement.

([Girard 06, vol. II, p. 317]) *réseau clos* tout ensemble fini non vide de dessins $\mathfrak{R}=\{\Delta 0, ..., \Delta n\}$ de bases[1] respectives $\Xi p \vdash \Lambda p$ telles que :

- les *loci* des bases sont deux à deux disjoints ou égaux.
- chaque locus apparaît dans au plus deux bases, une fois en partie gauche, une fois en partie droite (le lieu partagé est appelé coupure)
- le graphe dont les sommets sont les bases, et les arêtes les coupures, est connexe et acyclique.

Une fois les lieux reliés par coupure éliminés, il reste au plus un lieu négatif (*manche*) non coupé. S'il ne reste rien, on dit que le réseau est clos. L'unique dessin Δi dont la base est soit positive, soit négative avec le manche non coupé, est appelé *dessin principal*. Dans la normalisation du réseau (cas clos) de dessin principal Δ, dont on suppose que la dernière règle appliquée est κ, on distingue trois cas:

- κ est la règle du daimon, alors le réseau se normalise en l'unique dessin de base vide,
- κ est la règle $(+, \xi, I)$. En ce cas, ξ est un lieu de coupure. Il apparaît positivement dans Δ, mais négativement (donc comme *manche*) dans un autre dessin du réseau, disons E qui est forcément négatif et dont la dernière règle est nécessairement de la forme $(-, \xi, N)$. Alors la normalisation échoue si $I \notin N$. Elle réussit si $I \in N$. Dans ce cas, soit, pour tout $i \in I$, Δi le sous-dessin de Δ dont la conclusion est de la forme $\xi.i \vdash ...$ et soit E' le sous-dessin de E de conclusion $\vdash \xi.I$[2], ..., on remplace Δ, E par les Δi, E', et on ne garde que la composante connexe qui contient E'. On obtient alors un nouveau réseau clos auquel on peut continuer d'appliquer la procédure.

Cette notion de normalisation est particulièrement apte à rendre compte de celle de *dialogue*. Un dessin Δ est alors vu comme un ensemble de successions de tours de parole possibles organisé de façon arborescente. Le locuteur porteur du dessin intervient positivement par une question ou un jugement.

[1] La base d'un dessin est son séquent conclusion. Ajoutons que les séquents dont il est ici question sont tous tels qu'ils possèdent au plus un lieu en partie gauche (ou *manche*) et un nombre arbitraire de lieux en partie droite (ou *dents*). Un tel séquent (ou *fourchette*) est positif si son manche est vide, négatif dans le cas contraire. Un dessin est dit positif (resp. négatif) si sa base est positive (resp. négative).

[2] $\xi.I$ désigne la suite $(\xi_i)i \in I$.

Chaque pas positif est suivi d'un pas négatif qui traduit, de la part du locuteur, les attentes potentielles relatives à la précédente intervention positive qui a eu lieu sur la même branche (il peut s'agir du type de réponse attendue dans le cas d'une question, ou du type d'argument envisagé dans le cas d'un jugement).

Dualement, on verra un dessin E porté par un interlocuteur comme une arborescence de suites de tours de parole complémentaires. L'interlocuteur répond à la question ou objecte au jugement avancé, mais il peut aussi, à son tour, intervenir par une question ou un jugement. Dans tous les cas, son tour de parole est lui aussi suivi par un pas négatif destiné à enregistrer la réaction du premier locuteur. Les bifurcations possibles dans les deux dessins reflètent les prévisions de réaction planifiées par chaque interlocuteur en fonction des interventions de l'autre. La normalisation du réseau formé par les deux dessins implique alors une visite des lieux avancés par les deux partenaires de façon complémentaire, et l'abandon implicite des branches qui n'ont pas été choisies lors de l'interaction, autrement dit elle fait apparaître une *trace* (ou *dispute* selon le terme de Girard) en quoi consiste le dialogue effectivement réalisé.

Par ailleurs, elle rend compte de la *convergence* du dialogue, c'est-à-dire du respect par les deux partenaires d'un certain nombre de sous-entendus ou de connaissances d'arrière-fonds matérialisés par la condition "I∈ N" qui signifie ici que chaque suite d'alternatives de continuation par un locuteur appartient bien au répertoire de continuations possibles tel que projeté par l'autre[1]. On pourra même avancer l'idée que, pour un observateur neutre, un dialogue ne se comprend qu'à condition de supposer que les deux interlocuteurs projettent de le rendre convergent. La visée de *convergence* semblera ainsi mieux définie que celle de *coopération* telle qu'elle apparaît chez des pragmaticiens comme H.P. Grice, et on pourra ainsi envisager de fonder une pragmatique formelle sur l'impératif *Restez convergents !*

3-3 Des dessins aux desseins

Une autre vision consiste à voir, dans un dialogue, des successions de pas, alternativement positifs, quand ils sont des interventions du partenaire dont on prend le point de vue, et négatifs quand ce sont les interventions de l'interlocuteur. De telles successions sont appelées *chroniques*. Plus précisément, dans cette vision, on considère comme étant une *action*, un triplet (ε, ξ, I) où ε indique la parité de l'action, autrement dit, lorsqu'on se place du point de vue

[1] La normalisation se poursuit à condition que l'ensemble de lieux ouvert par chaque intervention positive de la part d'un locuteur appartienne au répertoire de l'autre, admis dans le pas négatif correspondant.

d'un locuteur donné, ε est "+" lorsque l'action vient du locuteur lui-même et elle est "-" quand elle vient de l'interlocuteur, ξ est un lieu qui indique le *foyer* de l'action et I est un ensemble d'entiers qui permet de définir l'ensemble des foyers des actions futures, lequel évolue évidemment continuellement jusqu'à la fin du dialogue[1]. Une *action* est donc soit positive soit négative, elle s'effectue à partir d'un lieu donné, sélectionné parmi les lieux fournis par les actions antérieures, et elle fournit un nouvel ensemble de lieux où poursuivre la partie, soit en positifs soit en négatifs.

Une chronique de base $\gamma|-\Delta$ est alors une suite non vide alternée d'actions $k_0, k_1, ..., k_n$ où $k_i = (\varepsilon, \xi i, Ii)$, telle que:

1) si la base est négative (resp. positive), k_0 a la polarité - (resp. +),
2) seule la dernière action, k_n, peut être le daimon : (+, †),
3) une action négative k_i a pour foyer ou bien γ (auquel cas c'est la première action), ou bien un élement de $\xi_{i-1}.I_{i-1}$,
4) une action positive k_i a pour foyer un élément ξ_i de Δ ou bien un élément de $\xi_q.I_q$, où $(-, \xi_q, I_q)$ est une action négative précédente,
5) les foyers sont deux à deux distincts.

On notera que la condition (3) signifie que toute action négative s'appuie sur un lieu immédiatement précédent dans la même chronique[2], et que la condition (4) signifie que le locuteur a toujours le droit de puiser le foyer de son intervention dans la liste initiale Δ[3] ou bien dans une liste de lieux introduits précédemment par son interlocuteur[4]. On peut alors interpréter un dessin comme... un *dessein*, c'est-à-dire une stratégie dans un jeu où chaque pas (positif) d'un joueur est vu comme une action en réaction à un coup avancé par l'autre, l'aspect "stratégie" signifiant que tous les coups possibles de l'adversaire sont prévus, avec chaque fois la réponse appropriée. Un tel dessein est donc un *arbre de chroniques* (ou un ensemble d'arbres, c'est-à-dire une forêt) tel que les chroniques soient deux à deux cohérentes, autrement dit tel que si deux

[1] fin marquée en général par l'occurrence de l'action (+, †), qui se traduit concrètement le plus souvent par une expression d'acquiescement.
[2] Ceci est le pendant de la notion de *LatestMove* dans la formalisation du dialogue à laquelle procède J. Ginzburg ([Ginzburg 11]): le dernier mouvement dans un dialogue est le fait de discours le plus saillant et il détermine la réaction de l'interlocuteur.
[3] Qu'on peut voir alors comme liste de topiques de discours disponibles.
[4] Noter que l'interlocuteur peut avoir introduit simultanément plusieurs topiques de discours au cours d'une de ses interventions et que le locuteur peut donc revenir à tout moment sur un topique non encore traité, donc figurant à n'importe quel moment antérieur du processus.

chroniques diffèrent, ce soit à partir d'une action négative, et qu'à partir de celle-ci, elles n'aient plus jamais les mêmes foyers. Cela signifie qu'il ne peut y avoir branchement dans un tel arbre que sur une action positive: il s'agit du cas où plusieurs lieux sont donnés simultanément pour la poursuite du dialogue[1]. Un branchement sur une action négative signifierait la superposition de deux actions positives simultanées, autrement dit, du point de vue du discours, l'énonciation de deux positions contradictoires, ce qui est impossible[2].

Il y a évidemment une parenté profonde entre dessins et desseins bien que leur lien ne soit pas biunivoque (cf. [Girard 06, vol. II, p. 311])[3]. En allant des uns aux autres, nous nous déplaçons évidemment de l'aspect "preuve" à l'aspect "jeu". Ce faisant, nous ouvrons la voie à une réflexion sur le langage à partir des *actions* dont il est le support, ce qui est en quelque sorte une nouvelle façon, à la fois, de *faire de la pragmatique* et de chercher à fonder les lois de la logique sur une base matérielle effective: celle de nos interactions[4].

4- Des dessins aux comportements

On notera encore que, si nous nous sommes servis, à la base, des règles de la logique linéaire pour en tirer une généralisation sous la forme des règles positive et négative de la ludique, nous pouvons, en aval de ce périple, oublier d'où nous sommes partis et considérer que les règles de la ludique ne sont rien d'autre que celles qui nous permettent d'obtenir une construction canonique pour un type très général de jeu. On se demandera donc dans un second temps, à rebours du chemin suivi, s'il est possible à partir de cette construction, de retrouver les notions qu'en cours de route nous avons évacuées une à une (celle de preuve, celle de formule, celle de règle etc.). En particulier à quoi correspond désormais la notion de *type* (identifiée au sein du paradigme Curry-Howard à celle de

[1] Du point de vue logique il s'agit de la règle du tenseur.

[2] Du point de vue logique, cela correspond à un « & », et donc reviendrait à exiger d'obtenir en mêmes temps les deux voies d'une alternative. Noter qu'il y a toujours néanmoins, en principe, dans un dialogue, la possibilité de revenir en arrière sur un choix, autrement dit d'explorer plus tard la possibilité ouverte par le choix alternatif à celui que l'on a fait. Formellement, ceci ne sera possible que dans un cadre formel permettant de « rejouer » les coups déjà produits- on parle alors de *ludique avec répétitions*. cf. [Balsadella et Faggian 09].

[3] Techniquement, un dessin de base (par exemple) $\xi|\text{-}\sigma, \tau, \delta$, est tel qu'à chaque pas, la répartition des lieux non focalisés soit précisée, même celle de ceux qui ne sont jamais focalisés. Un dessein ne précise pas cette répartition, qui peut n'être vue que comme un détail. Le résultat est, en tout cas, qu'il peut y avoir plusieurs dessins pour un même dessein

[4] On n'est pas loin ici du projet de Habermas visant à établir les fondements de la raison à partir des régularités émergentes de l'agir communicationnel, mais nous nous plaçons dans un cadre beaucoup plus abstrait et général qui ne présuppose rien d'autre a priori qu'une caractérisation géométrique de l'interaction.

formule)? On sait qu'abstraitement, en informatique, on définit un type par un genre de comportement, qui est commun à plusieurs objets. Deux objets sont "du même type" si et seulement s'ils se comportent de la même manière vis-à-vis de certaines opérations, par exemple deux entiers quelconques ont les mêmes propriétés du point de vue de l'addition et de la multiplication. Il en va de même ici où nous pouvons définir un type à partir d'un comportement commun vis-à-vis de l'opération fondamentale, qui est la normalisation. La possibilité de le faire vient d'un théorème démontré par Girard (cf ibid. 13-6-2, pp 327-328), désigné comme théorème *de séparation*. Il revient à dire qu'on peut toujours *séparer* deux objets observables par leurs comportements (cf. aussi [Faggian 04]), autrement dit, on peut définir la notion de type de telle sorte que deux dessins ne soient pas de même type si et seulement s'il existe un dessin orthogonal à l'un mais pas à l'autre. Ceci conduit à définir la notion de type comme ce qui est appelé en ludique un *comportement* : le comportement d'un dessin Δ étant son bi-orthogonal : $\Delta^{\perp\perp}$.

Autrement dit, nous parvenons à exprimer de manière précise l'idée fondamentale qu'un objet est identifié (en tant que type) non pas à partir d'une essence, mais à partir de l'ensemble de ses comportements, actuels et virtuels, par rapport à d'autres objets du même univers. Encore une fois, ici, l'interaction est première. C'est elle qui définit ce qui est observable dans l'espace où elle se produit. Ayant défini de tels objets d'ordre supérieur - les *comportements* - on peut ensuite étudier les différentes manières de les composer entre eux. C'est là que nous trouverons des opérations qui rétrospectivement fondent les connecteurs dont nous étions partis initialement. Il existe une manière de définir chacun des opérateurs, $\otimes$, $\oplus$, $\wp$, & de telle sorte que ``l'on retombe sur ses pieds", autrement dit que se vérifie un théorème de complétude, mais de complétude *interne*[1].

Un ensemble de desseins E (voire un seul dessein, Δ) permet toujours de définir un comportement **G** (il suffit de prendre tous les desseins orthogonaux aux éléments de E, et de prendre l'orthogonal de l'ensemble ainsi formé), néanmoins il peut se passer que certains éléments de E soient superflus dans cette opération (en les supprimant, on obtiendrait le même **G**), en d'autres termes il existe une *notion de complétude interne* que l'on peut caractériser de la manière suivante :

- E est complet pour **G** si E est nécessaire et suffisant pour produire **G**.

[1] En tant qu'opposée à la complétude « externe », qui est la complétude classique, autrement dit la mise en relation *sémantique* avec un univers externe.

On peut alors tenter de démontrer un théorème de complétude interne pour chaque manière de définir un nouvel opérateur: la vérification de la propriété sera alors un critère pour le valider. Pour ce faire, il faut, à chaque fois, démontrer que l'ensemble des desseins choisi pour servir de base à la construction est complet pour le nouveau comportement obtenu[1] . Finalement, on aboutira à ce qu'une preuve syntaxique sans coupure[2] d'une formule A ⊗ B --o C soit tout simplement un élément du comportement **A** ⊗ **B** --o **C**, où **X** représente le comportement engendré par X, et où les opérateurs de la seconde formule sont ceux qui sont définis entre les comportements.

5- Conclusion

On peut comparer l'entreprise de Girard à celles d'auteurs comme Hintikka ([Hintikka et al. 83, 97]) et Lorenzen ([Lorenzen, 60]) qui s'inscrivent elles aussi dans un cadre dialogique. Le but de Lorenzen, on le sait, était de montrer, par la formulation dialogique des règles associées aux connecteurs, que la logique intuitionniste était la logique la plus naturelle. Ce faisant, il fermait les yeux sur les multiples adaptations possibles de la dialogique aux autres logiques, par l'intermédiaire d'un jeu sur les règles dites - ici aussi - structurelles: Rahman et ses collaborateurs (Rückert, Keiff etc.) ([Rahman 05]) ont en effet montré que par variation sur ces règles, il était possible, non seulement de retrouver la logique classique mais aussi diverses formes de calcul[3] (logique partielle, logique libre etc.). Il reste à prouver la « naturalité » de ces variations. Comme le dit M. Marion ([Marion 09]), comparant la règle intuitionniste et la règle classique[4],

> *If the difference between classical and intuitionnistic logic is the prohibition of repeated attacks, where is a justification for this to be found?*

[1] Par exemple, si on note |G| l'ensemble des dessins nécessaires et suffisants pour engendrer le comportement G, l'ensemble des couples de dessins nécessaires et suffisants aux définitions respectives de G et de G', c'est-à-dire |G| x |G'|, est exactement un ensemble de dessins nécessaires et suffisants à la définition de G & G', c'est-à-dire: |G}| x |G'| = |G & G'|, les dessins de ce deuxième ensemble étant exactement les dessins obtenus par union d'un élément de |G| et d'un élément de |G'| (théorème de l'incarnation).

[2] On peut identifier les preuves en question à des dessins *gagnants*, autrement dit dont la confrontation avec un contre-dessin se termine toujours, et sans application de la règle du *daimon*.

[3] De telle sorte qu'à l'inverse de Lorenzen... ils finissent par faire de la logique dialogique un argument pour un pluralisme logique! (cf [Keiff, 07]).

[4] Dans la première, chaque joueur peut ou bien attaquer une formule complexe assertée par son adversaire ou se défendre contre la *dernière* attaque à laquelle il n'a pas encore été répondu, alors que la seconde dit que chaque joueur peut ou bien attaquer une formule complexe assertée par son adversaire ou se défendre contre *n'importe quelle* attaque, *y compris celles auxquelles on a déjà répondu.*

D'une manière générale, la question à laquelle se trouvent confrontés les cadres de Lorenz et Lorenzen aussi bien que de Hintikka et Sandu ([Hintikka & Sandu 97]) est celle d'une inévitable circularité dès qu'il s'agit de trouver d'où s'originent les règles particulières du dialogue auxquelles ils se réfèrent. Ainsi que le rappelle M. Marion, Lorenzen cherchait à fonder ces règles sur nos supposées pratiques discursives *pré*logiques, mais comment affirmer que celles-ci (pour autant qu'elles existent) aient directement à voir avec telle ou telle règle, comme par exemple celle que l'on utilise pour attaquer et défendre une implication?[1] N'y a-t-il pas un sens à dire, comme le fait Hodges ([Hodges 04]), que dans un dialogue, on peut attaquer une affirmation soit en arguant qu'elle est fausse, soit qu'elle est inutile pour les déductions futures[2]? De plus, comme le dit toujours Marion, la notion, elle-même, de conversations « prélogiques » semble avoir quelque chose d'incohérent. On serait plutôt tenté de suivre la voie indiquée par Brandom ([Brandom 1994]) : une *assertion* (par exemple dans une conversation, justement) n'est pas un simple « signal » comme pourrait en envoyer un animal ou une machine réglée pour cela, mais se trouve, par la nature même du langage humain, immédiatement immergée dans un jeu d'offre et de demande de raisons. J'asserte P parce que je me sens autorisé à le faire, et il en est ainsi parce que je possède les ressources nécessaires pour répondre à toute demande de justification pour P venant d'un tiers, autrement dit, en assertant P je m'engage à soutenir certaines au moins des implications de P. On ne saurait mieux dire que je me trouve donc déjà dans une activité logique et non « pré » -logique. Dans [Marion 12], Marion propose l'équivalence :

attaque = demande de raison
défense = fourniture de raison

mais dans l'approche ludique, nous ne parlerons pas en termes *d'équivalence* entre ces deux séries de mouvement dans la mesure où la ludique ne s'exprime pas en termes de règles « d'attaque » ni en termes de règles de « défense » (c'est la logique de Lorenzen qui s'exprime ainsi). En ludique, les seules règles que nous avons à notre disposition sont les règles *positive* et *négative*: une règle positive pour effectuer une *action* (positive) du genre de: *asserter un argument*, de *poser une question* ou de *répondre à une question*, une règle négative pour montrer qu'on a enregistré l'action positive de l'interlocuteur en lui reconnaissant une pertinence:

[1] En logique dialogique comme dans les jeux de Hintikka, on ``attaque'' une formule $\phi \Rightarrow \psi$ en plaidant pour ϕ et en demandant ainsi à son adversaire de défendre ψ, on défend donc, dans ce cas, en s'engageant sur la vérité de ψ.

[2] Autrement dit, dans le cas de l'implication par exemple, en rejetant purement et simplement ϕ..

elle figurait dans la gamme des attentes. De ce fait, l'action négative (se traduisant comme une *attente*) constitue une autorisation (*entitlement*) : une réponse donnée doit figurer dans le spectre des réponses attendues, une question posée doit figurer dans la gamme des questions pertinentes pour le stade auquel la conversation est parvenue. Au fil des échanges, les positions positive ou négative changent en alternant: nous ne sommes donc pas dans le schéma de dialogue prévu par Lorenzen ou par Marion (dans la mesure où l'action positive peut correspondre à la fois à une demande de raison et à une fourniture de raison et où l'action négative n'est ni l'une ni l'autre, étant simplement un cadre de recevabilité pour une action positive), néanmoins nous pouvons conserver le vocabulaire brandomien (même si un peu déplacé) pour assimiler l'action positive à un engagement (puisque même dans une demande de raison, le locuteur s'engage, ne serait-ce que sur la pertinence de sa question) et l'action négative à une autorisation. Noter que, dans ce contexte, la règle du daïmon est simplement un mouvement par lequel un locuteur *endosse* la position prise par l'autre: avouer qu'on rend les armes, ce n'est pas nécessairement « perdre la partie », ce peut être tout simplement signifier qu'on est convaincu, et qu'on endosse pour l'avenir la même position que l'interlocuteur. Les schémas de règle proposés sont donc bien plus proches de structures objectives et fondamentales du dialogue (sorte de conditions de possibilité du langage) que ne le sont les règles supposées d'attaque ou de défense. Avant d'attaquer ou de défendre, dans un dialogue, on s'engage et on donne des autorisations (sous la forme d'attentes légitimes).

En procédant ainsi, par ailleurs, les connecteurs logiques (ou particules) prennent un tout autre sens et voient leur être émerger non plus de règles *a priori* mais de *comportements*, à l'opposé des cadres posés par Lorenzen ou par Hintikka où on tente de justifier une pratique logique en se basant sur des règles (d'attaque et de défense) dont on voit bien qu'elles sont faites pour convenir aux connecteurs considérés. Le point de vue girardien cherche à se démarquer de cette circularité en fondant la logique sur un autre ordre: le géométrique. Certes, nous avons pu avoir l'impression dans ce qui précède que les règles de la ludique étaient calquées, elles aussi, sur les règles d'introduction des connecteurs linéaires, mais il s'agissait alors seulement de guider une démarche heuristique. Après être passés aux *loci*, nous n'avons plus eu entre les mains que des schémas purement graphiques où les lieux peuvent être interprétés comme de simples cases de damier où des pions se déplacent tantôt vers un espace négatif, tantôt vers un espace positif en suivant certaines règles[1]. Du reste, nous

[1] *Géométrie de l'interaction* est la manière dont Girard a qualifié son programme de recherches entre les années quatre-vingt-dix et la première décennie des années deux mille, cf [Girard 89b, 95, 07}.

voyons bien qu'il n'y a plus de sens, à la fin de ce périple, à associer les règles de la ludique à des règles d'attaque ou de défense pour des connecteurs précis. Si les connecteurs reviennent dans le jeu, c'est par le biais de nouvelles constructions. Tout d'abord, comme nous l'avons dit plus haut, la notion de *formule* est retrouvée par l'intermédiaire de celle de *comportement*. Un comportement est un ensemble de dessins qui, tous, réagissent de façon semblable par rapport aux autres dessins dans l'opération de normalisation, on l'obtient donc par une véritable opération de clôture. De tels ensembles clos peuvent ensuite être composés entre eux par des opérations que l'on définit selon un critère de *complétude interne*: ce sont ces opérations qui joueront alors le rôle des connecteurs. Ceux-ci ont donc une base *géométrique* (en termes d'espaces) et sont des constructions a posteriori. La difficulté de la ludique vient du fait que, s'il est aisé de redonner sens ainsi à tout le contenu « finitiste » de la logique (ce que Girard appelle la logique *parfaite*, au sens linguistique de « parfait = processus achevé ») en retrouvant additifs et multiplicatifs, il est en revanche beaucoup plus difficile de retrouver ce qui excède le fini, et qui exprime notamment la réutilisabilité (ou la nature pérenne) des ressources, autrement dit les exponentielles, telles que « ! ».

La géométrie de l'interaction s'est jetée dans ce travail mais avant d'aller jusque là, nous bénéficions d'un cadre de construction novateur qui, à notre avis, permet de repenser sérieusement l'origine des lois logiques sur une base procédurale et donc les conditions de possibilité du langage logique, conditions qui ne sont ni à trouver dans la logique elle-même (par quelque voie déguisée) ni dans une logique transcendantale, mais peut-être dans des structures anthropologiques fondamentales comme celles qui organisent nos dialogues.

Références

J.-M. Andréoli, "Logic Programming with Focusing Proofs in Linear Logic", The *Journal of Logic and Computation*, 2, 3, pp. 297-347, 1992,

M. Basaldella, C. Faggian, "Ludics with repetitions", LICS 2009,

A. Blass, "A Game Semantics for Linear Logic", *Annals of Pure and Applied Logic*, 56, pp 183-220, 1992,

R. Brandom, *Making it explicit*, Harvard Press, 1994, trad. franç. *Rendre explicite*, ed. du Cerf, 2010,

R. Brandom, *Articulating Reasons*, Harvard Press, 2000, trad. franç. *L'articulation des raisons*, ed. du Cerf, 2009,

N. G. de Bruijn, "A survey of the project Automath", in J. P. Seldin \& J.R. Hindley (eds.), *To H. B. Curry: Essays on Combinatory Logic, Lambda Calculus and Formalism*, Academic press, 1980, pp. 579--606,

H. B. Curry & R. Feys, *Combinatory Logic*, North-Holland, 1958,

V. Danos & L. Régnier, "The Structure of Multiplicatives", *Archives for Mathematical Logic* n° 28, Springer, pp. 181--203, 1989,

M. Dummett, *Elements of Intuitionism*, Oxford University Press, 1977.

C. Faggian, "Interactive observability in Ludics" in *Proceedings of the International Colloquium on Automata, Languages and Programming (ICALP 2004),* LNCS n° 3142, pp. 506--518, Springer, 2004.

J. Ginzburg, The Interactive Stance, Oxford University Press, 2011,

J.-Y. Girard, "Linear Logic", *Theoretical Computer Science*, n° 50, 1987,

J.-Y. Girard, Y. Lafont & P. Taylor, *Proofs and Types*, Cambridge Tracts in Theoretical Computer Science 7, Cambridge University Press, 1989,

J.-Y. Girard, "Towards a geometry of interaction", in J. Gray and A. Scedrov (eds), *Categories in Computer Sciences and Logic*, American Mathematical Society, vol. 92, pp. 69--108, Providence, 1989,

J.-Y. Girard, "Geometry of Interaction III: accommodating the additives" in J-Y. Girard, Y. Lafont et L. Regnier (eds) *Advances in Linear Logic*, Cambridge University Press, pp. 329--389,1995,

J.-Y. Girard, "On the Meaning of Logical Rules-I" in *Computational Logic*, U. Berger and H. Schwichtenberg eds. Springer-Verlag, 1999,

J.-Y. Girard, "Locus Solum", *Mathematical Structures in Computer Science* 11, pp. 301-506, 2001,

J.-Y. Girard, "From Foundations to Ludics", *Bulletin of Symbolic Logic* 09, pp. 131-168, 2003,

J.-Y. Girard, *Le Point Aveugle*, vol. I , II, Hermann, Paris, 2006,

J.-Y. Girard, "La logique comme géométrie du cognitif" in J-B. Joinet (ed.) *Logique, dynamique et cognition*, Publications de la Sorbonne, pp. 15--29, Paris, 2007.

J.-Y. Girard, "Transcendental Syntax 2.0", notes du cours donné "à Logique et Interaction 2012", Marseille, 6-10 février 2012

J. Hintikka, J. Kulas, The Game of Language: *Studies in Game Theoretical Semantics and its Applications*, D. Reidel, 1983,

J. Hintikka, G. Sandu, *Game Theoretical Semantics*, in J. Van Benthem and A. ter Meulen *Handbook of Logic and Language*, chap. 6, Elsevier, 1997,

W. Hodges, "Logic and games" in Zalta, E. N. editor, *The Stanford Encyclopedia of Philosophy*, entrée /logic-games/, 2004,

W. A. Howard, "The Formulae-as-Types Notion of Construction", in J. P. Seldin \& J.R. Hindley (eds.*), To H. B. Curry: Essays on Combinatory Logic, Lambda Calculus and Formalism*, Academic press, 1980, pp. 479--490,

J-B. Joinet, *Logique et interaction*, mémoire pour l'habilitation à diriger des recherches, Université Paris 7 - Diderot, département ``Histoire et Philosophie des Sciences", 12 décembre 2007.

L. Keiff, *Pour un pluralisme logique*, thèse de doctorat, Université de Lille III, 2007.

A. Lecomte, *Logic, Meaning and Ludics*, Imperial College Press, 2011,

A. Lecomte, M. Quatrini, "Ludics and Rhetorics", in *Ludics, Dialogue and Interaction*, Folli-Springer-LNAI n° 6505, 2011,

K. Lorenz, *Arithmetik und Logik als Spiele*, Dissertation, Universität Kiel, 1961,

P. Lorenzen, *Logik und Agon*, Atti. Congr. Internat. di Filosofia, 4, pp187-194, 1960

M. Marion, "Why Play Logical Games?" In *Games: Unifying Logic, Language, and Philosophy*, O. Majer, A.-V. Pietarinen & T. Tulenheimo (éd.). Dordrecht: Springer, p. 3-26, 2009.

M. Marion, "Game Semantics and the Manifestation Thesis" In *The Realism-Antirealism debate in the Age of Alternative Logics*, S. Rahman et al. (éds.) *Logic, Epistemology and the Unity of Science* 23 Springer Science + Business Media B.V., p. 141-168, 2012.

Per Martin-Löf, *Intuitionistic Type Theory*, Bibliopolis, Naples, 1984.

A-V. Pietarinen, *Game Theory and Linguistic Meaning*, Elsevier, 2007.

S. Rahman & L. Keiff, "How to be a dialogician" in Vanderveken, D. (ed.) *Logic, Thought and Action,* Springer, pp. 359--408, 2005.

A. Ranta, *Type-Theoretical Grammar* Oxford University Press, 1994.

J. Stoy, *Denotational Semantics: the Scott-Strachey Approach to Programming Language Theory*, MIT Press, Cambridge, Mass. 1977.

THREE LECTURES ON THE STORY OF PRAGMATISM

Hilary **PUTNAM**
(Harvard University)

Résumé. Dans un entretien donné dans la série documentaire *American Philosopher*, Putnam dit : « (…) La philosophie est en bon état seulement lorsqu'elle investit de façon simultanée des questions d'intérêt intellectuel pur, ou du moins ce qui semble avoir en ce temps-là un intérêt purement intellectuel, et des questions qui possèdent de façon évidente une importance pratique immense dans une période donnée. » La raison ne consiste pas dans le fait d'enrichir seulement l'une par l'autre. L'enjeu le plus important est de prévenir les conséquences regrettables qu'une « mauvaise philosophie » peut en définitive apporter lorsque des penseurs professionnels se dérobent de leur tâche sociale. Une telle compréhension de la philosophie, et en particulier du pragmatisme classique, comme « manière de vivre » forme le noyau des trois conférences de David Ross Boyd données par Hilary Putnam à l'Université d'Oklahoma les 25-26-28 Octobre 2005. Nous avons l'honneur et la fierté de publier ces conférences pour la première fois en un seul article dans ce volume.

Le pragmatisme classique, en particulier celui de James et Dewey, est caractérisé par une confiance profonde dans une possibilité de changer la "colère du temps" (James) en évitant l'arbitraire et l'intégrisme, en éduquant les individus qui possèdent le libre arbitre et qui sont en définitive dans une position de se libérer eux-mêmes des habitudes sociales souvent irrationnelles (Dewey).

De toute évidence, la variété des problèmes auxquels nous sommes confrontés aujourd'hui était déjà dans l'agenda de James et Dewey. D'un côté du spectre intellectuel, ils ont remarqué une tendance de la suprématie des sciences de la nature qui a conduit à une perte de confiance dans les valeurs humaines. D'autre part, l'idéalisme avec son ordre moral transcendantal, pourrait conduire vers une forme désastreuse d'absolutisme. Le programme pragmatiste consistait à concilier la connaissance scientifique factuelle digne de confiance avec les valeurs humanistes, les émotions, et aussi la religion. Il peut être perçu comme une forme de remède pour tout ce qui attire vers les extrêmes sur le plan intellectuel. D'un point de vue théorique, le centre de la question est la dichotomie valeur/fait, que Putnam considère -comme il l'a ouvertement déclaré et à de nombreuses reprises - comme étant le problème le plus important dans la philosophie contemporaine.

L'affirmation selon laquelle les valeurs sont subjectives a été poursuivie dans la philosophie pure. Par la suite, il y a eu un impact énorme sur la vie pratique. Le cas paradigmatique est l'économie. La demande mentionnée ci-dessus, est, comme il l'écrit, « l'héritage le plus dangereux du positivisme logique ». Le « troisième éveil pragmatique », appelant à la méthodologie scientifique dans l'évaluation des jugements de valeur, est exactement ce qui peut résoudre le problème.
L'objectif ultime de Putnam dans cette série de conférences est de démontrer de façon convaincante que les pragmatistes classiques, en particulier James et Dewey, nous initient à des idées importantes et que comme tels, ils méritent de faire partie de la « philosophie à venir ». « Trois conférences sur l'histoire du pragmatisme » transmet ce message important pour notre époque, où malheureusement les sociétés connaissent une lutte globale et totale pour la paix, la justice économique et la bonne éducation.

Paula Quinon, au nom du comité de rédaction.

Mots-clés : Pragmatism, James, Dewey, Peirce, éveil pragmatique, avenir de la philosophie, dichotomie fait/valeur.

ملخّص. أفاد هيلاري بتنام في حوار أجراه في السلسلة الوثائقية :*الفيلسوف الأمريكي*[1]، بأن" الفلسفة تبدو في أحسن حال فقط عندما تحقق في آن واحد، في مسائل ذات شاغل فكري محض، أو فيما يبدو، في حينها على الأقل، أنه ذا شاغل فكري محض، وفي مسائل تبدو بوضوح أنها ذات أهمية عملية بالغة في ذلك الزمن المحدّد." ولا يمكننا تفسير ذلك فحسب بكون الواحدة تثري الأخرى. تتمثّل القضية الأكثر أهميه في الوقاية من النتائج الوخيمة، والتي ينجم عنها في نهاية المطاف "فلسفة سيّئة"، حينما يتهرّب المفكرون المهنيون من واجبهم الإجتماعي. يكوّن مثل هذا الفهم للفلسفة، وللنزعة البراجماتية الكلاسيكية بالخصوص، بوصفها "طريقة حياة"، لب المحاضرات الثلاث التي تسمى محاضرات دفيد روس بويد، والتي كان بتنام قد ألقاها في جامعة **أوكلاهوما** بالولايات المتحدة الأمريكية أيام 25 و 26 و 28 أكتوبر من سنة 2005. و لقد منحنا هيلاري بتنام شرف نشرها مجتمعة لأوّل مرّة في هذا العدد من مجلّة

[1] سلسلة من التسجيلات الوثائقية القصيرة حول الفلسفة بأمريكا و الفلسفة الأمريكية من إخراج فليب ماكرنولدس ويمكن مشاهدتها على اليوتيوب. أخذ الاستشهاد من الفيلسوف الأمريكي # 37 بعنوان : " هلاري بتنام حول ثنائية الواقعة و القيمة والفلسفة السيّئة."

المخاطبات.[1] تتصف النزعة البراجماتية الكلاسيكية، خاصة تلك التي نجدها لدى جيمس و دوي، بالثقة العميقة في إمكانية تغيير "غضب الزمن" (جيمس) باجتناب الإعتباطية والأصولية بواسطة تربية الأفراد المتمتّعين بإرادة حرّة، و الذين هم في موقع يؤهّلهم لتحرير ذواتهم من العادات الإجتماعية اللاعقلانية (دوي). ويبدو أنّ المشاكل المتنوعة التي نواجهها اليوم كانت مطروحة في سجلّ عمل جيمس و دوي. فلقد كشفا من ناحية أولى على اتجاه علوم الطبيعة نحو الهيمنة ممّا أدّى إلى ضياع الثقة في القيم الإنسانية. و من ناحية أخرى، المثالية ونظامها الأخلاقي المتعالي الذي يمكن أن يقود إلى شكل كارثي من المطلقية. يتمثّل برنامج البراجماتي في التوفيق بين المعرفة العلمية التي يمكن ان نثق بها لانها تقوم على وقائع و بين القيم الانسانية و العواطف و ايضا الدين. ويمكننا النظر اليه على انه شكل من العلاج لكل جاذبية نحو اتجاهات التطرّف الفكري. ويتمثّل جوهر الرهان من منظور نظري في الثنائية "واقعة/قيمة" التي تعتبر - مثلما صرّح بذلك بتنام بكلّ وضوح وفي عدّة مناسبات – من بين أهمّ المشاكل التي تواجهها الفلسفة المعاصرة. إنّ المطلب الذي مؤدّاه بأنّ القيم هي ذاتية قد وقع البحث فيه داخل الفلسفة المحضة. ولقد كان له تبعا لذلك وقع كبير على الحياة العملية، حيث يمثل الاقتصاد الحالة النموذجية. ويقول لنا بتنام بان هذا الادعاء الذي ذكرناه آنفاً "هو الارث الاكثر خطورة للوضعية المنطقية". إنّ حركة التنوير الفلسفية الثالثة للبرجماتى الرامية إلى منهج علمي في تثمين قيمة الأحكام هي التي بوسعها على وجه التحديد أن تحلّ المشكلة. يتمثّل هدف بتنام النهائي من هذه السلسة من المحاضرات في المحاججة بصورة مقنعة على أنّ البراجماتيين الكلاسيكيين وخاصة جيمس و دوي يعلّموننا أمرا يستحقون عنه أن يكونوا جزءا من "فلسفة المستقبل". وتقوم "ثلاث محاضرات في قصّة البراجماتية" بنشر مثل هذه الرسالة بالغة الأهمية في زماننا هذا، حيث تشهد المجتمعات على كامل كوكبنا للأسف صراعاً من أجل السلام و العدالة الإقتصادية و التربية السليمة.

باولا كينون عن هيئة التحرير

كلمات مفتاحية : البراجماتية، جيمس، دوي، بورس، تنوير براجماتي، مستقبل الفلسفة، التفرّع الثنائي واقعة/قيمة.

[1] نشرت المحاضرة الأولى تحت عنوان : "قصّة البراجماتية" في مجلة COMPRENDRE Vol 13/1.02011 :37-48.

Abstract. In one of the interviews given to *American Philosopher*[1] Putnam says "[…] philosophy is only healthy when it simultaneously investigates questions of purely intellectual interest, or what seem, at least at the time, to have only a purely intellectual interest, and questions which obviously have an immense practical importance at the particular time." The reason is not to solely enrich one by the other. The most important issue is to prevent regrettable consequences, which ultimately a "bad philosophy" delivers, when professional thinkers shirk their social duty.

Such an understanding of philosophy, and in particular of classical pragmatism, as "the way of life" form the core of the three David Ross Boyd Lectures given by Hilary Putnam at the University of Oklahoma on October 25-26-28, 2005. These lectures are proudly published for the very first time in this volume.[2]

Classical pragmatism, especially the one of James and Dewey, is characterized by deep confidence in a possibility to change the "temper of time" (James) avoiding arbitrariness and fundamentalism, by educating individuals who posses free will and eventually are in a position to liberate themselves from often irrational social habits (Dewey).

Apparently, the variety of problems that we face today was already on the agenda of James and Dewey. On the one side of the intelectual spectrum they noticed a supremacist tendency of natural science that led to a loss of confidence in human values. On the other, idealism with its transcendental moral order, which could lead toward a disastrous form of absolutism. The pragmatist program consisted in reconciling trustful factual scientific knowledge with humanistic values, emotions, and also religion. It can be perceived as a form of remedy for gravitating towards intelectual extremes.

From the theoretical perspective the center of the issue is the fact/value dichotomy, which is – as Putnam declared it openly on many occasions – what he considers as being one of the most important problems faced by contemporary philosophy. The claim that values are subjective was pursued in pure philosophy. Subsequently it had an enormous impact on practical life. The paradigmatic case is economics. The above-mentioned claim, as he says, is "the most dangerous legacy of logical positivism". The "pragmatist third enlightenment" calling for scientific methodology in evaluating value judgments, is exactly what can solve the problem.

The ultimate objective of Putnam in this series of lectures is to convincingly argue that classical pragmatists, especially James and Dewey, teach us something and that as such they deserve to be part of the "future

[1] A series of short films about philosophy in America and American philosophy by Phillip McReynolds published at **youtube.com/user/americanphilosopher**. The quotation comes from *American Philosopher #37 :* "Hilary Putnam on The Fact Value Dichotomy and Bad Philosophy".

[2] The first lecture was published under the title "The Story of Pragmatism" in *COMPRENDRE* Vol. 13/1, 2011: 37-48.

philosophy". "Three Lectures on the Story of Pragmatism" convey this important message for our times, where unfortunately societies across the entire globe have to struggle for peace, economic justice and proper education.

Paula Quinon, on the behalf of the Editorial Board

Keywords: pragmatism, James, Dewey, Peirce, pragmatic enlightenment, future of philosophy, fact/value dichotomy.

THE STORY OF PRAGMATISM

Although this lecture, the first of my three David Ross Boyd lectures, is titled "The Story of Pragmatism", it might have been titled "The Story of James and Dewey," because I shall not talk about the third of the great "classical pragmatists", Charles S. Peirce, until the next lecture. So let me tell you something about James, to begin the story, and then something about Dewey.

James's lectures on pragmatism

In Boston, in November and December of 1906, William James delivered the Lowell Lectures which were published the following year under the title, *Pragmatism: a New Name for Some Old Ways of Thinking*. The opening lecture bears the dry title, "The present dilemma in philosophy". But that lecture is anything but dry; considered on its literary merits alone, it must surely be one of the finest examples of philosophical prose written in this country. And its contents are certainly provocative. Yet it has received remarkably little discussion; even James's most hostile critics, who might expect to be infuriated by it, generally pass over it in silence. I shall speculate about why this is the case.

But first let me say how this lecture relates to my reasons for being interested in James as a philosopher today. It is clear to everyone who has read James that he regards philosophy as something terribly important. When philosophy first separated itself off self-consciously from sophistry one of its central objectives was to provide rational guidance on how to live. That objective – which is James's objective – remained characteristic of philosophy for many centuries. It is beautifully expressed in the following passage from Philo Judaeus :

> Every person – whether Greek or Barbarian – who is in training for wisdom, leading a blameless, irreproachable life, chooses neither to commit injustice nor return it unto others, but to avoid the company of busybodies, and hold in contempt the places where they spend their time

> – courts, councils, marketplaces, assemblies – in short, every kind of meeting of thoughtless people. As their goal is a life of peace and serenity, they contemplate nature and everything found within her : they attentively explore the earth, the sea, the air, the sky, and every nature found therein. […] Such people consider the world as their city, and its citizens are the companions of wisdom; they have received their civic rights from virtue, which has been entrusted with presiding over the universal commonwealth. Thus, filled with every excellence, they are accustomed no longer to take account of physical discomforts or exterior evils, and they train themselves to be indifferent to indifferent things; they are armed against both pleasures and desires, and, in short, they always strive to keep themselves above passion. […] It is obvious that people such as these, who find their joy in virtue, celebrate a festival their whole life long. To be sure, there is only a small number of such people; they are like embers of wisdom kept smoldering in our cities, so that virtue may not be altogether snuffed out and disappear from our race. But if only people everywhere felt the same way as this small number, and became as nature meant for them to be : blameless, irreproachable, and lovers of wisdom, rejoicing in the beautiful because it is beautiful, and considering that there is no other good besides it... then our cities would be brimful of happiness. They would know nothing of the things that cause grief and fear, but would be so filled with the causes of joy and well being that there would not be a single moment in which they would not lead a life full of joyful laughter; indeed the whole cycle of the year would be a festival for them.[1]

Commenting on this passage in a remarkable book on just this aspect of philosophy, Pierre Hadot writes:

> In this passage from Philo of Alexandria, inspired by Stoicism, one of the fundamental aspects of philosophy in the Hellenistic and Roman eras comes clearly to the forefront. During this period, philosophy was a way of life. This is not only to say that it was a specific type of moral conduct; we can easily see the role played in the passage from Philo by the contemplation of nature. Rather, it means that philosophy was a mode of existing-in-the-world, which had to be practiced at each instant, and the goal of which was to transform the whole of an individual's life.
>
> For the ancients, the mere word *philo-sophia* – the love of wisdom -- was enough to express that conception of philosophy. In the *Symposium*, Plato had shown that Socrates, symbol of the philosopher, could be

[1] Philo Judaeus, *On the Special Laws*, 2 : 44-48; quoted in Pierre Hadot, *Philosophy as a Way of Life* Wiley-Blackwell, 1995 : 264-265.

> identified with Eros, the son of Poros (expedience) and of Penia (poverty). Eros lacked wisdom, but he did know how to acquire it. Philosophy thus took on the form of an exercise of the thought, will, and the totality of one's being, the goal of which was to achieve a state practically inaccessible to mankind: wisdom. Philosophy was a method of spiritual progress which demanded a radical conversion and transformation of the individual's way of being.[1]

William James was certainly not a Stoic, and he did not think that wisdom was practically inaccessible to mankind; but his aim, no less than that of Philo, was to change our way of life as well as our way of thinking. That is why he can begin his lectures with a tribute to a thinker whose outlook in all other respects was diametrically opposed to his own: the Roman Catholic G. K. Chesterton. What Chesterton and James share is the conviction that philosophy "affects matters"; as Chesterton puts it, "the question is not whether [philosophy] affects matters, but whether in the long run anything else affects them."

Perhaps here we have one of the reasons why this lecture has received so little discussion. In James's own time, "philosopher" was coming to imply "professor", and as James says, "Whatever universe a professor believes in must at any rate be a universe that lends itself to lengthy discourse."[2] Of course, James does not actually say that the professor is interested in lengthy discourse and not in how people should live, but very often that is also the case. For James, the priorities are quite different; he is not afraid of technical argument, but his audience is decidedly not the professoriat. When he writes that,

> Philosophy is at once the most sublime and the most trivial of human pursuits. […] It 'bakes no bread' as has been said, but it can inspire our souls with courage; and repugnant as its manners, its doubting and challenging, its quibbling and dialectics, often are to common people, no one of us can get along without the far-flashing beams of light it sends over the world's perspectives,[3]

he is addressing all of us. As William James Earle very well put it,

> James addressed himself to the people, not especially to other philosophers, and he listened to the people to find out what life meant to them. He respected not so much their common sense as their

[1] Philosophy as a Way of Life : 265.
[2] William James, *Pragmatism and the Meaning of Truth* [PMT], Harvard University Press, 1978 : 10.
[3] PMT : 10-11.

> common feelings and hopes and would not allow his philosophy to dismiss cavalierly that which figured largely in the experiences of men.[1]

In part, the professoriat has responded by discussing every aspect of James's thought *except* his conception of what philosophy is all about!

But there is a second reason for the virtual silence of James's critics about Lecture I. What makes this lecture so provocative is its central thesis: that philosophy is, in the end, a matter of temperament. If that thesis has not had the scorn poured upon it that has been poured upon, say, James's theory of truth – a theory that has been badly misrepresented[2] – that is, perhaps, because it would be a little embarrassing to reply: "No, James: philosophy is just a matter of rational argument." After all, if that is all philosophy is, it is a little mysterious why philosophical disagreement should continue for so long! It is, in the end, undeniable that temperament must play a large role in the acceptance of philosophical views. One might, of course, say that that is "true but irrelevant"; but that is a bit dangerous. (A little bit like saying, "My views are dictated by reason itself; we only have to appeal to temperament and similar psychological factors to explain why others are not able to see that my views are the only reasonable ones.") Safer to ignore this whole question!

But James's talk of "temperament" must not be misunderstood (which is probably what has happened). James is not saying that philosophy is just a matter of subjective choice and that is the end of the matter. James also believes that there are better and worse temperaments. Temperaments too can be criticized. But such criticism will not change people at once; to affect a change in the "temper of a time" is a long slow process. And it is in that sort of process that James is interested.

The threat of scientism and the blindness of rationalism

What concerns James, as it has concerned many other thinkers in the last two centuries, is the way in which the growth in our understanding of nature, the increase in the sophistication and power of our natural science, has led to a loss of confidence in human values. "For a hundred and fifty years past," he writes, "the progress of science has seemed to mean the enlargement of the

[1] "James, William" in *The Encyclopedia of Philosophy*, Macmillan, 1967, volume 4 : 241.

[2] For a description of the misrepresentations see my "Comment on Robert Brandom's paper" in Urszula M. Zeglen and James Conant (eds.), *Pragmatism and Realism*, Routledge, 2002 : 59-65; for what I think is the right reading of James on truth, see my "James's Theory of Truth" in Ruth Anna Putnam (ed.), *The Cambridge Companion to William James*, Cambridge University Press, 1997 : 166-185.

material universe and the diminution of man's importance. The result is what one may call the growth of naturalistic or positivistic feeling. Man is no law-giver to nature, he is an absorber. She it is who stands firm; he it is who must accommodate himself. Let him record truth, inhuman though it be, and submit to it! The romantic spontaneity and courage are gone, the vision is materialistic and depressing. Ideals appear as inert by-products of physiology; what is higher is explained by what is lower and treated forever as a case of 'nothing but' -- nothing but something else of a quite inferior sort."[1] James admires the natural sciences, and particularly admires their love of fact, their rejection of all pretensions to a priori or transcendent sources of knowledge, their fallibilism and experimentalism, but is dismayed at the materialism and the skepticism which he sees accompanying those admirable traits in the case of those whom he calls "the tough-minded" (and whom we might today call the "scientistic").

At the same time, James finds no acceptable alternative in the writings of his Idealist contemporaries, who seem to him to "dwell on so high a level of abstraction that they never even try to come down."[2] And he sees even less hope in traditional religion, which he describes as "fighting a slow retreat."[3] James employs a remarkable literary to device to dramatize the extent to which the combination of traditional theism and philosophical abstraction are, in his view, out of touch with the realities of life, with the problems that are really there for us to see, and for us to do something about.

James's device is to use as a hideous example, not a passage from one of his Idealist contemporaries nor a passage from a contemporary theologian, but a passage from Leibnitz's *Theodicy*[4] (as if to say: "this temperament is *always* this out of touch with reality"). In this passage, it is assumed by Leibnitz that the number of the eternally damned is infinitely greater, in our human case, then the number of the saved, and Leibnitz reconciles this with God's goodness by arguing, first, that there number of saved *on other planets* may be vastly greater than the number of damned, and, second, that it is "fitting" that "the damned draw to themselves ever new penalties by their continuing sins." James's response is memorable:

> Leibnitz's feeble grasp of reality is too obvious to need comment from me. It is evident that no realistic image of the torment of a damned soul had ever approached the portals of his mind. Nor had it occurred to him

[1] PMT : 15.
[2] PMT : 16.
[3] PMT : 16.
[4] For a full reference, see PMT : 150

> that the smaller the number of "samples" of the genus "lost soul" whom God throws as a sop to the eternal fitness, the more unequitably grounded is the glory of the blest. What he gives us is a cold literary exercise, whose cheerful substance even hell-fire does not warm.

And he adds,

> And do not tell me that to show the shallowness of rationalist philosophizing I have had to go back to a shallow wigpated age. The optimism of present-day rationalism is just as shallow to the fact-loving mind.[1]

But the fireworks are not over. To Leibnitz's cheerful theodicy, "whose substance even hell-fire does not warm", James juxtaposes a description of one of the real evils in our own big cities: John Corcoran, a clerk, loses his position through illness, and "during the period of idleness his scanty savings disappeared." Corcoran is too weak for snow-shoveling – the only employment available. "Thoroughly discouraged, Corcoran returned to his home late last night to find his wife and children without food and the notice of dispossession on the door." The next morning he committed suicide by drinking carbolic acid. (One cannot help remarking that if the present tendency to limit assistance to the poor continues in the United States, such stories will again appear in our newspapers – if they print them.) And, as if to remind us that the spirit of Leibnitz is still with us, James then quotes Royce and Bradley to the effect that the Absolute (or "the eternal order") is richer for every evil in the temporal order.

The relation to our present-day concerns is clear. It is true that we no longer have around as optimistic a form of rationalism as the Absolute Idealism of the late nineteenth and early twentieth centuries to justify the sorts of evils James cites (although the celebration of "the free market" as the solution to all our problems does look suspiciously like a secularized version of Leibnitz's and Royce's and Bradley's theodicies). But the idea that it is, in some sense, a "result of science" that objective values do not exist is very popular in present day anglo-saxon metaphysics.[2] If James promises us an outlook that will enable us to hold on to both our love of fact and our confidence in our "human values",

[1] PMT : 20.

[2] Among the important late twentieth century philosophers who attacked the idea of objectively correct value judgments one can list Simon Blackburn, Alan Gibbard, Gillbert Harman, John Mackie, and Bernard Williams; earlier, of course, there were the logical positivists and Charles Stevenson.

and to do so without so transcendentalizing those values that they become ineffectual, he is making an offer that it would be irresponsible not to examine with care. And that is precisely what he does offer us:

> I offer the oddly-named thing pragmatism as a philosophy that can satisfy both kinds of demand. It can remain religious like the rationalisms, but at the same time, like the empiricisms, it can preserve the richest intimacy with facts.[1]

James speaks here of pragmatism as a philosophy that can "remain religious", and this reflects his lifelong hope for a satisfactory philosophy of religion, but that hope is not one that James was able to satisfy, in my judgment at least. The great *Varieties of Religious Experience* was "intimate with facts", but, as James was well aware, the lectures of which that book consists dealt, apart from a few brief pages at the end, with the psychology of religious belief, and the question of the justification of such belief is deliberately postponed. Only in his final work, *A Pluralistic Universe*, does James attempt it, and that work, far from being "intimate with facts", consists largely of declarations about what James finds personally satisfying, with what he wishes to believe. However, James interest in the lectures I have been describing was not only in the clash between the religious and the anti-religious temperaments, but just as much in our right to believe that there is an objective moral order.

Nowadays the issue is ubiquitous. Recently, for example, I read John Gardner's novel *October Light.* A charming device of that novel is that one of the two main characters, Sally, is reading a "trashy novel" pages of which are embedded in the main story. And in the "trashy novel" some of the characters (the evil ones, in fact) repeatedly tell us that we are nothing but machines. For example, a character called "Santisillia" says,

> Everything's got to be an accident unless you decide there are gods and devils. We do nothing. Peter Wagner's uncle plows out snow andsaves freezing people by pure accident, because he's caught in the Sundayschool bag, or his father was a doctor, or God knows what. Captain Fist does all these ungodly things because it happened to rain all through his childhood, or his father was a drunk, or he's an XXY, or his blood's deficient in, say, riboflavin. So everybody's a machine. An automaton, unless you decide there are gods and devils and there's some magic way they can get to you.[2]

[1] PMT : 20.

[2] John Gardner, *October Light*, Knopf, 1976 : 324-345.

So the problem that James pointed to when he wrote that to more and more people in the preceding hundred and fifty years "Ideals appear as inert by-products of physiology; what is higher is explained by what is lower and treated forever as a case of 'nothing but' – nothing but something else of a quite inferior sort" isn't a problem that concerns only religious people. And the philosopher who more than any other secularized James's philosophical project of constructing a philosophy which respects facts and respects science but also respects humanistic values was John Dewey, to whom I now turn.

Dewey as a successor to James

Until 1903, James had thought of John Dewey primarily as an American representative of Hegelian Idealism, a sort of younger version of James's colleague Josiah Royce. But in a letter to James dated March 20, 1903[1], Dewey writes that he is

> sending you some proof from a forthcoming Decennial volume, *Studies in Logical Theory*, written by Moore, MacLennan Thompson Stuart, one or two others & myself as editor. You may not have time nor inclination to read, but I wish you would glance the pages (sic) enough to see whether you could stand for a dedication to yourself.

That fall James writes that "On returning from the country yesterday, one of the first things that greeted me was your logical studies, and the surprising words that close its preface. What have I done to merit such a tribute".[2] What Dewey had written was: "For both inspiration and the forging of the tools with which the writers have worked there is a pre-eminent obligation on the part of all of us to William James, of Harvard University, who, we hope, will accept this acknowledgment and this book as unworthy tokens of a regard and an admiration that are coequal." [3] From this point on Dewey and James are firm philosophical allies, and after James's death Dewey emerges as unmistakably James's successor as leader of the pragmatist school, even if he distances himself from James's theological speculations.)

[1] Collected in William James, Ignas K. Skrupskelis, Elisabeth M. Berkeley, Henry James, *The Correspondence of William James*, vol. 10, 1902-March 1905, University Press of Virginia, 2002 : 214-215.

[2] Letter dated October 17, 1903 Collected in *The Correspondence of William James*, vol. 10, 1902-March 1905 : 321.

[3] *The Middle Works of John Dewey*, vol. 2, 1882-1898, Southern Illinois University Press, 1976 : 296-297.

While Dewey's strategies for constructing and defending a world-view which respects both science and humanistic values are different from James's, they are for the most part ones of which James would have approved. A principal one is to attack a whole series of what Dewey regarded as untenable dualisms, including facts and values, the mind and the body, the mind and nature, and the individual and society – all dualisms that James had tried to subvert. And even more than James, Dewey was a "public intellectual" through and through – indeed, he was to become the most famous American public intellectual of his time. (An excellent description of this side of Dewey can be found in Cornell West's *The American Evasion of Philosophy*.) And above all, Dewey was an *educator* – still probably the most read educational philosopher. Indeed, Dewey wrote in 1916 that

> if a theory makes no difference in educational endeavor, it must be artificial. The educational point of view enables one to envisage the philosophical problems where they arise and thrive, where they are at home, and where acceptance or rejection makes a difference in practice. If we are willing to conceive education as the process of forming fundamental dispositions, intellectual and emotional, philosophy may be defined as *the general theory of education*.[1]

To give you a taste of just how Dewey practiced education, I shall quote from "Teaching Ethics in the High School", an essay Dewey published in Educational Review in 1893.[2]

> Ethics, rightly conceived, is the statement of human relationships in action. In any right study of ethics, then, the pupil is not studying hard and fixed rules for conduct; he is studying the ways in which men are bound together in the complex relations of their interactions. He is not studying, in an introspective way, his own sentiments and moral attitudes; he is studying facts as objective as those of hydrostatics or the action of dynamos. They are subjective, too, but subjective in the sense that since the pupil himself is one who is bound up in the complex of action, the ethical relations have an interest and concern for him which no action of fluid or dynamo can possibly have. While this subject-matter should be taught from the lowest grade up, I shall choose an illustration of the mode of teaching it better adapted for high schools…

[1] John Dewey, *Democracy and Education*, McMillan, 1916 : 328.
[2] *The Early Works of John Dewey*, vol. 4, 1882-1898, Southern Illinois University Press, 1976 : 54-61. The passage I quote is on pages 56-57.

Let the teacher, at the outset, ask the pupils how they would decide, if a case of seeming misery were presented to them, *whether* to relieve it and, if so, *how* to relieve. This should be done without any preliminary dwelling upon the question as a 'moral' one; rather, it should be pointed out that the question is simply a practical one, and that ready-made moral considerations are to be put to one side. Above all, however, it should be made clear that the question is not what to do, *but how to decide what to do*. As this is the rock on which the method is likely to split, let me indicate the force of the distinction. Anyone who is acquainted with the methods in which the well organized Associated Charities do their work knows that they never discuss giving relief to someone on the basis of abstract principles of charity. They construct, from all the available data, an image of the case in question, and decide the particular question upon the basis of the needs and circumstances of that particular case. Now the whole object of the method I am bringing forward is not to get children arguing about the moral rules which should control the giving of charity – that is a relapse into the method of precepts against which I have protested. The object is to get them into the habit of mentally constructing some actual scene of human interaction, and of consulting them for instruction as to what to do. All the teacher's questions and suggestions, therefore, must be directed toward aiding the pupil in building up in his imagination such a scene. To allow them to discuss *what* to do, save as relative to the development of some case, is to fall back into the very moral abstractions we are trying to avoid. So when children begin to argue (as they are almost sure to do) about the merits of some proposed plan of action, care must be taken not to let them argue it in general, but to introduce their ideas into the case under consideration so as to add new features and phases. The whole point, in a word, is to keep the mental eye constantly upon some actual situation or interaction: to realize in the imagination this or that particular needy person making his demand upon some particular person. It follows from this, of course, that the line of illustration chosen, that of charity, has no value in itself; it is taken simply as a basis with reference to which to get the child to fix his mind carefully upon the typical aspects of human interaction. The thought which underlies the method is that if instruction in the theory of morals has any practical value it has such value as it aids in forming, in the mind of the person taught, the habit of realizing for himself and in himself the nature of the practical situations in which he will find himself placed. The end of the method, then, is *the formation of a sympathetic imagination for human relations in action*; this is the ideal which is substituted for training in moral rules, or for analysis of one's sentiments and attitudes in conduct.

Dewey still considered himself an idealist, or more precisely an "experimental idealist" in 1893, although "generally favorable" references to James are beginning to appear in his writing,[1] but the passage I have quoted is one he would still have endorsed after his conversion to pragmatism, and it seems to me to express, if not to explain in detail, a great deal of his later philosophical outlook. In 1893, however, Dewey was still far from formulating that later outlook. The intuitions were, perhaps, already in place – certainly they are in place in this short article – but the later philosophical outlook as a whole, embracing, as it came to, aesthetics (*Art as Experience*), an account of human nature (*Human Nature and Conduct*), an account of scientific method in Dewey's generous sense of the term (*Logic, the Theory of Inquiry*), the 1908 *Ethics* and its revision in 1932, and much much more – almost eight million words, in fact! is impossible to describe in detail in the space of these lectures. But if one is going to focus on just a few aspects of Dewey's philosophy, it seems to me that we see in three Dewey's suggestions as to how we might teach ethics to high school students, namely, the refusal to identify ethics with a fixed set of rules and principles, the insistence that ethical problems are practical problems, and the belief that reason and emotion can and should work together and inform one another in approaching all practical problems, are insights that we need today and that are, alas! still often neglected in professional moral philosophy.

A few concluding remarks

Today's lecture was titled "the story of pragmatism". If your mental image of pragmatism was formed by reading Richard Rorty, this lecture may have surprised you: I did not say, for example, as Rorty does, that pragmatists think that "warrant [is] a sociological matter, to be ascertained by observing the reception of S's [the speaker's] statement by her peers."[2] Warrant, or "warranted assertibility" is, as Rorty well knows, the central notion in Dewey's account of the rational formation of belief, the account in Dewey's *Logic: the Theory of Inquiry*, and nothing could have been farther from Dewey's mind than the idea that warranted assertability is just a culture-relative matter, something to be ascertained by sociologists. I did not say, as Rorty also does, that for pragmatists calling some sentences true is just paying them a "compliment" because they "seem to be paying their way and fit in with other sentences which are doing so".[3]

[1] See the Introduction to *The Early Works of John* Dewey, volume 4, by Wayne A. R. Leys : iv-v.
[2] Richard Rorty, "Putnam and the Relativist Menace", *Journal of Philosophy* 60, 9, 1993: 443-461.
[3] Richard Rorty, *Consequences of Pragmatism*, University of Minnesota Press, 1982: xxv.

In Wednesday's lecture I shall say something about the pragmatists' theory or theories of truth, but for now let me simply say that the pragmatists were *not* cultural relativists about "warrant" and they all insisted that there *was* such a thing as truth and such a thing as reality, and that truths have to agree with reality. The problem, as James, puts it in *Pragmatism*[1] is what "agreement" means, and he recognizes that that is a difficult metaphysical question. But that a sentence can be "paying its way" and not be *true* is something he repeatedly points out. In fact, the idea that satisfaction (which is what Rorty means by a belief's "paying its way") are *sufficient* for truth is explicitly listed as a "misunderstanding" of pragmatism by James in *The Meaning of Truth*.[2] "Such anti-pragmatism as this," James says, "seems to me a tissue of confusions. To begin with, when the pragmatist says 'indispensable,' it confounds this with 'sufficient'. The pragmatist calls satisfactions indispensable for truth-building, but I have everywhere called them insufficient unless reality be also incidentally led to. If the reality assumed were cancelled from the pragmatist's universe of discourse, he would straightway give the name falsehood to the beliefs remaining in spite of all their satisfactoriness."

But the clearest statement of James's realism occurs in a letter to Dickinson Miller dated Aug. 5, 1906 in which James uses the following analogy :[3]

> The world *per se* may be likened to a cast of beans on a table. By themselves they spell nothing. An onlooker may grasp them as he likes. He may simply count them all and map them. He may select groups and name them capriciously, or name them to suit certain extrinsic purposes of his. What ever he does, so long as he *takes account* of them, his account is neither false nor irrelevant. If neither, why not call it true? It *fits* the beans-*minus* him and *expresses* the *total* fact, of beans-*plus*-him.

In brief, the classical pragmatists may have had controversial theories about truth, reality, and warranted assertibility, but they took them seriously – which is what Rorty famously wants us to stop doing. And that is the reason why I shall not further discuss Rorty's views in these lectures. My subject is pragmatism, not whatever happens to "package" itself under that name.

---

[1] See Lecture 6 in *Pragmatism*, "Pragmatism's Conception of Truth".

[2] Cf. Chapter VIII of *The Meaning of Truth*, "The Pragmatist Account of Truth and its Misunderstanders", James's reply to what he calls the fourth misunderstanding, 270 ff. The "fourth misunderstanding" is "No pragmatist can be a realist in his epistemology."

[3] *The Letters of William James*, edited by his son Henry James, The Atlantic Monthly Press, 1920, Vol. II : 295.

To sum up, I did not discuss James's or Dewey's views on truth and meaning today, except for denying that they are "Rortian". Instead, I focused on what I see as the central philosophical aim of these two great pragmatists, the aim of producing a philosophy which would do justice to our respect for science, and for fact in general, *as well as* our humanistic values and concerns (and, in James's case, our religious feelings). This does not mean that I want you to think of either James or Dewey as *merely* "public philosophers", and much less as "popular" philosophers. Rather, I see them as in the line of the great philosophers of the past who wanted philosophy to be simultaneously popular and technical, or better, to bring the best thought of their day, both inside and outside of technical philosophy, to bear on the question, "How to Live". I gave a brief account of the way in which Dewey left the Idealist movement which was so dominant in James's time (that is the movement led by followers of Hegel), and how he converted to pragmatism, becoming James's great ally and, eventually, James's successor. I emphasized that Dewey's achievements as an educator were closely linked with his philosophical achievements; indeed, for Dewey every philosophical idea worthy of respect makes *some* difference to education, and I gave an example of this from very early Dewey – "pre-pragmatist" Dewey, in fact – an 1893 article on teaching ethics to high school students. As the title promises, my next lecture will reflect on the significance of what Dewey and James accomplished, as well as on the elements I find problematic in their philosophies.

SOME REFLECTIONS ON THE STORY

Let me recall Santisillia's speech that I quoted in Monday's lecture. In case some of you missed that lecture, Santisillia is a character in a novel inside a novel: the novel, which is referred to as "a trashy novel" is the one that Sally, one of the two principal characters in John Gardner's *October Light*, is reading throughout the period that the action takes place, and Santisillia, a criminal character, speaks as follows:

> Everything's got to be an accident unless you decide there are gods and devils. We do nothing. Peter Wagner's uncle plows out snow and saves freezing people by pure accident, because he's caught in the Sunday school bag, or his father was a doctor, or God knows what. Captain Fist does all these ungodly things because it happened to rain all through his childhood, or his father was a drunk, or he's an XXY, or his blood's deficient in, say, riboflavin. So everybody's a machine. An automaton,

> unless you decide there are gods and devils and there's some magic way they can get to you.[1]

The fallacies in this half baked little piece of philosophy are easy to spot, and many of them get discussed (although not in connection with *October Light*, of course) in those weeks of any "Problems of Philosophy" course that take up the topic of "freedom of the will". First and foremost, there is the confusion of fatalism – the idea that everything we do is determined by *external* causes – with *determinism* – the idea that what happened in the future depends on what happened in the past according to deterministic laws (e.g., the laws of Newtonian physics). And there is Santisillia's odd idea that whatever happens deterministically is an "accident". And there is the assumption that ethical subjectivism – the doctrine that judgments of right and wrong are merely expressions of ultimately arbitrary factors (this is hidden in the sneering claim that Peter Wagner's uncle's brave actions were merely the "accidental" results of the "Sundayschool bag") – also follows immediately from determinism (as if one couldn't be a determinist who believes that there are objective ethical truths).

Moving to a more sophisticated level, the lecturer in the Problems of Philosophy course is likely to point out that Hume famously came to the conclusion that there is a distinction between actions we do "of our own free will", actions we are morally responsible for, and actions we are compelled to do that we are not responsible for (someone holds a gun to our head, or even pushes our limbs to make us do what he wants us to do) *even in a deterministic world*. Indeed, Hume argued that it would be precisely in a world in which there was *no* predictability to human actions that notions of responsibility and freedom would collapse. This position – that there is no *incompatibility* between "free will", in the everyday sense, and determinism is called, quite naturally, "compatibilism". Naturally, not all philosophers agree that compatibilism is right, and there is also a dispute (which I shall not go into in these lectures) as to the bearing or lack of bearing on the question of the fact that today's physics, unlike Newton's, is probabilistic rather than deterministic. But if compatibilism is right, as I think it largely is (I say "largely" because something does have to be said about determinism and indeterminism, an issue that William James cared greatly about), then what need a pragmatist like Dewey add to what Hume had already pointed out?

[1] John Gardner, *October Light*, Knopf, 1976 : 324-345.

Well, in the last lecture I pointed out how "pragmatist" some of Dewey's thought already was in the early 1890s, when he still considered himself an "experimental idealist". That is as true of Dewey's thinking about free will as it is of his thinking about the teaching of ethics. In fact, Dewey is concerned, as early as 1894, to argue in a syllabus titled "The Study of Ethics"[1] that the classical picture of a "free will", actually makes the "free will", or the "Self" with a capital "S", something *external* to the embodied human person. In the end, our "free will" becomes a sort of foreign agent, so that *both* the "determinist" (Dewey means the philosopher who, like Santisillia, denies that we have freedom to choose) and the "indeterminist" (Dewey means the philosopher who defends the classical picture of a "free will") picture our volitions as imposed upon us from outside. The "indeterminist" Dewey referred to was a philosopher named James Martineau, who claimed in *Study of Religion*, a book published in 1899, that free action requires the presence of a "deciding self", "a personal center of intelligence and causality"[2], distinct from one's acquired character, habits and motives.

Against Martineau, Dewey argues that:

> The necessity of […] the deciding self [in Martineau's metaphysics] is a necessity originated wholly through the failure to recognize the present moving self in "motive" and "character". The problem comes out clearly when we find the problem stated as if it were an alternative between determination of the volition *by* character and motive, or *by* the Self, the free will. […]
> The truth of the matter is that Martineau (and so with all the other indeterminists) simply accepts the adequacy of the necessitarian psychology of volition up to a certain point, accepts its dualistic separation of impulse and motive from self, and then, seeing the ethical insufficiency, help themselves out by bringing in the Deus ex Machina, a Free Will. This is the reason the contests between indeterminists and determinists … are so futile and unending. Both have the same premises, the product of inadequate psychological analysis. The only way to "rescue" freedom from the attack of the determinist is not to bring it in as a "third factor" [one of Martineau's terms for free will] but to reconstruct the theory of motive and character to bring out the functional presence of the self in them, and their consequent flexible, dynamic structure.

[1] John Dewey, "Study of Ethics" in *The Early Works of John Dewey*, vol. 4, 1882-1898, Southern Illinois University Press, 1976 : 221-364.
[2] James Martineau, *Study of Religion*, vol. 2, The Clarendon Press, 1889 : BK. III, Ch. 2, 215.

> The criticism of the indeterminist holds equally, therefore, against the determinist, that is, the predeterminist [what I called the "fatalist]. He makes the same abstraction of motive, erecting hunger, love of praise, modesty, etc., into little entities which pull and haul on a self outside of them. Or, going into a wider field, he talks of the determination of self by heredity and environment [like Santisillia!]. He has the two things, set over against each other, and with only a mechanical connection between them, one of force, just as the indeterminist can get only an arbitrary relation. They both argue then as if it were a question between mechanical causation on one side, and arbitrary interference on the other, forgetting that both alternatives arise from the unexamined assumption of the dualism of self and ideal and motive. The whole controversy vanishes in thin air when we substitute for the determination of volition by circumstances or by Free Will, the determination of Self in volition, in deed – its passage into definite, unified activity.[1]

The observation that the "indeterminist" Martineau is just as guilty as the fatalist (or "predeterminist") of picturing our volitions as coming from something external to the only self I truly know, the self that consists of my character and motives in their functional integration, is almost "Wittgensteinian" in its diagnostic insightfulness. If something is missing in this early work, it is the concern with the *practical significance* of the issue of free will that one expects from a "pragmatist". But after what I called his "conversion" from idealism to pragmatism, this concern is omnipresent. In his 1910-11 "Contributions to a Cyclopepdia of Education", for example, we find Dewey writing,

> Just in the degree in which one is gifted with the habit of reflection, in that degree he is capable of acting in the light for a foreseen future instead of being pushed from behind by sheer instinct or habit.
> With respect to freedom, then, the task of the educator is threefold. First, to keep alive plasticity, initiative, capacity to vary; to prevent induration and fixation in fossilized automatic habits. Even a thoroughly good habit needs to be kept flexible, so that it may be adapted, when the need arises, to circumstances not previously experienced even by way of anticipation. Secondly, to confirm preferences; to build up and strengthen positive and constructive interests in specific directions. Nothing is more fatal practically than the growth of a spirit of indifference, of boredom, or of miscellaneous and easily diverted responsiveness. Thirdly, to make preferences reasonable; that is to say,

[1] "Study of Ethics": 130-131.

> to develop in individuals the habit of forecasting the consequences of acting upon a given preferential tendency, of comparing one set of results with another, and by these means enlightening preference as its own deeper and more abiding nature. Capacity transforms habit when required. Steady and specific interests, foresight, and deliberation—given these factors of character, and purely speculative difficulties in the concept of freedom may be left serenely alone.[1]

And in the 1922 *Human Nature and Conduct,* Dewey explicitly relates the free will issue to political struggles:

> One has to turn from moral theories to the general human struggle for political, economic and religious liberty, for freedom of thought, speech, assemblage and creed, to find significant reality in the conception of freedom of will. Then one finds himself out of the stiflingly close atmosphere of an inner consciousness and in the open-air world. The cost of confining moral freedom to an inner region is the almost complete severance of ethics from politics and economics. The former is regarded as summed up in edifying exhortations, and the latter as connected with arts of expediency separated from larger issues of good.
> In short, there are two schools of social reform. One bases itself upon the notion of a morality which springs from an inner freedom, something mysteriously cooped up within personality. It asserts that the only way to change institutions is for men to purify their own hearts, and that when this has been accomplished, change of institutions will follow of itself. The other school denies the existence of any such inner power, and in so doing conceives that it has denied all moral freedom. It says that men are made what they are by the forces of the environment, that human nature is purely malleable, and that till institutions are changed, nothing can be done. Clearly this leaves the outcome as hopeless as does an appeal to an inner rectitude and benevolence. For it provides no leverage for change of environment. It throws us back upon accident, usually disguised as a necessary law of history or evolution, and trusts to some violent change, symbolized by civil war, to usher in an abrupt millennium. There is an alternative to being penned in between these two theories. We can recognize that all conduct is interaction between elements of human nature and the environment, natural and social. Then we shall see that progress proceeds in two ways, and that freedom is found in that kind of interaction which maintains an environment in which human desire and choice count for something.[2]

[1] *The Middle Works of John Dewey*, vol. 6, 1910-1911, Southern Illinois University Press, 1978 : 465 and 466.
[2] John Dewey, *Human Nature and Conduct* (1922) in *The Middle Works of John Dewey*, vol. 14, 1899-

Dewey's remarks remind us that philosophical theories of the self and of its freedom or lack thereof have historically been of momentous importance; and they place these theories in the context of the *difference they make* to education, to politics, and to life in general. And doing that is what both James and Dewey urged us to do with all philosophical issues. Indeed, they saw this as implied by the very concept of "pragmatism". But the third of the "classical pragmatist" trio, Charles S. Peirce, had a different understanding. It is time to resume my telling of "the story of pragmatism" by bringing him into the picture.

James and Peirce

As I mentioned in the previous lecture, *Pragmatism: a New Name for Some Old Ways of Thinking* was a (lightly revised) transcript of the Lowell Lectures which James delivered in Boston in November and December of 1906. Although William James took the name "pragmatism", from Charles Sanders Peirce[1], it is well known that Peirce didn't think that James's version of the doctrine was true to his intentions, and later went so far as to change the name of his own philosophy from "pragmatism" to "pragmaticism". Although some of the themes of James's *Pragmatism* had already been introduced in a lecture titled "Philosophical Results and Practical Conceptions" that James had delivered at the University of California in 1898, it was the publication of the Lowell lectures that made James a celebrated philosopher, as well as the best known American psychologist. Monday I described the first lecture, in which James avows his intention to speak to the "temperament", and not merely the intellect, of his reader. But that lecture speaks only of the needs pragmatism is to fulfill, and not of its content. The second lecture promised to be more specific, bearing as it did the title "What Pragmatism Means".

James opened the lecture with an example of a fruitless dispute about a pseudo-issue – the sort of dispute, he suggests, that pragmatism can save us from:

1924, Southern Illinois University Press, 1983 : 9

[1] Peirce had expounded his pragmatism in a series of papers in the 1870s. Of these, two, in particular, came to represent common ground for all four of the classical pragmatists -- Peirce, James, Dewey and Mead – while others developed themes and methods peculiar to Peirce's own philosophy and not necessarily agreed to by the others. The two we refer to are "The Fixation of Belief" and the "How to Make Our Ideas Clear". James own interest in pragmatism dates from his conversations with Peirce in the 1870s, when both were member of the "Metaphysical Club" which met in the home of Chauncey Wright (cf. Ralph B. Perry, *The Thought and Character of William James*, vol. I, Little, Brown, and Co., 1935 : ch. 31).

> Some years ago, being with a camping party in the mountains, I returned from a solitary ramble to find everyone engaged in a ferocious metaphysical dispute. The *corpus* of the dispute was a squirrel – a live squirrel supposed to be clinging to one side of a tree-trunk; while over against the tree's opposite side a human being was imagined to stand. This human witness tries to get sight of the squirrel by moving rapidly round the tree, but no matter how fast he goes, the squirrel moves as fast in the opposite direction, and always keeps the tree between himself and the man, so that never a glimpse of him is caught. The resultant metaphysical problem now is this: *Does the man go round the squirrel or not?* He goes round the tree, sure enough, and the squirrel is on the tree, but does he go round the squirrel?

And James tells us that he immediately replied that

> Which party is right [...] depends on what you *practically mean* by "going round" the squirrel.

James continues by acknowledging his debt to Peirce, whom he quotes as saying that

> To attain perfect clearness in our thoughts of an object, then, we need only consider what conceivable effects of a practical kind the object may involve – what sensations we are to expect from it, and what reactions we must prepare. Our conception of these effects, whether immediate or remote, is then for us the whole of our conception of the object, so far as that conception has positive significance at all.

James's just quoted resolution of this curious "metaphysical problem" is supposed to illustrate Peirce's maxim (and without a doubt Peirce would have agreed with James's resolution of *this* "metaphysical problem"). But James acknowledgment of indebtedness, while certainly sincere, has to be taken with a grain of salt, and I now want to look at the differences between James's version of the maxim and the original version.

James does not accept the fact/value dichotomy, he does not consider value judgments to be merely subjective, and he does not think that cognition can simply be identified with scientific cognition, or that the natural sciences are the only paradigm we have for cognition. On these things the classical pragmatists – Dewey, James, Peirce – all agreed. Yet Peirce's position was, in certain respects, very different from that of the others. Peirce rejected the fact/value dichotomy, but he did not reject the Kantian dichotomy between "pure" and

"impure" interests.[1] He insisted that the interest that drives pure scientific inquiry is utterly different from the interests that drive ordinary practical inquiry, while Dewey and James strongly disagree. If one does not know this, one cannot understand why Peirce distanced himself from pragmatism. However, if one were in the position of reading the second lecture in *Pragmatism* without having read anything by Peirce, one might well think that James did not start anything new, that he was just a devotee of an ongoing movement. That is, in fact, what he claims :

> There is absolutely nothing new in the pragmatic method. Socrates was an adept at it. Aristotle used it methodically. Locke, Berkeley, and Hume : made momentous contributions to truth by its means. Shadworth Hodgson keeps insisting that realities are only what they are 'known as'. But these forerunners of pragmatism used it in fragments: they were preluders only. Not until our time has it generalized itself, become conscious of a universal mission, pretended to a conquering destiny. I believe in that destiny, and I hope I may end by inspiring you with my belief. [2]

Here James is posing as someone converted to a Movement to which Peirce also belongs. But even when Peirce and James agree in a verbal formulation, such as the ones he quotes in this lecture, they take that formulation in very different ways. (This is complicated by the fact that there are difficulties in understanding how either one of them took it.)

Let us look at the way in which James paraphrases Peirce in what must have been almost the opening minutes of this lecture. This purports to be a direct statement of what Peirce says in the all-important article, "How to Make Our Ideas Clear" (which first appeared in *Popular Science Monthly* in 1878) :

> Mr. Peirce, after pointing out that our beliefs are really rules for action, said that, to develop a thought's meaning, we need only determine what conduct it is fitted to produce: that conduct is for us its sole significance. And the tangible fact at the root of all our thought-distinctions, however subtle, is that there is no one of them so fine as to consist in anything but a possible difference in practice. To attain perfect clearness in our thoughts of an object, then, we need only consider what conceivable effects of a practical kind the object may involve—what sensations we are to expect from it, and what reactions we must prepare. Our

[1] You will see that this is the case from the first lecture in Peirce's *Reasoning and the Logic of Things*, ed. K. Ketner with expository matter by H. Putnam (Harvard University Press, 1992).
[2] PMT 30.

> conception of these effects, whether immediate or remote, is then for us the whole of our conception of the object, so far as that conception has positive significance at all. [1]

I said that this purports to be a direct statement of what Peirce says, and, in fact, Peirce himself gives it a sort of endorsement:

> In the first place, there is the definition of James, whose definition differs from mine only in that he does not restrict the 'meaning', that is the ultimate logical interpretant, as I do, to a habit, but allows percepts, that is, complex feelings endowed with compulsiveness, to be such. If he is willing to do this, I do not quite see how he need give any room at all to habit. But practically, his view and mine must, I think, coincide, except where he allows considerations not at all pragmatic to have weight.[2]

A qualified endorsement indeed !

Let us look at "the definition of Peirce"—i.e., James's paraphrase of Peirce—closely. It is right that Peirce thought of beliefs as "rules for action" (although Peirce generally preferred the term "habit", a central metaphysical notion in Peirce's philosophy, and one which applies to the inorganic as well as to the organic world.) Peirce's inspiration was Alexander Bain's definition of belief as "that upon which a man is prepared to act", a definition which was much discussed in the Metaphysical Club in Cambridge in the eighteen-seventies (a discussion circle to which both James and Peirce belonged).

Part of what this definition of belief means is clear: Peirce and James are saying that to really *have* a belief is not just to say words in one's mind, or to have a mental image or a feeling when one contemplates a proposition, but to be prepared to *act* on it. But James says, "Mr. Peirce, after pointing out that our beliefs are really rules for action, said that to develop a thought's meaning we need only determine what conduct it is fitted to produce." One cannot find anything exactly like this in "How to Make Our Ideas Clear", but in other places Peirce does say things like this. For example, in "A Survey of Pragmatism" (not published in Peirce's lifetime), Peirce writes,

[1] PMT : 28-9

[2] Charles S. Peirce, *Collected Papers of C.S. Peirce*, Charles Hartshorne, Paul Weiss (eds.), volume 5, Harvard University Press: section 494.

> [...] the most perfect account of a concept that words can convey will consist in a description of the habit [1] which that concept is calculated to produce. But how otherwise can a habit be described than by a description of the kind of action to which it gives rise, with a specification of the conditions and of the motive.[2]

It is fair to say that here Peirce does identify meaning with "a rule (habit) of conduct", and James may well have heard Peirce talk in this way. But how does Peirce understand the "motive" of a habit?

In "Pragmatism and Pragmaticism", Peirce writes:

> If the meaning of a symbol consists in *how* it might cause us to act, it is plain that this 'how' cannot refer to the description of mechanical motions that it might cause, but must intend to be a description of the action as having this or that *aim*.[3]

If our quotation from Peirce stopped here, one might safely accept James's paraphrase. But Peirce goes on :

> In order to understand pragmatism, therefore, well enough to subject it to intelligent criticism, it is incumbent upon us to understand what an ultimate aim, capable of being pursued in an indefinitely prolonged course of action can be.

And Peirce goes on[4] to make clear that the "ultimate aim" he is speaking of is development of a set of beliefs—a kind of finished knowledge that we are to approach in the limit, but never actually achieve—which will have an "aesthetic[5] quality" which will be a "free development of the agent's own aesthetic quality" and which will, at the same time, match the "aesthetic quality" of "the ultimate action of experience upon him". In short, it is the aims of pure science (which are *sui generis*, in referring to the indefinitely long run) that Peirce has in mind here (as elsewhere), and not what we ordinarily *call* the "aims" of a piece of conduct.

---

[1] Elsewhere Peirce writes "habits" in the plural.

[2] Peirce [5 : 491] (The reference is deciphered thus : volume 5, numbered section 494, in the Harvard edition of the *Collected Papers of C.S. Peirce*).

[3] Peirce [5 : 135]

[4] Peirce [5 : 136]

[5] For Peirce, the branch of value theory that determines final ends is "Aesthetics".

For James and Dewey, however, this limitation of the pragmatic method of "making our ideas clear" to science was absolutely unacceptable. And this disagreement, I think, is the real root cause of Peirce's decision to disassociate from the movement James called "pragmatism" and to change the name of his own philosophy to "pragmaticism".

James and Peirce on truth

Peirce, whom James credits with having invented pragmatism, famously defined truth as "the opinion which is fated to be ultimately agreed to by all who investigate".[1] (According to Peirce, this definition is simply an application of the pragmatic maxim, the pragmatist's method of "making our ideas clear".) In spite of the very real differences between James's metaphysical views and Peirce's, variants of this definition abound in James's writing.

Such variants begin to appear in James's writing long before the Lowell Lectures. In the concluding paragraph of the relatively early (1878) "Remarks on Spencer's Definition of Mind as Correspondence", we find James combining the characteristically Jamesian idea that human beings "help to create" truth with the Peircean idea that the true judgements are the ones that we are fated to believe, not at any given instant, but in the long run, on the basis of "the total upshot of experience". Let us look at this passage closely. Here is how the paragraph opens[2] :

> I, for my part, cannot escape the consideration forced upon me at every turn, that the knower is not simply a mirror floating with no foot-hold anywhere, and passively reflecting an order that he comes upon and finds simply existing. The knower is an actor, and coefficient of the truth on one side, whilst on the other he registers the truth which he helps to create. Mental interests, hypotheses, postulates, insofar as they are bases for human action—action which to a great extent transforms the world—help to *make* the truth which they declare.

Here the idea that we help to make truth is spelled out in a way that seems innocuous: our actions determine what will happen, how the world will be transformed, and hence what will be true of the world. (In his later writings James will find a second, and more controversial, sense in which we help to

[1] "How to Make Our Ideas Clear", collected in *Writings of Charles S.Peirce; A Chronological Edition*, vol. 3 (1872-1878), C.S.W. Kloesel (ed.) : 273. Peirce adds in the same sentence "and the object represented in that opinion is the real".

[2] William James, "Remarks on Spencer's Definition of Mind as Correspondence" in *Essays in Philosophy*, Harvard University Press, 1978 : 7-22. Quotations from pages 21-22.

make truth.) But James is not primarily thinking of historical truth in this paragraph. For after the sentences just quoted he immediately raises the question (in which he continued to be interested to the end of his life), whether "judgments of the *should-be*" can correspond to reality, and responds with a declaration that this possibility should not be ruled out :

> We know so little about the ultimate nature of things, or of ourselves, that it would be sheer folly dogmatically to say that an ideal rational order may not be real. The only objective criterion of reality is coerciveness, in the long run, over thought. […] By its very essence, the reality of a thought is proportionate to the way it grasps us. Its intensity, its seriousness – its interest, in a word – taking these qualities, not at any given instant, but as shown by the total upshot of experience. If judgments of the *should-be* are fated to grasp us in this way they are what "correspond". The ancients placed the conception of Fate at the bottom of things -- deeper than the gods themselves. "The fate of thought", utterly barren and indeterminate as such a formula is, is the only unimpeachable regulative Law of Mind.

Although the expression is unfortunate, James is not here confusing "the reality of a thought" (i.e., how it "grabs" us) with the reality of things external to us ("the objective criterion of reality" [in the sense of the criterion for something's *being real*]). Rather he is claiming that the criterion for something's being real is precisely that we are fated, in the long run, to believe that it is—that the belief that it is real (where the "it" may be something as large as "an ideal moral order") exhibits "coerciveness over thought".

Nor did Peirce himself fail to appreciate the measure of both agreement and disagreement. Hence the remark, which I already quoted, that

> In the first place, there is the definition of James, whose definition differs from mine only in that he does not restrict the 'meaning', that is the ultimate logical interpretant, as I do, to a habit, but allows percepts, that is, complex feelings endowed with compulsiveness, to be such.

As we have seen, Peirce is referring to James's formulation of the pragmatic maxim for making our ideas clear in the second lecture in *Pragmatism*[1] (a

[1] He may also be thinking of James's 1898 Howison Lecture "Philosophical Conceptions and Practical Results" (a slightly revised version was published under the title "The Pragmatic Method" in *Journal of Philosophy, Psychology and Scientific Methods* in 1904; that version appears in *Essays in Philosophy* : 123-139). There James writes, "I think myself that [the principle of pragmatism] should be expressed more broadly than Mr. Peirce expresses it. The ultimate test for

formulation *all* of whose parts come from various of Peirce's own writings) but the reservation he expresses is occasioned by the fact that James allows "coerciveness over thought", "[an idea's] intensity, its seriousness—its interest, in a word" (and what is this, if not a "complex feeling endowed with compulsiveness"?) to have weight in determining the truth of the idea, whereas Peirce would require that this "coerciveness over thought" come from the testing of predictions implied by the idea, or implied by a larger hypotheses of which the idea is an integral part.

This does not mean, however, that on Peirce's view interests have no role to play in determining the truth. For, as I pointed out a moment ago, Peirce himself wrote, "In order to understand pragmatism, therefore, well enough to subject it to intelligent criticism, it is incumbent upon us to understand what *an ultimate aim, capable of being pursued in an indefinitely prolonged course of action can be*." (my emphasis.) And Peirce goes on to make clear that the "ultimate aim" he is speaking of is a finished knowledge, that we are to approach in the limit but never actually achieve, that will have an "aesthetic quality" which will be a "free development of the agent's own aesthetic quality" and which will, at the same time, match the "aesthetic quality" of "the ultimate action of experience upon him".[1] And Peirce supposes that all rational inquirers must share this "ultimate aim", while James believes that more human and more immediate aims and sentiments must also play a role determining what the "ultimate consensus" will be.

But in what sense exactly do Peirce and James think of our "interests" or our "ultimate aim" as determining truth? The answer is complex. First, for both James and Peirce truth is a property of opinions or beliefs, and without thinkers, rational inquirers, there are no beliefs and opinions to be true or false. In that sense, both Peirce and James can agree that being interested in having true beliefs determines whether there will be truth. Moreover, our various interests determine what inquiries we shall pursue, what concepts we will find useful, etc., i.e., they determine which truths there will be. But James is willing to draw radical consequences from this last idea, consequences which Peirce is not willing to draw, because of what he calls his "scholastic realism", his belief that ultimately only those concepts survive that correspond to real universals,

---

us of what truth means is indeed the conduct it dictates or inspires. But it inspires that conduct because it first foretells some particular turn to our experience which shall call for just that conduct." (loc. cit. : 124).

[1] Peirce [5 : 136]. For Peirce, the branch of value theory that determines final ends is "Aesthetics".

which he called "Thirds". The element in James's thought that Peirce objected to is clearly expressed in "The Sentiment of Rationality". There James writes :

> [...] of two conceptions equally fit to satisfy the logical demand, that one which awakens the active impulses, or satisfies other aesthetic demands better than the other, will be accounted the more rational conception, and will deservedly prevail.
> There is nothing improbable in the supposition that an analysis of the world may yield a number of formulae, all consistent with the facts. In physical science different formulae may explain the phenomena equally well – the one-fluid and two-fluid theories of electricity, for example. Why may it not be so with the world? Why may there not be different points of view for surveying it? within each of which all data harmonize, and which the observer may therefore either choose between, or simply cumulate one upon the other? A Beethoven string quarter is truly, as someone said, a scraping of horses' tails upon cats' bowels, and may be exhaustively described in such terms; but the application of this description in no way precludes the simultaneous applicability of an entirely different description. Just so a thorough-going interpretation of the world in terms of mechanical sequence is compatible with its being interpreted teleologically, for the mechanism itself may be designed.
> If, then, there were several systems excogitated, equally satisfying to our purely logical needs, they would still have to be passed in review, and approved or rejected by our aesthetic and practical nature.

But the disagreement—and it is very important—over this claim of James's should not obscure the fact that James, like Peirce, declares his allegiance to a notion of truth defined in terms of convergence, or "ultimate consensus".

My own reaction to this

Consider, Peirce's famous "pragmatic maxim"-the doctrine that that :

> To attain perfect clearness in our thoughts of an object we need only consider what conceivable effects of a practical kind the object may involve- what sensations we are to expect from it, and what reactions we must prepare. Our conception of these effects, whether immediate or remote, is then for us the whole of our conception of the object, so far as that conception has positive significance at all.

This maxim was tremendously important to the three classical pragmatists. And both Peirce and James attached great importance to their (different) versions of the idea that "truth involves coerciveness, in the long run, over

thought" – call this, "the pragmatist theory of truth". One respect in which their versions are different, by the way, is that James held that the truth is what *will* become coercive over thought, meaning by that *human* thought, whereas Peirce eventually formulates (or reformulates) his theory of truth in such a way that what is true is what *would* become coercive over thought, the belief on which all inquirers *would* be fated to converge, if inquiry were *indefinitely* continued, even by extraterestial species after the human race ceased to exist! Another respect, already mentioned, is they had different accounts of the factors that cause beliefs to become "coercive over thought".

It may surprise you, given the premise of this whole series of lectures, that the classical pragmatists still have something to teach us, that I do not believe that either the pragmatist maxim or the pragmatist theory of truth (either in Peirce's version or in James's) is correct. To begin with the latter, one effect of the pragmatist theory of truth is to make the truth or falsity of any assertion about the past depend on what will happen in the future (or, in Peirce's case, on what is "fated" to happen in the future if inquiry is sufficiently prolonged). Consider any historical proposition whose truth-value is unknown and possibly unknowable (because all the records have been destroyed), say the proposition that "Boadicea was really called 'Boudica'". If James is right, this proposition is true just in case evidence will come to light in the future which will cause competent inquirers to conclude that this was Queen Boadicea's actual name; if Peirce is right, it is true just in case the world is such that competent inquirers *must* eventually find such evidence, even if it takes billions of years. I see no reason to believe either of these claims. I think that what makes a proposition about the past true is what actually happened in the past, not what *will* happen or what *must* happen in the future.[1]

As for the "pragmatic maxim", my attitude is as follows: I don't believe that propositions are rules for conduct. And I also don't believe that a proposition's meaning can be exhausted by talking about what sensations it leads us to expect or what reactions it leads us to prepare.

Those ideas were made popular by logical positivism as well as by pragmatism, although the aim of the positivists was to show that metaphysical propositions are meaningless and the aim of the pragmatists was to ascertain what they did mean. But decades of discussion of these issues in the last century pretty much demolished these claims, to my satisfaction at least.[2] So, if

[1] See my "Pragmatism", *Proceedings of the Aristotelian Society*, vol. xcv, Part 3, 1995 : 291-306.
[2] See the paper cited in the previous note for my reasons for rejecting these ideas.

I don't accept either the "pragmatic maxim" or "the pragmatist theory of truth", why do I think the pragmatists are so important today?

The fact is that, although James was extremely keen on his version of the pragmatist theory of truth, hardly any of his interesting metaphysical ideas actually presuppose it. This is something that Bertrand Russell, who detested the pragmatist theory of truth but was extremely impressed by James's theory of perception (to which Russell gave the name "neutral monism") fully understood.[1] And nothing of what I have praised and will praise in Dewey depends on the pragmatist theory of truth. In fact, in *Logic, the Theory of Inquiry* there is only one reference to that theory – in a footnote! And although I have said that I can't accept the pragmatic maxim, I can accept many of the particular applications of it that James and Dewey made.

What I have in mind by this is that the idea of asking of *philosophical positions,* of attempted answers to the great philosophical questions, what difference they have made and can make in practice, what difference they make to our *lives*, is a necessary first step towards bringing philosophy back in contact with human concerns, a first step to doing what Dewey asked us to do when he wrote that "Philosophy recovers itself when it ceases to be a device for dealing with the problems of philosophers and becomes a method, cultivated by philosophers, for dealing with the problems of men.[2]" Today and Monday we have seen some examples of how this leads Dewey to approach the teaching of ethics and the hoary question of free will. But the part of Dewey's thought that is perhaps most relevant today, and is certainly still hotly debated, concerns his rejection of the still tremendously influential dichotomy between factual propositions and value judgement. I agree with Dewey that it should be rejected, and in Friday's lecture I will tell you why.

PRAGMATISM AND THE FUTURE OF PHILOSOPHY

The present lecture is titled "Pragmatism and the Future of Philosophy". I did not entitle it "The Future of Pragmatism" because I do not want to revive pragmatism as a movement. I don't believe in "movements" in philosophy, except as temporary expedients for bringing new ideas to the attention of the

[1] Bertrand Russell on James in *The Analysis of Mind*, G. Allen & Unwin, 1921.

[2] David Sidorski (ed.), *The Essential Writings of John Dewey*, Harper Torchbooks, 1977 : 94. This quotation is from "The Need for a Reform of Philosophy" in Henry Holt et al. (eds.), *Creative Intelligence; Essays in the Pragmatic Attitude*, The Quinn & Boden Co. Press, 1917 : 3-69.

philosophical public. But there are ideas in classical pragmatism that I think deserve to be part of "the future of philosophy".

I ended the last lecture by promising to talk about Dewey's rejection of the supposed dichotomy between factual propositions and value judgments. The rejection of the claim that there is an absolute dichotomy here is perhaps the most important idea of Deweyan pragmatism that I hope philosophers will come to accept in the future.

This dichotomy has by now become something familiar to lay people and not just a matter for discussion by philosophers and social scientists. Every one of you has heard someone ask, "Is that supposed to be a fact or a value judgment?". The presupposition of the question is that if it's a "value judgment" it can't possibly be a "fact", and, all too often, a further presupposition is that value judgments are "subjective".

This dichotomy was already widely accepted by analytic philosophers when I was a graduate student more than a half-century ago. The logical positivists, including my teacher Hans Reichenbach, claimed to have shown that ethical propositions only appear to be bona fide assertions; in reality, they lack truth value, they said, and, indeed, they are outside the sphere of rational argument altogether. Important social scientists accepted the dichotomy as well; Lionel Robbins, one of the most influential economists of the 1930s, gave this view one of its most aggressive formulations:

> If we disagree about ends it is a case of thy blood or mine- or live or let live according to the importance of the difference, or the relative strength of our opponents. But if we disagree about means, then scientific analysis can often help us resolve our differences. If we disagree about the morality of the taking of interest (and we understand what we are talking about), then there is no room for argument.[1]

Yet this "self-evident" dichotomy is one that Dewey regards as baseless:

> Articles frequently appear that discuss the relation of fact and value. If the subject discussed under this caption were the relation of value-facts to other facts, there would not be the assumption of uniqueness just mentioned. But anyone reading articles devoted to discussion of this issue will note that it is an issue or problem just because it is held that propositions about values are somehow of a unique sort, being

[1] Lionel Robbins, On the Nature and Significance of Economic Science, Macmillan, 1932 : 132.

> inherently marked off from propositions about facts. I can think of nothing more likely to be clarifying in the present confused state of the subject than an explicit statement of the grounds upon which it is assumed that propositions about values are not propositions about space-time facts, together with explicit discussion of the consequences of that position. If a question were raised about the relation of geological propositions to astronomical propositions, or of meteor- propositions to comet-propositions, it would not occur to anyone that the 'problem' was other than that of the connection between two sets of facts. It is my conviction that nothing would better clarify the present unsatisfactory state of discussion of value than definite and explicit statement of the reasons why the case is supposed to be otherwise in respect to value.[1]

By "propositions about values" Dewey means here not just propositions about which human beings or communities have what values under what circumstances – sociological or psychological propositions – but propositions about what is valuable. Now that the fact/value dichotomy has become so widely accepted, it may appear naïve of Dewey to claim that there can be facts about values. How can there be facts about what is and what is not valuable? What is more, Dewey suggests that such facts are just "space-time facts", that is, they do not depend on anything supernatural or "non-natural". (And he wrote this in 1944, long after G. E. Moore argued in his famous Principia Ethica, published in 1903, that if there are such facts, they must involve a "non-natural property"!)

But Dewey was not naïve. He knew very well that his was a minority position. The first sentence of the essay from which I just quoted reads:

> When I analyze the discouragement I have experienced lately in connection with discussion of value, I find that it proceeds from the feeling that little headway is being made in determining the questions or issues fundamentally involved rather than from the fact that the views I personally hold have not received general approval.[2]

Let us see what Dewey meant by "the questions or issues fundamentally involved".

---

[1] John Dewey, "Some Questions About Value", *Journal of Philosophy*, 51 (17), 1944 : 455. Collected in *The Later Works of John Dewey*, volume 15, 1925-1953 : 101-108. The passage I cite can be found at the page 106.

[2] Ibid. : 101.

The fundamental idea in all of Dewey's writing about the theory of value was to distinguish between what is *valued* in the sense of evoking a mere feeling of liking or enjoyment, and that which has been critically *evaluated* and studied. In Dewey's view, it is only when we have acquired knowledge of the relevant causes and effects and relations to our other values and our doings that what is valued become valuable or what is satisfying become satisfactory. Or, as he himself puts it :

> To say that something satisfies is to report an isolated finality. To say that it is satisfactory is to define it in its connections and interactions. The fact that it pleases or is immediately congenial poses a problem to judgment. How shall the satisfaction be rated? Is it a value or is it not? Is it something to be prized and cherished, to be enjoyed? Not stern moralists alone but everyday experience informs us that finding satisfaction in a thing may be a warning, a summons to be on the lookout for consequences. To declare something satisfactory is to assert that it meets specifiable conditions. [1]

It is because he consistently rejected the idea that attitudes such as liking, preferring, approving, commending, and the like are sufficient to constitute value, and because he wished to emphasize the role of intelligent evaluation in value judgment that he offered what he called a "preliminary rough listing" of the questions he thought we should be discussing in the essay I mentioned earlier ("Some Questions About Value").[2] Here is Dewey's list :

I. What connection is there, if any, between an attitude that will be called prizing or holding dear and desiring, liking, interest, enjoying, etc.?

II. Irrespective of which of the above-named attitudes is taken to be primary, is it by itself a sufficient condition for the existence of values? Or, while it is a necessary condition, is a further condition, of the nature of valuation or appraisal, required?

III. Whatever the answer to the second question, is there anything in the nature of appraisal, evaluation, as judgment or/and proposition, that marks them off, with respect to their logical or their scientific status, from other propositions or judgments? Or are such distinctive properties as they possess wholly an affair of their subject-matter – as we might speak of astronomical and geological

[1] *The Later Works of John Dewey*, volume 4, 1925-1953: 208.
[2] *Ibid*: 101-102.

propositions without implying that there is any difference between them qua propositions?

IV. Is the scientific method of inquiry, in its broad sense applicable in determination of judgments and/or propositions in the way of valuations or appraisals? Or is there something inherent in the nature of values as subject-matter that precludes the application of such method? – And, very importantly, in connection with the fourth of these questions, Dewey tells us that he inserted the phrase "in its broad sense" after "the scientific method of inquiry" to make it clear that the word "scientific" is "not assumed in advance to signify reduction to physical or biological terms, but, as is the case with scientific investigations of concrete matters generally, leaves the scope of the subject-matter to be determined in the course of inquiry."[1]

Dewey's responses, in his work as a whole, to the four questions he raised in this short article will be discussed in a few minutes. But first I want to look at certain well-known philosophical views that are diametrically opposed to Dewey's.

Dewey's naturalist opponents

One sort of opponent that Dewey recognizes but does not discuss in "Some Questions About Value" is the non-naturalist, the philosopher who holds that value propositions presuppose a non-natural or "transcendent" source of knowledge; in a footnote to that essay he writes that that view has been omitted "so what is said will not appeal to those who hold that view".[2] In a sense, the work of both Dewey and James[3] is intended to show us that to assume that we need a transcendent justification for value propositions is only to make them seem occult, and they are anything but that—they are rooted in real natural facts about human nature and about real human environments. (Moreover, those who take the "transcendent" route in ethics have historically been opponents of fallibilism in ethics, and fallibilism, for pragmatists, is inseparable, from democratic ethics.)

[1] "Some Questions About Value" footnote on p. 450 in the *Journal of Philosophy*; endnote to p. 102 in *The Later Works of John Dewey*, volume 15, 1925-1953.
[2] Ibid. : 440 in The Journal of Philosophy; endnote to page 101 in The Later Works of John Dewey, volume 15.
[3] William James, "The Moral Philosopher and the Moral Life", *International Journal of Ethics*, 1 (3) 1891 : 330-354.

So this essay is addressed to naturalists in ethics. Dewey was well aware that among his fellow naturalists there were philosophers who regard ethical utterances as "pseudo-propositions".

In *The Unity of Science*[1], for example, after explaining that all nonscientific problems are "a confusion of…pseudoproblems"[2], Rudolf Carnap wrote as follows:

> All statements belonging to Metaphysics, regulative Ethics, and (metaphysical) Epistemology…are in fact unverifiable and, therefore, unscientific. In the Viennese Circle, we are accustomed to describe such statements as nonsense… This terminology is to be understood as implying a logical, not say a psychological distinction; its use is intended to assert only that the statements in question do not possess a certain logical characteristic common to all proper scientific statements [i.e. verifiability – HP]; we do not intend to assert the impossibility of associating any conceptions or images with these logically invalid statements. Conceptions can be associated with any arbitrarily compounded series of words; and metaphysical statements are richly evocative of associations and feelings both in authors and readers.

And Dewey discusses this view (although he does not mention Carnap by name) in "Some Questions About Value". How then, could Dewey write (in the very same article) the words I quoted earlier, namely, "[it] is my conviction that nothing would better clarify the present unsatisfactory state of discussion of value than definite and explicit statement of the reasons why the case is supposed to be otherwise in respect to value"? Didn't Carnap "state the reasons"?

Well Carnap did give a supposed reason. He said that value-propositions "are in fact unverifiable". This is certainly a reason that Dewey would have accepted, had Dewey agreed that it was the case. But the only reason Carnap had for saying that value propositions are unverifiable in 1934, the year that *The Unity of Science* was published, was the claim, accepted by the Logical Positivists and their "Vienna Circle" at that time, that the only verifiable propositions are observation reports such as "this chair is blue" (or, in an alternative version, "I have a blue sense-datum") and logical consequences of such propositions – a claim so extreme as to rule out all of the propositions of theoretical physics, as Carnap later came to realize! From Dewey's perspective this is no reason at all.

[1] Rudolf Carnap, *The Unity of Science*, Kegan Paul, Trench, Hubner & Co., 1934 : 26-27.
[2] Ibid. : 22.

Other defenders of the "emotivist" or "expressivist" account of ethical sentences simply claimed that it was the very "grammar" of ethical sentences to express emotions or "attitudes" (or, in Hans Reichenbach's version, to "command"), and not to state facts. But this is certainly not the surface grammar of such utterances: we do speak of some valuations as correct or true and others as incorrect or false, and we also discuss whether they are warranted or unwarranted. The emotivists' reply was that the surface grammar is "misleading"; but again Dewey would want to hear a reason for this claim that a non-reductive naturalist should accept, and he claimed (and I think that he was right) that no such reason had been offered. (That one can be a naturalist in philosophy without being a reductionist is another idea of the classical pragmatists that certainly needs more advocates today.)

Perhaps just because the attempt to show that the "logical" or linguistic properties of value sentences support emotivism has collapsed (it was brilliantly criticized as early as 1960 by Paul Ziff in the final chapter of his *Semantic Analysis*), philosophers who deny that value propositions can genuinely state knowable facts more and more rely on purely metaphysical arguments. Thus the late John Mackie argued in a book rather provocatively titled *Ethics; Inventing Right and Wrong*[1] that although value sentences do indeed have the linguistic form of propositions, and are supposed to be capable of truth and falsity, warrant or lack of warrant, this is a metaphysical mistake. According to Mackie's famous "error theory" all ethical talk rest on an error. The supposed error is the belief that there could be such properties as good and evil, right and wrong. Although Mackie published this claim 13 years after Dewey's death, it is safe to assume that Dewey would demand a reason for this claim. And the only reason Mackie offered was that these ethical properties are too "queer" to exist![2]

Mackie (who was a metaphysical materialist), tried to prove ethical properties exhibited this "queerness" by pointing to a property that he claimed ethical judgments possess : namely, that one cannot make an ethical judgment, and mean it as a sincere ethical judgment, unless one thereby expresses an actual desire or preference. (The British philosopher Richard Hare earlier made the same assumption, and also came to the conclusion that ethical sentences do not state facts, although he did not speak of an "error".) Since descriptions of fact cannot, according to Mackie and Hare, be expressions of actual desires and preferences, it follows that ethical judgments are not descriptions of fact. q.e.d.

[1] J.L. Mackie, *Ethics; Inventing Right and Wrong*, Penguin Books, 1978.
[2] Ibid. : 41.

The origin of this supposed property of ethical judgments is clear : it comes from the logical positivists! For the logical positivists and their emotivist followers expressing actual desires and preferences was the very "function" of ethical judgments. But, as Elizabeth Anderson has remarked[1],

> Boredom, weakness, apathy, self-contempt, despair and other motivational states can make a person fail to desire what she judges to be good or desire what she judges to be bad. This prevents the identification of value judgments with expressions of actual desires and preferences, as Hare insists.

And without this identification, Mackie has no reason at all for his "queerness" argument, and the famous "error theory" that he based upon it. (Recall that the first of Dewey's four questions asks us what the connection is between valuing ("prizing") and desiring. And it is clear from the essay as a whole that Dewey does not think the answer is simple.)

This is not to deny that believing an ethical proposition often has motivational force, nor is it to deny that our aim in uttering such propositions is often to motivate. It is simply to deny that they have the mysterious property of always and necessarily motivating whenever they are sincerely believed.

In his brilliant study, *What We Owe to Each Other*, Thomas Scanlon discusses many of the questions I have just briefly discussed concerning the normative and motivational force of ethical assertions and the complexity of the connections between valuing and desiring. On Scanlon's "contractualist" theory, the moral motivation par excellence is the desire to avoid an action if the action is such that any principle allowing it would be one that other people could reasonably reject. And Scanlon responds to the question, "Why accept this account of moral motivation?" by saying,[2]

> According to the version of contractualism that I am advancing here, our thinking about right and wrong is structured by…the aim of finding principles that others, insofar as they too have this aim, could not reasonably reject. This gives us a direct reason to be concerned with other people's point of view : not because we might, for all we know, actually be them, or because we might occupy their positions in some other possible world[3], but in order to find principles that they, as well as we, have reason to accept […] there is on this view a strong continuity

[1] Elizabeth Anderson, *Value in Ethics and Economics*, Harvard University Press, 1993.
[2] Thomas Scanlon, *What We Owe to Each Other*, Belknap Press, 2000: 155.
[3] Rawls' "veil of ignorance" and "initial position" are what Scanlon is referring to.

> between the reasons that lead us to act in the way that the conclusions of moral thought require and the reasons that shape the process by which we arrive at those conclusions.[1]

I am not quoting Scanlon because I think that Dewey was a "contractualist" *avant la lettre*, but because Scanlon has well described how one sort of ethical claim can have motivating force in any community which shares one of the basic interests of morality. And the explanation he gives does not presuppose anything we ought to regard as "queer".

"But the motive Scanlon describes won't motivate anyone who is indifferent to what others believe and desire!" someone will object. True, but the claim that ethical utterances have to motivate even those who are indifferent to the interests and beliefs of others to count as genuine propositions is just the claim that Mackie and Hare made, the claim for which I said no good reason has been offered. Ethical utterances do have various kinds of motivating force, and Scanlon has well illustrated how one kind of motivating force can be accounted for.

What Dewey would have disagreed with Scanlon about is (1) the idea that there is a unique motive for ethics and (2) the idea that all ethical judgments depend on "principles".[2] But even more than Scanlon, perhaps, Dewey would have emphasized that ethics depends on a concern – perhaps "concern" is too weak a word – an identification with the interests of others. Like Aristotle, Dewey believes that the reasons for being ethical are not apparent from a non-ethical or pre-ethical standpoint; one must be educated into the ethical life, and this means that one's interests must be transformed. In that process, Dewey tells us, one does not simply acquire an interest in helping other people alongside of and independent of one's various interests in art, in work, in recreation, etc.; rather all of those interests are likewise transformed. In Dewey's account, the natural impulse of sympathy itself is transformed by being fused with our other impulses, and our other impulses and interests are transformed by being fused with sympathy. As he writes,

> What is required is a blending, a fusing of the sympathetic tendencies with all the other impulses and habitual traits of the self. When interest in power is permeated with an affectionate impulse, it is protected from being a tendency to dominate and tyrannize; it becomes an interest in

[1] Ibid. : 191

[2] Why this is not the right way to think of ethics is something I discuss in the opening and closing chapters of *Ethics Without Ontology*, Harvard University Press, 2005.

> effectiveness of regard for common ends. When an interest in artistic or scientific objects is similarly fused, it loses the indifferent and coldly impersonal character which marks the specialist as such, and becomes an interest in the adequate aesthetic and intellectual development of the conditions of a common life. Sympathy does not merely associate one of these tendencies with another; still less does it make one a means to the other's ends. It so intimately permeates them as to transform both into a new and moral interest.[1]

The Deweyan alternative to noncognitivism

One thing all three of the "classical pragmatists" agreed on was that *we have to learn in the course of inquiry* what can and cannot count as a verification, and that there is no way of delimiting in advance what we can and cannot learn from inquiry and from the application of the results of inquiry. (The latter – the application of the results of inquiry – is, for Dewey, a part of inquiry, and, indeed, the most essential part). For this reason, unlike Carnap, Dewey never appeals to a theory that purports to specify in advance what can and what cannot be "verifiable". And, unlike Mackie, Dewey is not a reductive materialist, and he does not pretend to have a principle which determines what is too "queer" to be a real property of things. What he did instead was develop a naturalistic picture of the ways in which intelligence can be applied to ethical problems, and especially to social problems. For Dewey that there can be objective ethical truths follows from the fact that ethical problems are simply a subset of our practical problems, in the ancient sense of "practical" – problems of how to live – and it can be a fact that a certain course of action or a certain form of life solves, or better resolves, what Dewey called a problematic situation.[2]

Dewey explains and develops his view in detail in a number of works, including the *Ethics*[3], *The Quest for Certainty*, and *Human Nature and Conduct*, as well as many, many articles and responses to his critics. He did not try to present it in "Some Questions About Value", because his purpose there was only to say what he thought were the important questions to ask, but inevitably some features of his positive view can be perceived in his brief remarks about these questions.

---

[1] John Dewey and James Hayden Tufts, *Ethics*, Holt, 1908.: 273.

[2] This is how I understand Dewey's answer to the noncognitivists in *A Theory of Valuation*. See R.A. Putnam and myself for a discussion of the role of the notion of a "problematic situation" and the notion of an objective resolution of a problematic situation in both Dewey's theory of inquiry and his ethical theory.

[3] John Dewey and James Hayden Tufts, *Ethics*, Holt, 1908.

In particular, when he discussed question I., Dewey drew an interesting distinction between two ways one can understand the notion of an attitude "such as prizing". To use a terminology that has come into use in recent decades, but which Dewey did not possess, we might call the two ways "internalist" and "externalist". An *internalist* philosopher in the philosophy of mind thinks of mental states as entirely "inside" the mind or brain. An *externalist* philosopher argues that the very identity of mental states depends on the actions and things to which they are directed. When applied to ethical theories, this distinction is relevant in more than one way. First of all, there are ethical theories according to which the only good (or bad) things are, in the last analysis states of mind. One example is G. E. Moore's theory in his 1903 *Principia Ethica*[1], a book whose tremendous influence on the members of the Bloomsbury Group is described in by J.M. Keynes in a wonderful essay titled "My Early Beliefs"[2]. Another example is Kant's ethical theory, in which only our acts of willing are ultimately good or bad, and a third is the Utilitarianism of Jeremy Bentham, according to which what is good is maximizing pleasure, conceived as a homogenous mental quantity capable of being added and even of being numerically measured (in some later versions of the theory). These are all internalist theories. Also they are all "cognitivist" theories, in that genuine ethical knowledge is possible, according to all three of these (otherwise very different theories). But the "noncognitivists", such as the emotivists I mentioned a few minutes ago, who thought that ethical sentences do not really state anything that is rationally evaluable, but only express emotions or "attitudes",[3] thought of these emotions and attitudes as mental states in an "internalist" sense, and one of the things Dewey wishes to do in "Some Questions" is to ask them *why* they think of them in this way. He asks this because he thinks that if we recognize that "prizing", for example, is bound up both with the things prized and with the actions we take in connection with those things, then we will be less likely to think that it must be one and the same "internal" mental state no matter what is prized and no matter what behavior the prizing leads to in a particular context. And this connects with his other questions, because *if prizing is complex, external-world involving, and context-dependent, then it is plausible that it should be susceptible to rational evaluation, evaluation as to its appropriateness in a given context*. On the other hand, if, as some "internalist" and noncognitivist theories hold, prizing (or "commending", or "approving") is simply an irreducible and homogenous state in the private

[1] George Edward Moore, *Principia Ethica*, 1903.
[2] John Maynard Keynes, "My Early Beliefs", in *The Collected Writings of John Maynard Keynes*, Macmillan, 1938: 433-451.
[3] "Attitude" is a key notion is Stevenson's influential emotivist tract.

theater of the mind, and the function of ethical utterances is simply to express this state and to bring it about in one's hearers, then the social and cultural origins and functions of valuation become completely obscured. So conceived, in Dewey's view, ethical utterances become merely expressions of what he calls "bias", and he closes "Some Questions" by writing :

> In this connection it seems worthy of note that those writers who hold to the completely a-rational character of valuing begin by accepting the "internal" mentalistic theory of value, and then proceed to endow this quasi-gaseous stuff with powers of resistance greater than are possessed by triple-plate steel.[1]

Dewey's criticism of emotivism, that it has an untenable "internalist" view of our mental states, is not a very well-known one, even today. But it is continuous with the criticism of Bentham's Utilitarianism that he had made many years earlier, in the 1908 *Ethics*, a criticism stated much more vividly by Robert Nozick many years later. (Nozick was, as far as I know, unaware that Dewey had discussed the same issue.)

Dewey's and Nozick's critique of Utilitarianism

The criticism I am referring to turns on the claim that happiness is not, contrary to Bentham, just a matter of subjective experiences. In the famous thought experiment Nozick employed, you have the option of spending your life lying in a tank connected to a superduper machine that gives you whatever experiences you might like to have. Nozick asked "Would you plug in? *What else can matter to us, other than how our lives feel from the inside*?"

And Nozick answered his own question:

> What does matter to us in addition to our experiences? First, we want to do certain things and not just have the experience of doing them. In the case of certain experiences, it is only because first we want to do the actions that we want the experiences of doing them or thinking we've done them…A second reason for not plugging in is that we want to be a certain way, to be a certain sort of person. Someone floating in a tank is an indeterminate blob. There is no answer to the question what a person is like who has been long in the tank. Is he courageous, kind, intelligent, witty, loving ? It's not merely that it's difficult to tell; there's no way he is. Plugging into the machine is a kind of suicide. It will seem to some, trapped by a picture, that nothing about what we are like can matter

[1] "Some Questions" in *The Later Works of John Dewey*, volume 15: 108.

> except as it gets reflected in our experiences. But should it be surprising that what we are is important to us? Why should we be concerned only with how our time is filled, but not with what we are?[1]

And here is Dewey making a similar point in 1908[2] : "[…] happiness consists in the *fulfillment in the appropriate objects* (or the anticipation of such fulfillment) of the powers of the self manifested in desires, purposes, efforts."[3] Dewey immediately proceeds to contrast this externalist conception of happiness "with the notion that it is a sum or collection of separate states of sensation or feeling". He describes precisely the "picture" that Nozick describes some of us as trapped by, according to which "nothing about what we are like can matter except as it gets reflected in our experiences" in the following words[4] :

> On the conception in question, according to which happiness is a sum or collection of separate states of sensation or feeling] it is the pleasure alone, when *dissociated*, which is the real end of conduct, an object being at best an external means of securing it. It is the pleasurable feeling which happens to be *associated* with food, with music, with a landscape, that makes it good; health, art, are not good in themselves. The other view holds that pleasure has no such existence by itself; that it is only a name for *the pleasant object*; that by pleasure is meant the agreement or congruity which exists between some capacity of the agent and some objective fact in which this capacity is realized.[5]

The work that this conception of happiness as the satisfaction, actual or anticipated, of a capacity of an agent by an "objective fact" (as opposed to a mere subjective feeling) does for Dewey's critique of utilitarianism is enormous. In the utilitarian conception, as Dewey writes, "When happiness is conceived of as an aggregate of states of feeling, these are regarded as homogenous in quality, different from one another only in intensity and duration. Their qualitative differences are not intrinsic, but are due to the different objects with which they are associated (as pleasures of hearing, or vision). Hence they disappear when the pleasure is taken by itself as an end."[6] This disappearance of the qualitative differences (as far as importance to the agent's "happiness" is

[1] Robert Nozick, Anarchy State and Utopia, 1974 : 43
[2] Dewey (with James H. Tufts) *Ethics*, in *The Middle Works of John Dewey*, volume 5: 256 (I am only quoting from sections written by Dewey himself).
[3] Emphasis added.
[4] *Ibid*.: 257.
[5] *Ethics*, in *The Middle Works of John Dewey*, volume 5: 257.
[6] *Ibid*.: 257

concerned), is, of course, what makes it possible for the utilitarian to speak of "summing" pleasures, "maximizing" them, etc.. But if Dewey is right, and if "agreeableness is precisely the agreeableness or congruence of some *objective condition* with some impulse, habit, or tendency of the agent"[1], then, "of course, pure pleasure is a myth. Any pleasure is qualitatively unique, being precisely the harmony of one set of conditions with its appropriate activity. The pleasure of eating is one thing; the pleasure of hearing music, another; the pleasure of an amiable act, another; the pleasure of drunkenness or of anger is still another." [2]

And Dewey continues,

> Hence the possibility of absolutely different moral values attaching to pleasures, according to the type or aspect of character which they express. But if the good is only a sum of pleasures, any pleasure, so far as it goes, is as good as any other – the pleasure of malignity as good as the pleasure of kindness, simply as pleasure.[3]

Of course, Dewey was not a Nozickian libertarian. While Dewey and Nozick shared an important criticism of utilitarianism, Dewey defended social democracy all his life, as the best expression in our time of what he called "the democratic personal way of life"[4] as well as the only way of truly applying cooperative intelligence and fallibilistic experimentation to the solution of our social problems[5], while Nozick offered an a priori defense of free-markets and the minimal state. And when Dewey defends what he called "the democratic personal way of life" by claiming that "to cooperate by giving differences a chance to show themselves because of the belief that the expression of difference is not only a right of the other persons but is a means of enriching one's own life-experience"[6], he cannot convince the emotivists, who will regard regard Dewey's talk of "enriching" one's life experience as just more

[1] Emphasis added.
[2] *Ibid*.: 257
[3] *Ibid*.: 257-8.
[4] "Creative Democracy – the Task Before USW" in *The Later Works of John Dewey*, volume 14: 228. This passage was called to my attention by Naoko Saito; see her "Transcending the Tragic with Dewey and Emerson: Beyond the Morse-Boisvert Debate," *Transactions of the Charles S. Peirce Society*, xxxix, no, 2, Spring 2003: 289.
[5] On this see "A Defense of Deweyan Democracy," chapter 9 of my *Renewing Philosophy,* Harvard University Press, 1992.
[6] "Creative Democracy – the Task Before USW" in *The Later Works of John Dewey*, volume 14: 228. This passage was called to my attention by Naoko Saito; see her "Transcending the Tragic with Dewey and Emerson: Beyond the Morse-Boisvert Debate," *Transactions of the Charles S. Peirce Society*, xxxix, no, 2, Spring 2003: 289.

"exclamations, expressing only the dominant emotional state of the one from whom the ejaculation issues."[1] As Dewey says, the question which view is right, Dewey's or the emotivists, has great "practical import".

> If valuing consists *wholly* and exclusively of something inherently recalcitrant to inquiry and adjudication, then it must be admitted that it can not rise above the brute-animal level – save with respect to the *means* most likely to secure its victory over conflicting valuations and values. But, if in answer to the third question, it is decided that there is some element or aspect of valuation on "objective" grounds in every case of prizing desiring, etc., etc., then it is possible that this element or aspect may itself become so prized, desired, and enjoyed that it will gain in force at the expense of the brute and non-rational factor.[2]

The difference it makes

To show how great a difference it makes if we treat ethical disagreements as Dewey thought we should, as disagreements that are not only rationally discussible, but as the disagreements which it is most important to discuss intelligently, would take a whole series of additional lectures. But I am sure the question which will come up immediately in the discussion following this lecture is, "by what criteria can we tell who is right when we have an ethical disagreement?" And to open the post-lecture discussion, instead of trying to summarize all the things I have said today, I will just make three remarks :

(1) In the course of a genuine inquiry, one which is provoked by a what Dewey would have called a "problematical situation" and not by what the pragmatists would have regarded as a mere paper doubt, we always bring to bear an immense stock of both valuations and descriptions which are not in question in that problematic situation. The pragmatists – all the pragmatists – have taught us that any assumption can be questioned, but that that does not mean that all assumptions can be put in question in any one inquiry. We are never in the position, imagined by too many philosophers, of having a large stock of factual beliefs and no value judgments and having to decide whether our first value judgment is warranted. We are never in the position of having to infer our very first "ought" from a whole lot of "ises".

[1] "Some Questions" *The Later Works of John Dewey*, volume 15 : 107. This is Dewey's – accurate! – description of the emotivist position.
[2] Ibid. : 455.

(2) We neither have nor need one single "criterion" or "decision method" for judging warranted assertability in ethics any more than we do in history or in economics or in literature or, for that matter, in science. Rather, what we need is, first, an interest in what Dewey called *effectiveness of regard for common ends*, commitment to the ethical life itself, and, second, as Dewey also said, we need "the authority of intelligence, of criticism." (Dewey once defined philosophy itself as "criticism of criticisms".)

(3) If Dewey did not believe that inquiry requires "criteria", in the sense of decision procedures, he did believe that there are some things that we have learned about inquiry from the conduct of inquiry. And what holds good for inquiry in general holds for value inquiry in particular.

Among the things that hold good for inquiry in general are the Peircean principles that inquiry which makes full use of human intelligence must not "block the paths of inquiry" by preventing the raising of questions and objections, or obstructing the formulation of hypotheses and the criticism of the hypotheses of others. Inquiry in any area should avoid relations of hierarchy and dependence, for these always lead back to the failed methods of inquiry that Peirce described in "The Fixation of Belief" – to the failed "method of tenacity", the failed "method of authority" and the failed "method of what is agreeable to reason". Rational inquiry in any area relies upon both the careful evaluation of experience and the invention of new descriptions of experience (and sometimes of new experiences), as Dewey explains in *The Quest for Certainty*. By appeal to these and similar standards we can often tell that that views are irresponsibly defended in ethics as well as in science. The right approach to our ethical problems is neither to give up on the very possibility of intelligent discussion nor to seek a metaphysical foundation outside of (or "above") all problematic situations, but to investigate and discuss and try things out cooperatively, democratically, and above all fallibilistically. The terrible thing about the fact/value dichotomy is that by denying that there is such a thing as a responsible and rational ethical discussion, it "blocks the path of inquiry" from the very start.

ميتافيزيقا الموضوعات المنطقية

Ouahiba **DAMOUCHE**
(Université d'Alger)

Résumé Nous tenterons dans cet article de formuler l'idée d'une métaphysique des objets logiques dans la philosophie de Russell. Ce dernier adopte la théorie de l'atomisme logique et fonde une sorte de métaphysique des propositions permettant d'atteindre la nature des objets. L'objet et ses synonymes, la chose et le terme, sont objectifs et distincts. Le terme est le sujet de la proposition et tous les termes ont le même statut ontologique dû à la possibilité de changement et de substitution. Le sujet devient un prédicat et le prédicat devient un sujet au sein de la même proposition. Nous considérons que c'est la distinction entre l'existence et l'entité qui crée, dans la philosophie de Russell, une métaphysique de l'objet. L'entité n'est pas l'existence, qui est le statut ontologique fondamental selon Russell. Cer dernier jette ainsi les bases d'une ontologie conceptuelle, étant donné qu'une description atomique de l'univers finit par considérer l'objet comme unité. Russell, par le biais de sa thèse sur la proposition élémentaire qui correspond à un objet atomique, construit une métaphysique qui justifie son empirisme et son réalisme.

Mots-clés : Russell, atomisme logique, objet, prédicat, ontologie, métaphysique.

الملخص. تبني راسل للذرية المنطقية أسس لميتافيزيقا في نظريته للقضايا في صيغتها الأولى، حيث يكون الموضوع أهم ركائزها. الموضوع (و المرادف له الشيء و الحد) هو موضوعي ومستقل وهو عنصر من الوحدة المركبة للقضية، فالحد هو موضوع لقضية وكل الحدود لها نفس الوضعية الانطلوجية بإعتبار إمكانية الاستبدال و التعويض ، فالموضوع يصبح محمولا و المحمول يصبح موضوعا في القضية نفسها. وتميز راسل بين الوجود والكينونة يؤسس لميتافيزيقا مرتبطة بالموضوع. تحصل الكينونة وليس الوجود على المكانة الأنطلوجية الأساسية في فلسفة راسل ، فالكينونة مستمرة والوجود منقطع . هذا ينم عن انطلوجيا تصورية، و كوصف ذري للعالم. تصور الموضوع كوحدة، مستقلة ومستمرة يطابق المفهوم الذري للكون فمن القضايا الذرية إلى الموضوع الذري. وهي ميتافيزيقا مبررة و مؤسسة لتجريبيته و واقعيته.

كلمات مفتاحية : راسل، الذريّة المنطقية، الموضوع، المحمول، الأنطولوجيا، ميتافيزيقا.

Abstract Russell's adoption of logical atomism, has founded a new metaphysics in his theory of proposition earliest form, with the object is being the most important element of its foundations. The object (and its synonyms a thing and a term) is objective, independent and is an element of a constituted unity of proposition. The term is an object of a proposition, and all terms have the same ontological statue because of the possibility of substitution and reduction. The object becomes a predicate, and the predicate becomes an object in the same proposition. Russell's distinction between existence and entity founds a new Metaphysics related to the object. The entity and not the existence is the fundamental ontological statue for Russell, as the entity is continuous and existence is discontinuous. This signifies a conceptual ontology, as an atomic description of the world. Perceiving the object as a unity, independent and continuous (persistent) conforms with this atomic conception of the world that starts from the atomic propositions to atomic object. This is a metaphysics that justifies his empiricism and realism.

Keywords: Russell, logical atomism, object, predicate, ontology, Metaphysics.

نتناول في هذا المقال الجوانب الميتافيزيقية لنظرية راسل في القضايا. و على الخصوص الشكل المتطرف للذرية . و يتناول أيضا الدور الذي لعبه مفهوم الموضوع خاصة في المرحلة الاولى لفلسفته.

إعتنق راسل بعد هجره للمثالية الذرية المنطقية التي أسست لواقعية تعددية، حيث أخذ عن مور الطبيعة غير الوجودية للقضايا ماعدا تلك التي تحكم بالوجود و استقلالها عن كل ذهن عارف، و كذلك مذهب الكثرة الذي يعتبر العالم سواء عالم الموجودات أم المجردات أي الكينونات[1] على أنه مركب من عدد لانهائي من الكينونات أو الموجودات لكل منها إستقلاله و يقوم على علاقات مطلقة لا تقبل الرد الى صفات حدودها أو صفات المجموع الذي يتركب من هذه الحدود[2]. بالنسبة الى العالم تكون الموجودات والكينونات مركبة من عدد لانهائي من الكينونات المستقلة المتبادلة مع العلاقات النهائية وغير قابلة

[1] برتراند راسل، مبادئ الرياضيات، ترجمة احمد مرسي و احمد فؤاد الاهواني (ط1 : مصر دار المعارف، 1965)، ص 24

[2] المرجع نفسه ص 25

للرد الى الصفات لحدودها أو للكل الذي تكونه [1]. على الرغم من أن هذه التعددية لا تؤدي براسل إلى الإعتراف بأي مميزات أساسية للفئة الانطولوجية في الكينونات. في *مبادئ الرياضيات* يقر راسل بعدم إمكانية الدفاع عن هذه التمييزات. ويقول بأن كل الكينونات هي **موضوعات** على المستوى الابستمولوجي نفسه. دفعه بالتالي مفهوم الموضوع الى تناول الفئات كلها. " كل شيئ هو موضوع".[2] تعتبر صورة الموضوعات التي تتسم بالعمومية كأساس لميتافيزقية راسل. إنها الميتافيزيقا المؤسّسة على الموضوع.

رأى راسل أن العالم المكون من الموضوعات يمكن أن يتفصل داخل عدد من الفروض المتداخلة التي تلعب دورا هاما في نظرية القضايا. الفرض الاول مرتبط بشكل مباشر بمفهومه العام عن طبيعة و مكونات القضايا. بالنسبة اليه العالم مكون من القضايا ومكوناتها. و يشير الى مكونات القضايا "كحدود".[3] فمفهوم الحد هو واحد من التصورات المركزية في فلسفته. بالنسبة الى هذه المتافيزيقا كل شيئ يكون مكون لقضية يجب إن يكون موجودا"[4]. من هاذين المبدئين يتبعه مباشرة أن كل شيئ هو حد و أن كل حد هو موضوع موضوعي ومستقل عنا، و من ثم" الحد" هو كما يقول راسل " و كل ما يمكن إن يكون موضوعا للفكر او ما يمكن إن يرد في قضية صادقة او كاذبة او يمكن إن يعد واحدا، سأسمّيه "حدّا" فهذه إذن هي الكلمة الأوسع في المفردات الفلسفية".[5] يستخدم مفهوم الحد كمصطلح أساسي وشامل يعبر ببساطة عن المفهوم العام للموضوع.

تجمع الحدود عند راسل لتشكل القضية. ولكن القضية ليست مجرد تجميع لعناصر مختلفة هي نوع من الوحدة المركبة مشكلة من مكوناتها المختلفة. كيف يجب أن تفهم هذه الوحدة ؟ في الفترة الاولى لفلسفة ما بعد المثالية لراسل، وحدة القضية فسرت ببعض خصائص مكوناتها. فيجب في كل قضية أن تحتوي على حد يربط مكونات القضية مع بعضها البعض. يؤدي هذا الى وضع تمييز بين الحدود على أساس الطرق الممكنة لظهورها

[1] B. Russell, *Principle of Mathermathics*, (Cambridge University Press 1903. 2nd ed. London George Allen & Unwin, 1937), p Pxviii.
[2] *Ibid.* p. 55.
[3] Russell, *Principles of Mathemathics*, p. 43.
[4] "Meinong's Theory of Complexes and Assumptions", Mind 13 (1904), p. 453.
[5] « the widest word in the philosophical vocabulary », *Principles,* p. 43.

في القضايا. يميز راسل بين الطريقتين التي يمكن للحدود أن تظهر فيها في القضايا. في القضية "بروتوس قتل سيزار" يظهر الفردان بروتوس وسيزار كموضوعات منطقية وعلاقة القتل تظهر بشكل محمولي كغراء يربط مكونات القضية مع بعضها البعض. والشيئ نفسه في القضية "سقراط فان" أي يظهر الفرد سقراط كموضوع منطقي للقضية و خاصية الفناء تظهر كمحمول .

يقر راسل بأن بعض الحدود-مثل: بروتوس-قيصر- سيزار - سقراط- يمكن أن تظهر بطريقة غير محمولية (أو حملية) في قضايا، كموضوعات منطقية، مثل هذه الحدود هي ما يدعوها" الأشياء" .[1] أما حدي القتل والفناء فهي محمولات في القضية التي ظهرت فيها و التي يدعوها راسل ب" التصورات"حيث يصرّح : " يمكن التمييز فيما يتعلّق بالحدود بين نوعين سأسميها أشياء وتصورات حسب الترتيب. والأولى هي الحدود التي تدل عليها أسماء الأعلام، و الأخرى هي ما تدل عليها جميع الألفاظ الأخرى".[2] في أي قضية يوحّد التصوّر المحمولي مكوّنات تلك القضية في المجموع :" في كل الوحدات حدّ واحد على الأقلّ يكوّن إمّا محمولا محموليا predecated predecate أو علاقة علائقية relating relation .[3]

يرى راسل أيضا أن أيّ حد يمكن أن يكون عنصرا محموليا للقضية ويمكن أن يكون أيضا حدّا إسميا. ليس تمييز راسل بين الأشياء و التصورات تمييزا بين ما يظهر فقط كموضوع وما يظهر فقط كمحمول. كل شيئ قادر في الميتافيزيقا أن يكون موضوعا منطقيا في القضية[4]. يقر راسل بأن كل محاولة لرفض هذه "الميتافيزيقا تدحض نفسها بنفسها منطقيا ، لأن الحد "أ" يظهر كموضوع منطقي في القضية (الخاطئة) المعبر عنها ب" أ" يظهر كموضوع منطقي في لا قضية". وبهذا فإن راسل يأخذ ما رفضه بإعتباره " تناقضا لغويا" أي أن تصور الحصان برأس إنسان ليس تصورا.[5] يقرّ راسل بأن الحدّ نفسه الذي يظهر كموضوع منطقي("الفناء") في القضية المعبر عنها ب" الفناء تصوّر" يظهر كمحمول في القضية " سقراط فان".[6] يتضمّن الحدّ كمقولة أنطولوجية، كلّ شيئ، وهو وجود نوع

[1] Russell, *Principles of Mathemathics*, p 44-45.
[2] *Ibid*., p. 44.
[3] *Ibid*., p. 442.
[4] *Ibid*., p. 44-48.
[5] *Ibid*., p. 507-10.
[6] *Ibid*., p. 45-46,48.

واحد من المتغيّرات في المنطق وهو غير محدد. لأنّ كل حدّ هو واحد. فالألفاظ؛ رجل، لحظة، عدد، فصل، علاقة، الغول، أو أي شيء آخر يمكن ذكره هي بكل تأكيد حدود؛ و إنكار أن شيئا ما هو حدّ يجب أن يكون باطلا دائما.

تمتد المتغيرات غير المحددة وغير المحصورة بالنسبة الى راسل الى كلّ الكينونات- موائد، أعداد، نقاط المكان، قضايا، فئات، دوال القضايا..الخ. [1] وتحتوي القضايا العامة، كما يفترض راسل دائما ،على متغيرات غير محدودة كمكونات.[2] بمعنى أن المتغيرات هي نفسها كينونات غير لغوية. يحدد راسل المتغير غير المحدد بالتصور الإشاري Denoting concept أي حد، يقول :"أي حد هو تصور يشير الى المتغير- غير المحدد-الصحيح".[3]

ولكن عندما تدخل التصورات الدالة في تفسير الموضوع يصبح الموضوع ذي مغزى، و تظهر علاقة داخل التصور الدّال، أو تنشأ علاقة داخل التصورين الدّالين. ولا توجد طرق مختلفة للدلالة، إنما توجد فقط أنواع مختلفة من التصورات الدالة، وما يوازيها من الأنواع المختلفة من الأشياء المدلول عليها. ويكون الشيئ المدلول عليه الموضوع. العلاقة بين الحدين في القضية الذرية لها خاصيتان تسيران من حد الى آخر، وهذا الذي يمكن تسميته بجهة العلاقة Sense ،و يميز راسل الحد الذي تتجه منه العلاقة عن الحد الذي تتجه نحوه العلاقة.[4]

بالنسبة اليه كل حد هو موضوع لقضية و كل الحدود لها نفس الوضعية الانطلوجية بالمعنى الذي يجعل الحد موضوعا لقضية يعوض بأي حد آخر موجود في القضية." إنه خاصية لحدود القضايا، حيث أي حد منها يمكن أن يعوض بأي كينونة أخرى بدون أن نتوقف عن امتلاكنا للقضية".[5] وإذا كان أي شيئ حدا في القضية "سقراط فان"، فإنّ سقراط هو حدّ أي كينونة، وأي حدّ يمكن أن يعوض سقراط لينتج قضية جديدة، بالتالي تصور الحد واحد من التصورات الأساسية لنظرية راسل في القضايا، أُستخدمت

---

[1] *Ibid*., p. 5-8.
[2] *Ibid*., P. 5-8.
[3] *Ibid*., p. 91.
[4] راسل مبادئ الرياضيات، ص 80 .
[5] « It is characteristic of the terms of a proposition that any one of them may be replaced by any other entity without our ceasing to have a proposition » ibid, p185.

كمعارضة للرأي الذي يرى أن الكينونات تنقسم الى أنماط، مثل أن نتحصل على قضية بتعويض كينونة في قضية بكينونة أخرى من النمط نفسه. وتظهر عملية إستبدال الحدود أنّ الحد الواحد لا يرمز إلا لشيئ واحد فقط، و الشيئ هنا لا يعني بالضرورة موضوعا معينا أو محددا بشكل من الأشكال، وهذا التمثيل مطابق لعملية التفسير التي تكون الترجمة نموذجا لها.[1] يستعمل راسل هذه الصورنة لبناء نظرية صورية في الموضوعات تعبر عن الأساس الميتنافيزيقي لذريته المنطقية.

رفض راسل وجود أي تمييزات نهائية بين الكائنات المختلفة التي تكون العالم، وهو بالتالي تعبير مباشر للميتافيزيقا المؤسسة على الموضوع، فالحد لا يمكن أن يكون كينونة فالكينونة موجودة أما الحد فهو متغير. فشل راسل في تبني نمط التمييزات بطريقة كاملة، فمبدأ أن الكينونات هي موضوعات منطقية معا، ومبدأ كل الموضوعات المنطقية هي تعويضات داخلية (Intersubstituble) في القضايا تنتج في نظره نقائض الفئات للمحمولات. المحمول هنا ليس كينونة لغوية ولكن حد من قضية لأن المحمول "فان" يقول راسل هو موضوع منطقي، ولأن الموضوعات المنطقية معوضة داخليا يمكننا أن نعوض هذا المحمول"فان" لسقراط في القضية سقراط فان. وهكذا نتحصل على قضية ينسب فيها المحمول لنفسه، هذه القضية خاطئة: المحمول فان ليس محمولا على نفسه، لأننا إذا أمكننا أن نقول هذا يجب أن يكون مثل هذا المحمول غير محمول على نفسه، لكن مثل ما أشار راسل إفتراض أن هذا المحمول،إما أن يحمل على نفسه أو لا يحمل هو تناقض ذاتي[2]، و بالتالي فهو مرفوض.

إنتهى راسل الى تقرير إستحالة إستبدال الحدود في القضايا، إلاّ بإفراغها من مضمونها و هوالسبيل الأيسر لتجنب مشكلة التداخل بين الحدود أو الموضوعات لأنه يتعلق بمفهوم الهويّة.

إفتراض راسل أن التمييز بين مختلف أنواع الكينونات ليس أساسيا وهو يظهر أيضا في اتجاهه نحو التمييز السطحي (المصطنع) بين الموضوعات المجردة والموضوعات غير

[1] Bertrand Russell, *Introduction à la philosophie mathématique*, p. 239.

[2] « to suppose either that this predicate is, or that it is not, predicable of itself, is self – contradictory », ibid, p.102.

المجردة. فالأساس النظري المفرغ من معناه التجريبي كان مهمّا بالنسبة الى راسل. هذا التمييز غير مهم نسبيا بالنسبة إلى مشكلة الموضوع المعرفي في الفترة الأولى، ففي السنوات الأولى لتلك الفترة أقر بأن كل الكينونات تستمر أو لها وجود أو لها خاصية إضافية الوجود في أن تكون في زمان ومكان محدد. وبالتالي يمنح راسل المكانة الأنطولوجية الأساسية للكينونة being وليس للوجود existence :" رغم أن الحد يمكن أن يتوقف عن الوجود، لا يمكنه أن يتوقف عن أن يكون to be ، فهو لا يزال كيانا entity يعد كواحد ويهتمّ بأي القضايا صادقة وأيّها كاذبة".[1] يشير مفهوم الحد أو الموضوع إلى أن انطلوجية راسل مجردة: موضوعاتها الأساسية ليست أساسا زمكانية. فإذا أردنا أن نفهم التمييز بين المجرّد والمحسوس بالتمييز بين البقاء Subsistence والوجود، فإن الموضوعات المحسوسة بالنسبة إلى راسل ليست إلا حالات خاصة للموضوعات المجردة أي تقريبا تلك التي تكون في علاقة معينة بمفهوم الوجود. تشمل الموضوعات المجرّدة بالمقابل كل الموضوعات: إنّها مجرّد موضوعات عامة. التمييز بين الموضوعات المجردة والموضوعات المحسوسة قد تظهر انها ليست أساسية بالنسبة الى راسل في وصفه الموجودات الإنسانية، القضايا،الأعداد والجبال كلها موجودة، أو لها كينونة being بالمعنى نفسه. كل الكينونات واقعية بالمعنى نفسه، وهي كلّها الكينونات على نفس المستوى بحيث أن كل الكينونات هي موضوعات (أو حدود) في إطار المكانة الأنطلوجية نفسها، فمشكلة الكينونة والوجود مقولتان انطلوجيتان تأسست عليها فلسفة المعرفة الراسلية بأكملها.

مكّن إدراك راسل لدلالة الحد و القضية و الروابط من نقل هذه المفاهيم الى الفلسفة، إذ أنّه قد وجد أن هناك فرقا شاسعا بين الرياضيات و الفلسفة على المستوى التجريدي، و ينعكس هذا على الموضوع كأحد المفاهيم الأساسية لنظرية المعرفة.

يمكننا تصوّر الموضوع في *مشكلة المعرفة* في الفترة الأولى لفلسفته كنتيجة غير مباشرة لواقعيته المتطرفة. ويقول في *مبادئ الرياضيات*: "مضلل من إهمال الكينونة being تفترض الناس أن ما لا يوجد هو لاشيئ. رؤية هذه الأعداد، العلاقات، والموضوعات العديدة

[1] « Though a term may cease to exist, it cannot seace to be ;it is still an entity, which can be counted as one, and concerning which some propositions are true and others are false". *Ibid*, p. 471.

الأخرى الفكرية أنها لا توجد خارج العقل، ولقد افترضوا أن الأفكار،التي نفكر بها حول هذه الكينونات هي حاليا تخلق موضوعاتها. كل واحد، ماعدا الفيلسوف يمكن أن يرى الفرق بين الموقع وفكرتي عن الموقع Post ،ولكن القليل من يرى الفرق بين العدد اثنين وفكرتي عن العدد إثنين . على الرغم من ذلك، فإن التمييز أساسي في كلتا الحالتين، بإختصار كل المعرفة يجب أن تكون إدراكا أو تمييزا Recognition حتى لا تكون مجرد وهم. الرياضيات يجب أن تكتشف بالطريقة نفسها التي اكتشف بها كريستوف كلومبوس أمريكا، ولم نعد نضع الأعداد أكثر مما وضع الهنود. العدد 2 ليس عقليا بحتا لكن هو كينونة يفكر فيها، مهما يكن التفكير حول شيئ له كينونة being، فإن له كينونة، وكينونته شرط مسبق وليس نتيجة للتفكير فيها.[1]

يعارض راسل بشدة النزعة النفسية psychologism ، ويؤمن بالواقعية المحايدة ،التي لا هي فيزيائية، ولا هي عقلية والتي توفّر مادة البحث للأحكام الموضوعية حول المسائل المجرّدة. بالنسبة إلى راسل: الموضوعات نفسها أخذت على أنها أساسية ككينونات، ومستقلة، وموضوعية، فموقف راسل يجعل الموضوعية في الموضوعات المتميزة والمستقلة عنا. إنه يرى أن كل شيئ هو موضوع، ومختلف الكينونات التي تكون العالم والموجودة في المعرفة يصفها بأنها واقعية وموضوعية.

تبنّى راسل في تحوّله عن المثالية ضربا متطرّفا من الذرية المنطقية حول كل شيئ يوجد، و يفهم في معزل عن كل الأشياء الأخرى. مفهوم الموضوع يلعب دورا حاسما في التصور الذرّي لراسل عن العالم، إذ يراه مكونا من موضوعات موضوعية غير متناهية ومنفصلة ومتميزة. وتكون طبيعة أي موضوع من هذه الموضوعات مستقلّة عن أي شيئ آخر، و توجد

[1] « Misled by neglect of being, people have supposed that what does not exist is nothing. Seeing that numbers, relations, and many other objects of thought, do not exist outside the mind, they have supposed that the thoughts in which we think of these entities actually create their own objects. Every one except a philosopher can see the difference between a post and my idea of a post, but few see the difference between the number 2 and my idea of the number 2. Yet the distinction is as necessary in one case as in the other…In short, all knowledge must be recognition, on pain of being mere delusion; Arithmethic must be descoverd in just the same sense in which colombus discovered the west indies, and we no more create numbers than he created the Indians. The number 2 is not purely mental, but is an entity which may be thougt of. Whateever can be thought of has being, and its being is a precondition, not a result, of its being thought of." Ibid, p. 450-1.

علاقات بين هذه الموضوعات، لكن هذه العلاقات خارجية لا تؤثر في الموضوعات. الموضوع المرتبط بموضوع آخر يكون نفسه في حالة عدم ارتباط هذا الموضوع بذلك الموضوع الآخر.

بالإضافة الى ذلك هذه العلاقات نفسها تتصوّر على أنها مثل الموضوع كينونات متميزة يمكن أن تعرف مرة أخرى في معزل عن أي شيئ آخر. وبالتالي تحليل المعرفة العلمية المؤسسة على الموضوع لراسل تؤيد تصوره الذري للعالم. المبدأ الذي يرى أن أي موضوع يوجد بأكمله لوحده ومستمر بذاته يتطلب كشرط مسبق لإمكانه وتناسقه. وجود الموضوع كعنصر واقعي بدون افتراض، أي أن تصور وجود الموضوع أو عدم وجوده مرتبط بالتصور نفسه، المستقل عن التصورات الاخرى.

مثلما تتلاحم انطلوجيا راسل مع تجريبيته وواقعيته، تتلاحم أيضا مع ابستمولوجيته الذرية، إذ يرتبط مفهوم المعرفة المباشرة بفكرة الوجود المستقل للموضوع، فالموضوع له وجود مستقل عن أي موضوع آخر، فهو يستنتج من افتراض قدرة المعرفة المباشرة و قدرتنا على الوقوف في علاقة معرفية مباشرة معه. في خصائص المعرفة الأساسية تكون المعرفة المباشرة ذات شكل ذري بحت. توفر المعرفة المباشرة بموضوع للعقل معرفة عن هذا الموضوع في شكل وحدة مستقلة و خفية تكون مفهومة كلية بنفسها في معزل عن كل العناصر الاخرى، بمعنى المعرفة المباشرة تعطينا معرفة كاملة عن موضوعاتها. المعرفة المباشرة نفسها هي علاقة خارجة عن الذات و خارجة عن الموضوع ، أي أنها ليست علاقة داخلية و لا تؤثر في العلاقات و المكونات الداخلية للموضوع . لا يؤثّر العقل الذي له اتّصال معرفيّ مباشر مع الموضوع ولا يشوّه بأيّ طريقة من الطرق الموضوع نفسه. عندما نتعرّف مباشرة على موضوع ما ذلك الموضوع يعرف لدينا فقط كما هو بدون استلزام شيئ آخر. معرفة الموضوع بشكل كامل و مطلق لكوننا نتعارف معه، يجعل ذلك الجزء من المعرفة مستقلا عن كل المعارف الاخرى.

وبالتالي فبالنسبة إلى راسل المعرفة لا تأتي مجزّئة إما أن يكون من الإمكان معرفة حقيقة واحدة أو معرفة الطبيعة الأساسية لموضوع مفرد و إما أن يكون كليّا مجهولا وجهلنا بالشيئ يفنّد المعرفة، وبهذا لا يمكن أن تكون لدينا معرفة كاملة عن أي شيئ في هذا العالم ككل. يعارض مباشرة رأي راسل عن المعرفة على العموم وتركيزه على مفهوم المعرفة

المباشرة كمعرفة كلية ومتميزة للموضوع على الخصوص تصوره عن المعرفة العلمية باعتبارها معارف جزئية لموضوعات مستقلّة. أفعال المعرفة المباشرة هي بالنسبة إليه الأفعال المنفصلة والمتميزة التي نعرف عن طريقها العالم. يمكن أن يعرف العالم بهذه الأفعال المنفصلة والمتميزة بشكل دقيق، لأنّ هذا العالم مكوّن من موضوعات مميّزة ومنفصلة.

مراجع :

برتراند راسل، مبادئ الرياضيات، ترجمة احمد مرسي و احمد فؤاد الاهواني (ط1 ؛ مصر دار المعارف، 1965)

B. Russell, *Principles of Mathermathics*, (Cambridge University Press 1903. 2nd ed. London George Allen & Unwin, 1937).

____ "Meinong's Theory of Complexes and Assumptions", Mind 13 (1904).

____ *Introduction to mathematical Philosophy*, Originally published by George Allen & Unwin, Ltd., London. May 1919.

ON CONCRETE UNIVERSALS: A MODERN TREATMENT USING CATEGORY THEORY

David **ELLERMAN**
(University of California/Riverside)

Résumé. Il serait considéré aujourd'hui comme une "mauvaise Métaphysique platonicienne" de penser que parmi toutes les instances concrètes d'une propriété il y aurait une instance universelle en sorte que toutes les instances auraient cette propriété en vertu de leur participation à cet universel concret. Il y a déjà une théorie mathématique, à savoir la théorie des catégories, qui datant de la moitié du 20e Siècle, montre justement comment modéliser les universaux concrets dans le « Paradis de Platon » des mathématiques. Ce papier, écrit pour le logicien philosophe, développe ce traitement catégorie-théorique des universaux concrets accompagné d'une conception selon laquelle nous pourrions modéliser de manière abstraite les fonctions du cerveau.

Mots-clès : théorie des catégories, propriété, universaux concrets.

ملخّص. سيعتبر اليوم ضربا من الميتافيزيقا الأفلاطونية السيّئة أن تفكّر أنّه من بين جميع الحالات الواقعية للخصوصية، ثمّة حالة كليّة، بمعنى أنّ كلّ الحالات موسومة بالخصوصية عن طريق اشتراكها المفترض في هذه الحالة الكليّة، بيد أنّه ثمّة نظرية رياضية ونقصد نظرية المقولات و الّتي تعود إلى أواسط القرن العشرين، تظهر كيف أنّ نموذجا مخصوصا يقوم بجعل الكليّات واقعية وذلك في إطار "الجنّة الأفلاطونية" للرياضيات، وتسعى هذه الورقة الموجّهة إلى علماء المنطق الفلسفي لتطوير هذه المعالجة للكليّات الواقعية القائمة على نظرية المقولات ومن حيث لا تنفصل عن تصوّر جديد حول نموذج مجرّد لوظائف الدماغ.

كلمات مفتاحية : نظرية المقولات ، الخصوصية، الكليّات الواقعية .

Abstract. Today it would be considered "bad Platonic metaphysics" to think that among all the concrete instances of a property there could be a universal instance so that all instances had the property by virtue of participating in that concrete universal. Yet there is a mathematical theory, category theory, dating from the mid-20th century that shows how to precisely model concrete universals within the "Platonic Heaven" of mathematics. This paper, written for the philosophical logician,

develops this category-theoretic treatment of concrete universals along with a new concept to abstractly model the functions of a brain.

Keywords: Category theory, property, concrete universals.

Introduction: "Bad Platonic Metaphysics"

Consider the following example of "bad metaphysics."

Given all the entities that have a certain property, there is one entity among them that exemplifies the property in an absolutely perfect and universal way. It is called the "concrete universal." There is a relationship of "participation" or "resemblance" so that all the other entities that have the property "participate in" or "resemble" that perfect example, the concrete universal. And conversely, every entity that participates in or resembles the universal also has the property. The concrete universal represents the "essence" of the property. All the other instances of the property have "imperfewctions." There is a process of removing imperfections so that by removing all the imperfections, one arrives at the essence of the property, the concrete universal.

To the modern ear, all this sounds like the worst sort of "bad Platonic metaphysics." Yet there is a mathematical theory developed within the last seventy years, category theory [MacLane 1971], that provides precisely that treatment of concrete universals within mathematics.

A simple example using sets will illustrate the points. Given two sets A and B, consider the property of sets: $F(X) \equiv$ "X is contained in A and is contained in B." In other words, the property is the property of being both a subset of A and a subset of B. In this example, the *participation* relation is the subset inclusion relation. There is a set, namely the intersection or meet of A and B, denoted $A \cap B$, that has the property (so it is a "concrete" instance of the property), and it is universal in the sense that any other set has the property if and only if it participates in (i.e., is included in) the universal example:

concreteness: $F(A \cap B)$, i.e., $A \cap B \subseteq A$ and $A \cap B \subseteq B$, and
universality: X participates in A□ B if and only if F(X), i.e., $X \subseteq A \cap B$ if and only if $X \subseteq A$ and $X \subseteq B$.

This example of a concrete universal is quite simple, but all this "bad metaphysical talk" has highly developed and precise models in category theory.

This interpretation of the universals of category theory as concrete universals is the main point of this paper. We will briefly mention two other controversies in philosophy related to concrete universals: the Third Man Argument and the set theoretical paradoxes. Also we will consider one of the most important uses of concrete universals in pure mathematics, namely adjoint functors or adjunctions, and we show how the building blocks of adjunctions can be recombined in a new way to define the notion of a brain functor that abstractly models a brain.

Theories of Universals

In Plato's Theory of Ideas or Forms (ειδη), a property F has an entity associated with it, the *universal* u_F, which uniquely represents the property. An object x has the property F, i.e., F(x), if and only if (iff) the object x *participates* in the universal u_F. Let μ (from μεθεξιζ or methexis) represent the participation relation so

"$x \mu u_F$" reads as "x participates in u_F".

Given a relation μ, an entity u_F is said to be *a universal for the property F* (with respect to μ) if it satisfies the following *universality condition*:

for any x, $x \mu u_F$ if and only if F(x).

A universal representing a property should be in some sense unique. Hence there should be an equivalence relation (≈) so that universals satisfy a *uniqueness condition:*

if u_F and u_F' are universals for the same F, then $u_F \approx u_F'$.

A mathematical theory is said to be a *theory of universals* if it contains a binary relation μ and an equivalence relation ≈ so that with certain properties F there are associated entities u_F satisfying the following conditions:

(I) *Universality*: for any x, $x \mu u_F$ iff F(x), and

(II) *Uniqueness*: if u_F and u_F' are universals for the same F [i.e., satisfy (I) above], then $u_F \approx u_F'$.

A universal u_F is said to be *abstract* if it does not participate in itself, i.e., $\neg(u_F \mu u_F)$. Alternatively, a universal u_F is *concrete* if it is self-participating, i.e., $u_F \mu u_F$.

Set Theory as The Theory of Abstract Universals

There is a modern mathematical theory that readily qualifies as a theory of universals, namely set theory. The universal representing a property F is the set of all elements with the property:

$$u_F = \{ x \mid F(x) \}.$$

The participation relation is the set membership relation usually represented by ϵ. The universality condition in set theory is the equivalence called a (naive) *comprehension axiom*: there is a set y such that for any x, x ϵ y iff F(x). Set theory also has an *extensionality axiom*, which states that two sets with the same members are identical:

$$\text{for all x, } (x \in y \text{ iff } x \in y') \text{ implies } y = y'.$$

Thus if y and y' both satisfy the comprehension axiom scheme for the same F then y and y' have the same members so y = y'. Hence in set theory the uniqueness condition on universals is satisfied with the equivalence relation (≈) as equality (=) between sets. Thus naive set theory qualifies as a theory of universals.

The hope that naive set theory would provide a *general* theory of universals proved to be unfounded. The naive comprehension axiom lead to inconsistency for such properties as

$$F(x) \equiv \text{"x is not a member of x"} \equiv x \notin x$$

If R is the universal for that property, i.e., R is the set of all sets which are not members of themselves, the naive comprehension axiom yields a contradiction.

$$R \in R \text{ iff } R \notin R.$$

Russell's Paradox

The characteristic feature of Russell's Paradox and the other set theoretical paradoxes is the self-reference wherein the universal is allowed to qualify for the property represented by the universal, e.g., the Russell set R is allowed to be one of the x's in the universality relation: $x \in R$ iff $x \notin x$.

There are several ways to restrict the naive comprehension axiom to defeat the set theoretical paradoxes, e.g., as in Russell's type theory, Zermelo-Fraenkel set theory, or von Neumann-Bernays set theory. The various restrictions are based on an iterative concept of set [Boolos 1971] which forces

a set y to be more "abstract", e.g., of higher type or rank, than the elements $x \in y$. Thus the universals provided by the various set theories are "abstract" universals in the intuitive sense that they are more abstract than the objects having the property represented by the universal. Sets may not be members of themselves.[1]

With the modifications to avoid the paradoxes, a set theory still qualifies as a theory of universals. The membership relation is the participation relation so that for suitably restricted predicates, there exists a set satisfying the universality condition. Set equality serves as the equivalence relation in the uniqueness conditions. But set theory cannot qualify as a *general* theory of universals. The paradox-induced modifications turn the various set theories into theories of *abstract* (i.e., non-self-participating) universals since they prohibit the self-membership of sets.

Concrete Universals

Philosophy contemplates another type of universal, a *concrete universal*. The intuitive idea of a concrete universal for a property is that it is an object that has the property and has it in such a universal sense that all other objects with the property resemble or participate in that paradigmatic or archetypal instance. The concrete universal u_F for a property F is *concrete* in the sense that it has the property itself, i.e., $F(u_F)$. It is *universal* in the intuitive sense that it represents F-ness is such a perfect and exemplary manner that any object resembles or participates in the universal u_F if and only if it has the property F.

The intuitive notion of a concrete universal occurs in ordinary language (the "all-American boy"), in Greek-inspired Christian theology (the Word made flesh together with *imitatio Christi* as the participation or resemblence relation to the concrete universal), in the arts and literature (the old idea that great art uses a concrete instance to universally exemplify certain human conditions), and in philosophy (the perfect example of F-ness with no imperfections, only those attributes necessary for F-ness).

[1] Quine's system ML [1955b] allows "$V \in V$" for the universal class V, but no standard model of ML has ever been found where "$\in$" is interpreted as set membership [viz. Hatcher 1982, Chapter 7]. We are concerned with theories that are "set theories" in the sense that "$\in$" can be interpreted as set membership.ι

The notion of a concrete universal occurred in Plato's Theory of Forms [Malcolm 1991]. Plato's forms are often considered to be abstract or non-self-participating universals quite distinct and "above" the concrete instances.
In the words of one Plato scholar, "not even God can scratch Doghood behind the Ears" [Allen 1960]. But Plato did give examples of self-participation or self-predication, e.g., that Justice is just [Protagoras 330]. Moreover, Plato often used expressions that indicated self-predication of universals.

> But Plato also used language which suggests not only that the Forms exist separately (χωριστα) from all the particulars, but also that each Form is a peculiarly accurate or good particular of its own kind, i.e., the standard particular of the kind in question or the model (ταραδειγμα) to which other particulars approximate. [Kneale and Kneale 1962, 19]

But many scholars regard the notion of a Form as *paradeigma* or concrete universal as an error.

> For general characters are not characterized by themselves: humanity is not human. The mistake is encouraged by the fact that in Greek the same phrase may signify both the concrete and the abstract, e.g. το λευον (literally "the white") both "the white thing" and "whiteness", so that it is doubtful whether αυτο το λευκου (literally "the white itself") means "the superlatively white thing" or "whiteness in abstraction". [Kneale and Kneale 1962, 19-20]

Thus some Platonic language is ambivalent between interpreting a form as a concrete universal ("the superlatively white thing") and an abstract universal ("whiteness in abstraction").

The literature on Plato has reached no resolution on the question of self-predication. Scholarship has left Plato on both sides of the fence; many universals are not self-participating but some are. It is fitting that Plato should exhibit this ambivalence since the self-predication issue has only come to a head in the 20th century with the set theoretical antinomies. Set theory had to be reconstructed as a theory of universals that were rigidly non-self-participating.
The reconstruction of set theory as the theory of abstract universals cleared the ground for a separate theory of universals that are always self-participating. Such a theory of concrete universals would realize the self-predicative strand of Plato's Theory of Forms.

A theory of concrete universals would have an appropriate participation relation μ so that for certain properties F, there are entities u_F satisfying the *universality condition*:

for any x, x μ u_F if and only if F(x).

The universality condition and F(u_F) imply that u_F is a *concrete* universal in the previously defined sense of being self-participating, u_F μ u_F. A theory of concrete universals would also have to have an equivalence relation so the concrete universals for the same property would be *the* universal up to that equivalence relation.

Is there a precise mathematical theory of concrete universals? Our claim is that category theory is precisely that theory.
To keep matters simple and intuitive, all our examples will use one of the simplest examples of categories, namely partially ordered sets.[1] Consider the universe of subsets or power set P(U) of a set U with the inclusion relation $\subseteq$ as the partial ordering relation. Given sets a and b, consider the property

$$F(x) \equiv x \subseteq a \ \& \ x \subseteq b.$$

The participation relation is set inclusion $\subseteq$ and the intersection $a \cap b$ is the universal u_F for this property F(x). The universality relation states that the intersection is the greatest lower bound of a and b in the inclusion ordering:

$$\text{for any } x,\ x \subseteq a \cap b \text{ iff } x \subseteq a \ \& \ x \subseteq b.$$

The universal has the property it represents, i.e., $a \cap b \subseteq a \ \& \ a \cap b \subseteq b$, so it is a self-participating or concrete universal. Two concrete universals for the same property must participate in each other. In partially ordered sets, the antisymmetry condition, $y \subseteq y' \ \& \ y' \subseteq y$ implies $y = y'$, means that equality can serve as the equivalence relation in the uniqueness condition for universals in a partial order.

[1] A binary relation $\leq$ on U is a *partial order* if for all $u,u',u'' \in U$, it is reflexive ($u \leq u$), transitive ($u \leq u'$ and $u' \leq u''$ imply $u \leq u''$), and anti-symmetric ($u \leq u'$ and $u' \leq u$ imply $u = u'$). For less trivial examples with more of a category-theoretic flavor, see Ellerman 1988.

Concrete Universals in more general categories

For the concrete universals of category theory,[1] the *participation relation* is the *uniquely-factors-through* relation. It can always be formulated in a suitable category as:

"x μ u" means "there exists a unique arrow x→u".

Then x is said to *uniquely factor through* u, and the arrow x→u is the unique factor or participation morphism. In the universality condition,

for any x, x μ u if and only if F(x),

the existence of the identity arrow 1_u:u→u is the self-participation of the concrete universal that corresponds with F(u), the application of the property to u. In category theory, the equivalence relation used in the uniqueness condition is the isomorphism (≡).[2]

It is sometimes convenient to "turn the arrows around" and use the dual definition where "x μ u" means "there exists a unique arrow u x" that can also be viewed as the original definition stated in the dual or opposite category. Category theory qualifies as a theory of universals with participation defined as "uniquely factors through" and the equivalence relation taken as isomorphism.

---

[1] In the general case, a category may be defined as follows [e.g., MacLane and Birkhoff 1967 or MacLane 1971]:

A *category* C consists of

(a) a set of *objects* a, b, c, ...,

(b) for each pair of objects a,b, a set $\hom_C(a,b) = C(a,b)$ whose elements are represented as *arrows* or *morphsims* f: a → b,

(c) for any f ∈ $\hom_C(a,b)$ and g ∈ $\hom_C(b,c)$, there is the *composition* gf: a→b→c in $\hom_C(a,c)$,

(d) composition of arrows is an associative operation, and

(e) for each object a, there is an arrow $1_a \in \hom_C(a,a)$, called the *identity* of a, such that for any f: a→b and g:c→a, $f1_a = f$ and $1_a g = g$.

An arrow f:a→b is an *isomorphism*, a ≡ b, if there is an arrow g:b→a such that $fg = 1_b$ and $gf = 1_a$.

A *functor* is a map from one category to another that preserves composition and identities.

[2] Thus it must be verified that two concrete universals for the same property are isomorphic. By the universality condition, two concrete universals u and u' for the same property must participate in each other. Let f: u'→u and g:u→u' be the unique arrows given by the mutual participation. Then by composition gf:u'→u' is the unique arrow u'→u' but $1_{u'}$ is another such arrow so by uniqueness, $gf = 1_{u'}$. Similarly, fg:u→u is the unique self-participation arrow for u so $fg = 1_u$. Thus mutual participation of u and u' implies u ≡ u'.

The universals of category theory are self-participating or concrete; a universal u uniquely factors through itself by the identity morphism.

Category theory as the theory of concrete universals has quite a different flavor from set theory, the theory of abstract universals. Given the collection of all the elements with a property, set theory can postulate a more abstract entity, the set of those elements, to be the universal. But category theory cannot postulate its universals because those universals are concrete. Category theory must find its universals, if at all, among the entities with the propert

Universals as Essences

The concrete universal for a property represents the essential characteristics of the property without any imperfections (to use some language of an Aristotelian stamp). All the objects in category theory with universal mapping properties such as limits and colimits [viz. Schubert 1972, Chaps. 7-8] are concrete universals for universal properties. Thus the universals of category theory can typically be presented as the limit (or colimit) of a process of filtering out or eliminating imperfections to arrive at the pure essence of the property.

Consider the previous example of the intersection a ∩b of sets a and b as the concrete universal for the property F of being contained in a and in b. Given a set x with the property of "being a subset of both a and b," an *imperfection* of x is another set x' with the property but which is not contained in x.

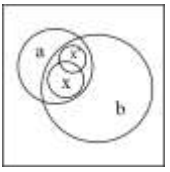


Fig. 1: *The set x' is an imperfection of the set x*

relative to the property of being a subset of both a and b.
If sets x and y both have the property, and x is contained in y then y is said to be *more essential* (in the sense of being "equally or more of the essence") than x.

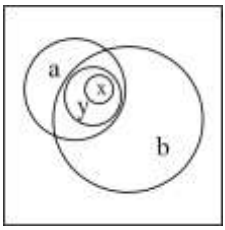


Fig. 2: The set y is more essential than x.

relative to the property of being a subset of both a and b.

If y is more essential than x then any imperfection of y is an imperfection of x, and x may have a few other imperfections of its own. In this case, the process of eliminating or filtering out imperfections and becoming "more essential" is the process of taking the union of sets. If we remove all the imperfections, i.e., add to x all the other elements common to a and b, then we arrive at the "essence" of the property, the concrete universal a∩b for the property.

The property $F(x) \equiv x \subseteq a \ \& \ x \subseteq b$ is preserved under arbitrary unions:

$$\text{if } F(x_\beta) \text{ for any } x_\beta \text{ in } \{x_\beta \mid \beta \in B\}, \text{ then } F(\cup_\beta x_\beta).$$

Hence given any collection of instances $\{x_\beta \mid \beta \in B\}$ of the property F, their union is more essentially F than the instances. None of the sets in the collection are imperfections of the union. Thus the limit of this process, the "essence of F-ness," can be obtained as the union of *all* the instances of F:

$$\cup\{x \mid x \subseteq a \ \& \ x \subseteq b\} = a \cap b.$$

The Essence of being a Subset of Set a and a Subset of Set b
Obtained by Filtering Out All Imperfections.

It has *no* imperfections relative to the property F so it is the concrete universal. Moreover, since the universal is concrete, the set a∩b is among the sets x involved in the union and it contains all the other such sets x . Thus the union is "taken on," i.e., is equal to one of the sets in the union.
All the category theory examples can be dualized by "reversing the arrows." Reversing the inclusion relation in the definition of F yields the property:

$$G(x) \equiv a \subseteq x \ \& \ b \subseteq x.$$

The participation relation μ for G is the reverse of inclusion ⊇ and the union of a and b is the concrete universal. The universality condition is:

for all x, $x \supseteq a \cup b$ iff $a \subseteq x$ & $b \subseteq x$.

If x has the property G but is not the universal, then x has certain imperfections. An imperfection of x (relative to the G property) would be given by an another set x' containing both a and b but not containing x. A set of instances of G could be purified of some imperfections by taking the intersection of the set. G-ness is preserved under arbitrary intersections. The intersection of a collection of sets with the property G is (equally or) more essential than the sets in the collection. None of the sets in the collection are imperfections of the intersection. Thus the universal or essence of G-ness can be obtained as the intersection of *all* the sets with the property G:

$$\cap\{x \mid a \subseteq x \ \& \ b \subseteq x\} = a \cup b.$$

The union of a and b has no imperfections relative to the property G.

Entailment as Participation between Concrete Universals

In Plato's Theory of Forms, a logical inference is valid because it follows the necessary connections between universals. Threeness entails oddness because the universal for threeness "brings on" [επιφερει or epipherei, viz. Vlastos 1981, 102; or Sayre 1969, Part IV] or "shares in" the universal for oddness. In amathematical theory of universals, the "entailment" relation between universals is defined as follows: given universals u_F and u_G,

u_F *entails* u_G if for any x, if $x \mu u_F$ then $x \mu u_G$.

In set theory, the participation relation μ is the membership relation ∈ so the entailment relation between sets as abstract universals is the *inclusion* relation. Thus in set theory as the theory of abstract universals, the entailment relation (inclusion) between universals is not the same as the participation relation (membership). The difference between inclusion and membership is illustrated by the copulas in "All roses are beautiful" and "The rose is beautiful."

In category theory, the participation relation μ is the uniquely-factors-through relation and the universals are self-participating. If u_G entails u_F, then $x \mu u_G$ implies $x \mu u_F$. Since $u_G \mu u_G$ (a relationship that does not hold for abstract universals), it follows that $u_G \mu u_F$. In short, for the concrete universals of category theory,

Entailment relation = Participation relation restricted to concrete universals.

To speak in a Platonic philosophical mode for illustrative purposes, let "The Rose" and "The Beautiful" be the concrete universals for the respective properties. In the theory of concrete universals, the general statement "All roses are beautiful" and the singular statement "The Rose is beautiful" are *equivalent*. Both express the proposition that "The Rose participates in The Beautiful," and that proposition is distinct from the statement "The rose is beautiful" (about a rather imperfect flower in one's backyard).

For an example of entailment, let us first consider another universal in the partial order of subsets of some given universe set. Given sets a and b, the *complement of a relative to b* is the concrete universal for the property

$$H(x) \equiv a \cap x \subseteq b.$$

Let the concrete universal be symbolized as $a \supset b$ so by concreteness and universality we have:

$$a \cap (a \supset b) \subseteq b, \text{ and}$$
$$\text{for all } x,\ x \subseteq a \supset b \text{ iff } a \cap x \subseteq b.$$

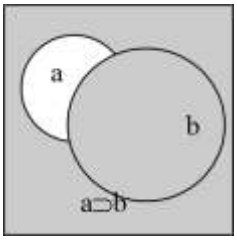


Fig. 3: Relative complement a⊃b is the union of b with the complement of a.

The property $F(x) \equiv x \subseteq a \ \& \ x \subseteq b$ entails the property $H(x) \equiv a \cap x \subseteq b$. The entailment between the properties is realized concretely by the participation relationship between the two concrete universals for the respective properties:

$$a \cap b \subseteq a \supset b.$$

Universal for F Participates in Universal for H

The reasoning is that F(x) implies $x \subseteq a \cap b$, and $a \cap b \subseteq a \supset b$ so $x \subseteq (a \supset b)$ (by transitivity of inclusion) and thus H(x). Thus the entailment, "for all x, F(x) implies H(x)," is realized concretely by the participation of the concrete universal for F(x) in the concrete universal for H(x).

We can now pair together the statements in our intuitive example and the corresponding rigorous statements in the set theoretical example (using the

correlation "The Rose" ↔(a∩b) and "The Beautiful" ↔ a⊃b). The three statements in each column of the table are equivalent.

Intuitive Example	Corresponding Rigorous Statement in Set Example
All roses are beautiful.	For all subsets x, x ⊆ a & x ⊆ b implies a∩x ⊆ b.
The Rose is beautiful.	a ∩ (a∩b) ⊆ b.
The Rose participates in The Beautiful.	a∩b ⊆ a⊃b.

The Third Man Argument in Plato

Much of the modern Platonic literature on self-participation and self-predication [e.g., Malcolm 1991] stems from the work of Vlastos on the Third Man argument [1954, 1981]. The name derives from Aristotle, but the argument occurs in the dialogues.

> But now take largeness itself and the other things which are large. Suppose you look at all these in the same way in your mind's eye, will not yet another unity make its appearance—a largeness by virtue of which they all appear large?
> So it would seem.
> If so, a second form of largeness will present itself, over and above largeness itself and the things that share in it, and again, covering all these, yet another, which will make all of them large. So each of your forms will no longer be one, but an indefinite number. [Parmenides, 132]

If a form is self-predicative, the participation relation can be interpreted as "resemblance". An instance has the property F because it resembles the paradigmatic example of F-ness. But then, the Third Man argument contends, the common property shared by Largeness and other large things gives rise to a "One over the many", a form Largeness* such that Largeness and the large things share the common property by virtue of resembling Largeness*. And the argument repeats itself giving rise to an infinite regress of forms. A key part of the Third Man argument is what Vlastos calls the *Non-Identity thesis*: NI If anything has a given character by participating in a Form, it is not identical with that Form. [Vlastos 1981, 351] It implies that Largeness* is not identical with Largeness.

P. T. Geach [1956] has developed a self-predicative interpretation of Forms as standards or norms, an idea he attributes to Wittgenstein. A stick is a

yard long because it resembles, lengthwise, the standard yard measure. Geach avoids the Third Man regress with the exceptionalist device of holding the Form "separate" from the many so they could not be grouped together to give rise to a new "One over the many". Geach aptly notes the analogy with Frege's ad hoc and unsuccessful attempt to avoid the Russell-type paradoxes by allowing a set of all and only the sets which are not members of themselves—except for that set itself [viz. Quine 1955a, Geach 1980].

Category theory provides a mathematical model for the Third Man argument, and it shows how to avoid the regress. The category-theoretic model shows that the flaw in the Third Man argument lies not in self-predication but in the Non-Identity thesis [viz. Vlastos 1954, 326-329]. "The One" is not necessarily "over the many"; it can be (isomorphic to) one among the many. In mathematical terms, a colimit or limit can "take on" one of the elements in the diagram. In the special case of sets ordered by inclusion, the union or intersection of a collection of sets is not necessarily distinct from the sets in the collection; it could be one among the many.

For example, let $A = \cup\{A_\beta\}$ be the One formed as the union of a collection of many sets $\{A_\beta\}$. Then add A to the collection and form the new One* as

$$A^* = \cup\{A_\beta\} \cup A.$$

This operation leads to no Third Man regress since $A^* = A$.

Whitehead described European philosophy as a series of footnotes to Plato, and the Theory of Forms was central to Plato's thought. We have seen a number of ways in which the interpretation of category theory as the theory of concrete universals provides a rigorous self-predicative mathematical model for Plato's Theory of Forms and for the intuitive notion of a concrete universal elsewhere in philosophy.

Adjoint Functors

One of the most important and beautiful notions in category theory is the notion of a pair of adjoint functors. The developers of category theory, Saunders MacLane and Samuel Eilenberg, famously said that categories were defined in order to define functors, and functors were defined in order to define natural transformations. Their original paper [Eilenberg and MacLane 1945] was entitled not "General Theory of Categories" but *General Theory of Natural Equivalences*. Adjoints were defined more than a decade later by Daniel Kan [1958] but the realization of their foundational importance has steadily

increased over time [Lawvere 1969; Lambek 1981]. Now it would perhaps not be too much of an exaggeration to see categories, functors, and natural transformations as the prelude to defining adjoint functors. The notion of adjoint functors (and the constituent semi-adjunctions defined below) includes all the instances of concrete universal mapping properties discussed above. As Steven Awodey put it in his text:

> The notion of adjoint functor applies everything that we have learned up to now to unify and subsume all the different universal mapping properties that we have encountered, from free groups to limits to exponentials. But more importantly, it also captures an important mathematical phenomenon that is invisible without the lens of category theory. Indeed, I will make the admittedly provocative claim that adjointness is a concept of fundamental logical and mathematical importance that is not captured elsewhere in mathematics. [Awodey 2006, 179]

Other category theorists have given similar testimonials.

> To some, including this writer, adjunction is the most important concept in category theory. [Wood 2004, 6]
> The isolation and explication of the notion of *adjointness* is perhaps the most profound contribution that category theory has made to the history of general mathematical ideas." [Goldblatt 2006, 438]
> Nowadays, every user of category theory agrees that [adjunction] is the concept which justifies the fundamental position of the subject in mathematics. [Taylor 1999, 367]

We will try to illustrate how adjoint functors relate to our theme of concrete universals while staying within the methodological restriction of using examples from partial orders (where adjunctions are called "Galois connections").

We have been working within the inclusion partial order on the set of subsets P(U) of a universe set U. Consider the set of all ordered pairs of subsets <a,b> from the Cartesian product P(U)□ P(U) where the partial order (using the same symbol □) is defined by pairwise inclusion. That is, given the two ordered pairs <a', b'> and <a,b>, we define

$$\langle a',b'\rangle \subseteq \langle a,b\rangle \text{ if } a' \subseteq a \text{ and } b' \subseteq b.$$

Order-preserving maps can be defined each way between these two partial orders. From P(U) to P(U)xP(U), there is the diagonal map $\Delta(x) = \langle x,x\rangle$, and from P(U)xP(U) to P(U), there is the meet map $\cap(\langle a,b\rangle) = a \cap b$. Consider now the following "*adjointness relation*" between the two partial orders:

$$\Delta(c) \subseteq \langle a,b\rangle \text{ iff } c \subseteq \cap(\langle a,b\rangle)$$

Adjointness Equivalence

for sets a, b, and c in P(U). It has a certain symmetry that can be exploited. If we fix <a,b>, then we have the previous universality condition for the meet of a and b: for any c in P(U),

$$c \subseteq a \cap b \text{ iff } \Delta(c) \subseteq \langle a,b\rangle.$$

Universality Condition for Meet of Sets a and b

The defining property on elements c of P(U) is that $\Delta(c) \subseteq \langle a,b\rangle$ (just a fancy way of saying that c is a subset of both a and b). But using the symmetry, we could fix c and have another universality condition using the reverse inclusion in P(U)xP(U) as the participation relation: for any <a,b> in P(U)xP(U),

$$\langle a,b\rangle \supseteq \Delta(c) \text{ iff } c \subseteq a \cap b$$

Universality Condition for $\Delta(c)$.[1]

Here the defining property on elements <a,b> of P(U)xP(U) is that the meet of a and b is a superset of the given set c. The concrete universal for that property is the image of c under the diagonal map $\Delta(c) = \langle c, c\rangle$, just as the concrete universal for the other property defined given <a,b> was the image of <a,b> under the meet map $\cap(\langle a,b\rangle) = a \cap b$.

Thus in this adjoint situation between the two categories P(U) and P(U)xP(U), we have a pair of maps ("adjoint functors") going each way between the categories such that each element in a category defines a certain property in the other category and the map carries the element to the concrete universal for that property.

$$\Delta : P(U) \rightarrow P(U)\times P(U) \text{ and } \cap: P(U)\times P(U) \rightarrow P(U)$$

Example of Adjoint Functors between Partial Orders

The notion of a pair of adjoint functors is ubiquitous; it is one of the main tools that highlights concrete universals throughout modern mathematics.

The Heteromorphic Analysis of Adjunctions

We have seen that there are two concrete universals (often one is trivial like Δ (c) in the above example) involved in an adjunctions and that the object-to-object maps or relations were always within one category (or partial order), e.g.,

[1] We have written $\langle a,b\rangle \supseteq \Delta(c)$ "backwards" to be an instance of the participation relation "x μ u_F" but it would more conventionally be written $\Delta(c) \subseteq \langle a,b\rangle$.

the "hom-sets" in a category where "hom" is short for homomorphism (a morphism between objects in the same category). Using object-to-object maps between objects of different categories (properly called "heteromorphisms" or "chimera morphisms"), the notion of an adjunction can be factored into two semi- or half-adjunctions each of which isolates a concrete universal [Ellerman 2006, 2007].

This heteromorphic treatment of adjoints will be illustrated using the above example. The objects $c \in P(U)$ in the partial order P(U) are single subsets c of U and the objects <a,b> in the partial order $P(U) \times P(U)$ are pairs of subsets of U. A heteromorphism or *het* from a single subset c to the pair of subsets <a,b> is given by the relation $c \subseteq a$ and $c \subseteq b$ which could be symbolized $c \rightarrow \langle a,b \rangle$. Fixing <a,b>, there is a single subset $(\langle a,b \rangle) = a \cap b$ with a canonical het $a \cap b \rightarrow \langle a,b \rangle$. Then the functor that takes <a,b> to $a \cap b$ gives a *right semi-adjunction* if for every het from $c \rightarrow \langle a,b \rangle$, there is a (unique) hom $c \subseteq a \cap b$ that gives us the following (commutative) diagram where the arrows are hets.

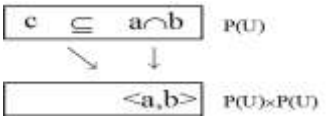


Fig. 4: Right semi-adjunction diagram.

This gives the following if-and-only-if (iff) equivalence between the diagonal het and the horizontal hom:

$c \rightarrow \langle a,b \rangle$ iff $c \subseteq a \cap b$.

Universality for right semi-adjunction.

Similarly for given c, there is a canonical het $c \rightarrow \Delta(c)$. Then the functor that takes c to $\Delta(c)$ is a *left semi-adjunction* if for any given het $c \rightarrow \langle a,b \rangle$, there is a (unique) $\Delta(c) \subseteq \langle a,b \rangle$ to make the following diagram commute.

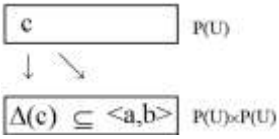


Fig. 5 : Left semi-adjunction diagram.

The corresponding universality equivalence is :

$$\Delta(c) \subseteq \langle a,b\rangle \text{ iff } c \to \langle a,b\rangle$$

Universality for left semi-adjunction.

The concept of a semi-adjunction is the most general concept of a concrete universal in category theory. The name "semi-adjunction" (or "half-adjunction") is derivative from "adjunction" since two semi-adjunctions with the same diagonal hets, $c \to \langle a,b\rangle$ in this case, combine to give an adjunction:

$$\Delta(c) \subseteq \langle a,b\rangle \text{ iff } c \to \langle a,b\rangle \text{ iff } c \subseteq a \cap b$$

Adjunction equivalence with het middle term.

Gluing together the two left and right semi-adjunction diagrams along the common het $c \to \langle a,b\rangle$ gives the adjunctive square diagram representing an adjunction.

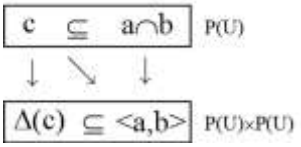


Fig. 6: Two semi-adjunctions = One adjunction.

Ordinarily the middle het term is left out, so we get the usual form of the adjunction equivalence:

$$\Delta(c) \subseteq \langle a,b\rangle \text{ iff } c \subseteq a \cap b$$

Usual form of adjunction equivalence.

The left or right semi-adjunctions are the most general form of concrete universals, and the adjunctions or pairs of adjoint functors are the special cases where left and right semi-adjunctions exist for the same hets.

Brain functors

If the concrete universals of category theory, which combine in one way to form an adjunction, serve to describe the important and natural concepts within pure mathematics, then one might well expect the concrete universals to also be important in applications.

One payoff from analyzing the important concept of an adjunction into two semi-adjunctions is that we can then reassemble those parts in a different way to define the new concept that is speculatively named a "brain functor." The basic idea is to think of one category in a semi-adjunction as the "environment" and the other category as an "organism." Instead of semi-adjunctions representing within each category the hets going one way between the categories, suppose the hets going both ways were represented by semi-adjunctions within one of the categories (the "organism").

A het from the environment to the organism is, say, a visual stimulus. Then a left semi-adjunction would play the role of the brain in providing the re-cognition of the stimulus as, say, a perception of a tree where the internal recognition is represented by the morphism ⇒ inside the "organism" category.

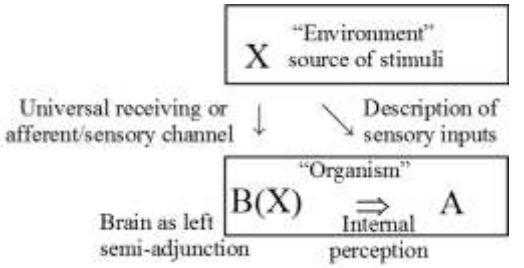


Fig. 7: Perceiving brain presented as a left semi-adjunction.

It is an old philosophical theme in the Platonic tradition that external stimuli do not give knowledge; the stimuli only trigger the internal perception or recognition that is knowledge. In *De Magistro* (The Teacher), the neo-Platonic Christian philosopher-theologian Augustine of Hippo (Annaba in modern Algeria) developed an argument (in the form of a dialogue with his son Adeodatus) that as teachers teach, it is only the student's internal appropriation of what is taught that gives understanding.

Then those who are called pupils consider within themselves whether what has been explained has been said truly; looking of course to that interior truth, according to the measure of which each is able. Thus they learn,…. But men are mistaken, so that they call those teachers who are not, merely because for the most part there is no delay between the time of speaking and the time of cognition. And since after the speaker has reminded them, the pupils quickly

learn within, they think that they have been taught outwardly by him who prompts them. (Augustine *De Magistro*, Chapter XIV)

The basic point is the active role of the mind in *generating* understanding. This is clear even at the simple level of understanding spoken words. We hear the auditory sense data of words in a completely strange language as well as the words in our native language. But the strange words 'bounce off' our minds with no resultant understanding while the words in a familiar language prompt an internal process of generating a meaning so that we understand the words.
There are also hets going the other way from the "organism" to the "environment" and there is a similar distinction between mere behavior and an action which expresses an intention. Mathematically that is described by dualizing or turning the arrows around which gives an acting brain presented as a right semi-adjunction.

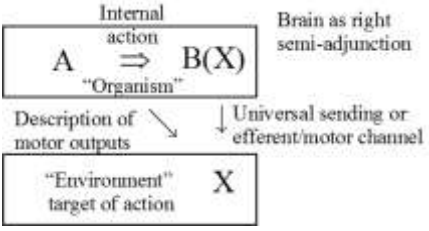


Fig. 8: Acting brain as a right semi-adjunction.

In the heteromorphic treatment of adjunctions, an adjunction arises when the hets from one category to another, Het(X, A), have a right semi-adjunction, Het(X,A) ≅ Hom(X,G(A)), *and* a left semi-adjunction, Hom(F(X),A) ≅ Het(X,A). But instead of taking the same set of hets as being represented by two different functors on the right and left, suppose we consider a single functor B(X) that represents the hets Het(X,A) on the left:
Het(X, A) ≅ Hom(B(X),A),
and represents the hets Het(A,X) [going in the opposite direction] on the right:
Hom(A,B(X)) ≅ Het(A,X).

If the hets each way between two categories are represented by the same functor B(X) as left and right semi-adjunctions, then that functor is said to be a *brain functor*. Thus instead of a pair of functors being adjoint, we have a single functor B(X) with values within one of the categories (the "organism") as

representing the two-way interactions, "cognition" and "action," between that category and another one (the "environment").
The diagram for an adjunction arises by gluing together the two diagrams for the left and right semi-adjunctions along the common diagonal het X→A.

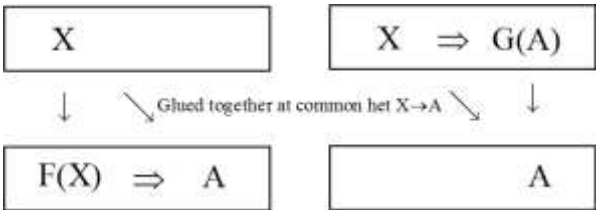


Fig. 9: Combining two semi-adjunctions make an adjunction

The combined diagram is the *adjunctive square* that represents an adjunction in the hetermorphic treatment of adjunctions.

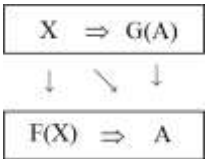


Fig. 10: Adjunctive Square Diagram.

The diagram for a brain functor is obtained by gluing together the diagrams for the left and right semi-adjunctions at the common values of the brain functor B(X).

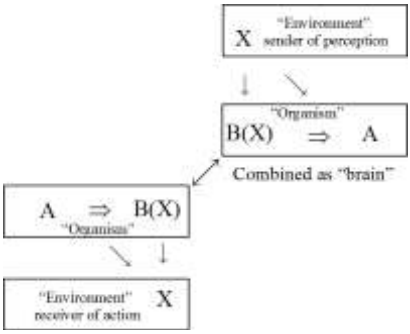


Fig. 11: Combining two semi-adjunctions to make a "brain"

This gives the brain functor "butterfly"[1] diagram—where we have taken the liberty to relabel the diagram for the brain as the language faculty for understanding and producing speech.

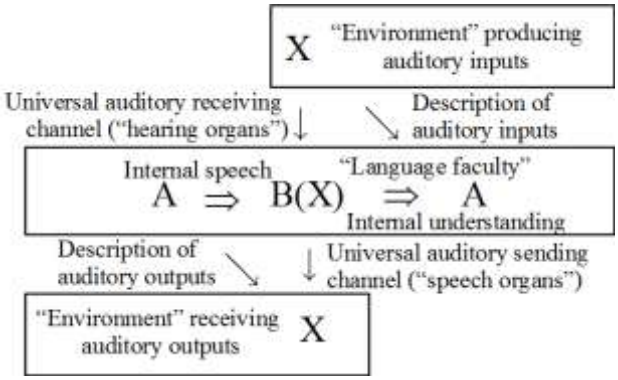


Fig. 12: Brain functor diagram interpreted as language faculty.

A simple example of a brain functor, where the two categories are partial orders, is given in the Appendix.

Category Theory and Foundations

What is the relevance of category theory to the foundations of mathematics? Today, this question might be answered by pointing to Lawvere and Tierney's *theory of topoi* [e.g., Lawvere 1972, Lawvere et al. 1975, or Hatcher 1982]. Topos theory can be viewed as a categorically formulated generalization of set theory to abstract sheaf theory. A set can be viewed as a sheaf of sets on the one-point space, and much of the machinery of set theory can be generalized to sheaves [Ellerman 1974]. Since much of mathematics can be formulated in set theory, it can be reconstructed with many variations in topoi.

The concept of category theory as the logic of concrete universals presents quite a *different* picture of the foundational relevance of category theory. Topos theory is important in its own right as a generalization of set theory, but it does not exclusively capture category theory's foundational relevance. Concrete universals do not "generalize" abstract universals, so as the theory of concrete

[1] Erase the labels and the arrows give the outline of a butterfly.

universals, category theory does not try to generalize set theory, the theory of abstract universals. Category theory presents the theory of the other type of universals, the self-participating or concrete universals.

Logic becomes concrete in category theory as the theory of concrete universals. *Facts become things*—at least in the Platonic Heaven of mathematics. Properties F can be realized concretely as things, the universals u_F. The fact that x is an F-instance is realized concretely by a thing, the unique participation morphism $x \rightarrow u_F$. A universal implication "for all x, F(x) implies G(x)" is realized concretely by another thing, the unique participation morphism $u_F \rightarrow u_H$ wherein one universal "brings on" or entails another universal.

Category theory is relevant to foundations in a different way than set theory. As the theory of concrete universals, category theory does not attempt to derive all of mathematics from a single theory. Instead, category theory's foundational relevance is that it provides universality concepts to characterize the important structures, schema, or Forms throughout mathematics (e.g., adjunctions).

Moreover, if the concrete universals characterize important concepts within pure mathematics, it should not be too surprising if they might also characterize, albeit at a very abstract level, important concepts and canonical schema (or Forms) in applications. The application scheme outlined here is the brain functor (obtained by rearranging the heteromorphic building blocks of adjunctions) which abstractly models the dual functions of perception and action.

The importance of category theory is that it provides a criterion of importance, concrete universality. Category theory provides the concepts to isolate the universal instance (where it exists) from among all the instances of a property. The Concrete Universal is the most important instance of a property because it represents the property in a paradigmatic way. All other instances have the property by virtue of participating in the Concrete Universal.

Appendix: A Brain Functor Between Partial Orders

A simple example of a brain functor using partial orders will be developed. In this setting, only the simplest "brain function" can be modeled, namely the building and functioning of an internal model of the external reality such as an

internal coordinate system to map an external set of locations. The external reality is given by a set of atomic points or locations Y, the atomic coordinates are the points in X, and the coordinate mapping function is the given function $f:X \rightarrow Y$. Just to keep the mathematics not completely trivial, we do not require f to be an isomorphism; multiple coordinates might refer to the same point (i.e., f is not necessarily one-to-one) and some points might not have coordinates (i.e., f is not necessarily onto). The two partial orders are the inclusion-ordered subsets of points P(Y) and the inclusion-ordered subsets of coordinates P(X).
In the case where the "brain" is an "electronic brain" or computer, Y is the set of locations on an external input/output device such as a floppy disk or any other external memory device. Each location is marked with a 0 or 1, so the subsets $V \in P(Y)$ would be the external sets of 1s. The set X would be the set of internal memory locations which also contain either a 0 or 1, so the subsets $U \in P(X)$ are the internal sets of 1s. The coordinate function $f:X \rightarrow Y$ maps the internal memory locations to the external disk locations. The dual perception/action functions in the electronic brain would be the familiar read/write operations between the computer and the external input/output device.

The brain functor in this example is $f^{-1}:P(Y) \rightarrow P(X)$ where for any subset $V \in P(Y)$, the value of the brain functor is:

$$f^{-1}(V) = \{x \in X: f(x) \in V\}.$$

Given a subset $V \subseteq Y$, what is the "best" internal subset $U \subseteq X$ that represents or recognizes V? The heteromorphism $V \rightarrow U$ is defined by the property, F(U) = "U is *complete for V*" in the sense that all the $x \in X$ that map to V are contained in U, i.e.,

$$V \rightarrow U \text{ means } V \subseteq \{y \in Y: \forall x, \text{ if } f(x) = y \text{ then } x \in U\}.$$

The left semi-adjunction for the property F(U) = "U is complete for V" is given by the smallest complete subset $f^{-1}(V) \in P(X)$ and the universality condition: $f^{-1}(V) \subseteq U$ iff $V \rightarrow U$, is satisfied.

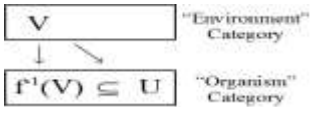


Fig. 13: Left semi-adjunction to "read" V.
with smallest complete subset $f^{-1}(V)$

The concrete universal $f^{-1}(V) \in P(X)$ has the property, i.e., $V \to f^{-1}(V)$, and a subset $U \in P(X)$ has the property, i.e., $V \to U$, if and only U participates in the concrete universal $U \supseteq f^{-1}(V) = u_F$ (where "participation" is written as the reverse inclusion).

In the dual case of "action," the het $U \to V$ going in the opposite direction (relative to the perception het $V \to U$) from a subset of X to a subset of Y is defined by the property, G(U) = "U is *consistent with V* " in the sense that no coordinate in U maps outside of V, i.e.,

$$U \to V \text{ means } f(U) \subseteq V.$$

The right semi-adjunction for the property G(U) = "U is consistent with V" is given by the largest consistent subset $f^{-1}(V) \in P(X)$, and the universality condition is: $U \subseteq f^{-1}(V)$ iff $U \to V$.

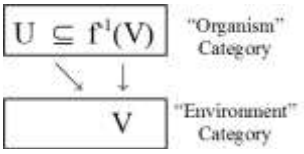


Fig. 14: Right semi-adjunction to "write" V.

with largest consistent subset $f^{-1}(V)$.

The concrete universal $f^{-1}(V) \in P(X)$ has the property, $f^{-1}(V) \to V$, and a subset $U \in P(X)$ has the property, i.e., $U \to V$, if and only if U participates in the concrete universal, i.e., $U \subseteq f^{-1}(V) = u_G$ (where "participation" is the inclusion). Combining the left and right semi-adjunctions at the common "brain" gives the butterfly diagram.

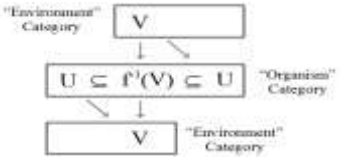


Fig. 15: Butterfly diagram for the brain functor f^{-1}:P(Y)→P(X).

Mathematically, this example is an instance of the general result that any functor that has both right and left adjoints is a brain functor. The right adjoint of $f^{-1}(V)$ is usually symbolized as:

$$\forall_f(U) = \{y \in Y: \forall x, \text{ if } f(x) = y \text{ then } x \in U\}$$

with the adjunction equivalence :

$$f^{-1}(V) \subseteq U \text{ iff } V \subseteq \forall_f(U)$$

while the left adjoint of $f^{-1}(V)$ is usually symbolized as:

$$\exists_f(U) = f(U) = \{ y \in Y: \exists x \in U, f(x) = y\}$$

with the adjunction equivalence:

$$\exists_f(U) \subseteq V \text{ iff } U \subseteq f^{-1}(V).$$

The quantifier notation is motivated by the special case where f is the projection $f = p_X : X \times Y \rightarrow Y$ so for any binary relation $U \subseteq X \times Y$, then $\exists_f(U) = \{y \in Y: \exists x U(x,y)\}$ and $\forall_f(U) = \{y \in Y: \forall x U(x,y)\}$.

The fact that the read/write functions of an electronic brain can be modeled by the brain functor $f^{-1}: P(Y) \rightarrow P(X)$ might be seen as an artifact of the simplicity of the case. As complexity increases exponentially in animal and human brains, this sort of precise modeling is not to be expected. The point, in such an empirical application, is the canonical scheme or Form that describes the functions of a brain at a conceptual level (e.g., Figure 12 giving the scheme for the language faculty).

References

Allen, R. E. 1960. "Participation and Predication in Plato's Middle Dialogues." *The Philosophical Review* 64:147-64.

Awodey, Steve 2006. *Category Theory*. Oxford: Clarendon Press.

Boolos, George. 1971. "The Iterative Conception of Set." *The Journal of Philosophy* 68, (April 22): 215-31.

Eilenberg, S., and MacLane, S. 1945. "General Theory of Natural Equivalences." *Transactions of the American Mathematical Society* 58: 231-94.

Ellerman, David 1974. "Sheaves of Structures and Generalized Ultraproducts." *Annals of Mathematical Logic* 7 (December): 163-95.
Ellerman, David 1988. Category Theory and Concrete Universals. *Erkenntnis* 28: 409-29.
Ellerman, David 2006. A Theory of Adjoint Functors—with some Thoughts on their Philosophical Significance. In *What is Category Theory?* Giandomenico Sica ed., Milan: Polimetrica**:** 127-183.
Ellerman, David 2007. Adjoints and Emergence: applications of a new theory adjoint functors. *Axiomathes.* 17 (1 March): 19-39.
Geach, P. T. 1956. "The Third Man Again." *The Philosophical Review* 65: 72-82.
Geach, P. T. 1980. *Logic Matters.* Berkeley: University of California Press.
Goldblatt, Robert 2006 (1984). *Topoi: the Categorical Analysis of Logic (revised ed.).* Mineola NY: Dover.
Hatcher, William. 1982. *The Logical Foundations of Mathematics*. Oxford: Pergamon Press.
Kan, Daniel 1958. Adjoint Functors. *Transactions of the American Mathematical Society.* 87 (2): 294-329.
Kneale, William, and Martha Kneale. 1962. *The Development of Logic.* Oxford: Oxford University Press.
Lambek, J. 1981. The Influence of Heraclitus on Modern Mathematics. I *Scientific Philosophy Today: Essays in Honor of Mario Bunge*. Joseph Agassi an Robert S. Cohen eds., Boston: D. Reidel Publishing Co.**:** 111-21.
Lawvere, F. William 1969. Adjointness in Foundations. *Dialectica.* 23: 281-95.
Lawvere, F. William, ed. 1972. *Springer Lecture Notes in Mathematics 274: Toposes, Algebraic Geometry and Logic.* Berlin: Springer-Verlag.
Lawvere, W., C. Maurer, and G. C. Wraith. 1975. *Springer Lecture Notes in Mathematics 445: Model Theory and Topoi.* Berlin: Springer-Verlag.
MacLane, Saunders. 1971. *Categories for the Working Mathematician.* New York: Springer-Verlag.
MacLane, Saunders, and Garrett Birkhoff. 1967. *Algebra*. New York: MacMillan.
Malcolm, John. 1991. *Plato on the Self-Predication of Forms*. Oxford: Clarendon Press.
Quine, W.V.O. 1955a. On Frege's Way Out. *Mind.* 64: 145-59.
Quine, W.V.O. 1955b. *Mathematical Logic.* Cambridge, Mass.: Harvard University Press.
Sayre, Kenneth. 1969. *Plato's Analytic Method.* Chicago: University of Chicago Press.
Schubert, Horst. 1972. *Categories*. Trans. Eva Gray. New York: Springer-Verlag.
Taylor, Paul 1999. *Practical Foundations of Mathematics*. Cambridge: CUP.
Vlastos, Gregory. 1981. *Platonic Studies*. Princeton: Princeton University Press.

Vlastos, Gregory, ed.. 1978. *Plato: A Collection of Critical Essays I: Metaphysics and Epistemology*. Notre Dame: University of Notre Dame Press.
Wood, Richard J. 2004. Ordered Sets via Adjunctions. In *Categorical Foundations. Encyclopedia of Mathematics and Its Applications Vol. 97*. Maria Cristina Pedicchio and Walter Tholen eds., Cambridge: Cambridge University Press**:** 5-47.

قراءة تحويلية في كتاب منهجُ العلم والفهم الدّيني ليحيى محمّد

Nidhal **ALBAGHDADI**
(Arab Open University For North America)

Résumé. Dans un livre intitulé *La méthode de la science et la compréhension religieuse,* Yahia Mohammed s'est livré à des compraisons entre la méthode et la compréhension. Il s'agit d'une étude en profondeur des point qui relient et délient les deux perspectives, enrichie d'une conception qui tend à déconstruire la nature de la relation entre la science et la religion. Dans cet article, j'ai essayé de discuter et d'analyser des paragraphes choisis de ce livre, à la lumière des principes de la philosophie d'Altadhamor et ses outils. Utilisant ce que j'appelle la lecture transformative pour découvrir davantage des caractéristiques de l'intercation impliquée dans la relation entre les deux persepctives majeures : la science et la religion.

Mots-clés : science, religion, méthode, compréhension, Yahia Mohammed, philosophie d'Altadhamor, lecture transformative.

ملخّص.في كتاب *منهج العلم والفهم الديني* انطلق الباحث في اجراء المقارنات الدقيقة بين المنهج والفهم، محاولا في دراسة معمقة ان يبرز أوجه الاختلاف والتشابه بين المنظومتين، بغية تفكيك الاشتباك حول طبيعة العلاقة بين العلم والدين. وفي مقالي هذا حاولت مناقشة محاور منتقاة من هذا العمل وذلك وفق آليات فلسفة التضامر وأدواتها ضمن سياق اسميته (القراءة التحويلية) بهدف اكتشاف المزيد من خصائص التفاعل بين المنظومتين: العلمية والدينية.

كلمات مفتاحية : علم ، دين ، منهج ، فهم ، يحي محمد ، فلسفة التضامر ، قراءة تحويلية.

Abstract. In the book *Science curriculum and religion understanding*, Yahia Mohammed made accurate comparisons between (curriculum) and (understanding). This in-depth study highlights the similarities and differences between the two perspectives with a view to dismantling the entanglement in the nature of the relationship between science and religion. In this article, I tried to discuss and analyze selected paragraphs of this work, according to mechanisms of *Aaltadhamor* philosophy and its tools,

and using what I call Transformative Reading to discover more of the interaction characteristics involved between the two major perspectives: science and religion.

Keywords: science, religion, Altadhamor Philosophy, transformative reading, Yahia Mohammed.□

الفكرُ المنتج هو: ذلك الفكر القادر على إحداثِ ضجّة تتّسم بالتشعّب في عقليّة القارئ كتلك الّتي يُحدثها صوت دّويّ مُفاجئ، مجهول المصدر، بحيث يقدح في فاهمة السّامع جميع الاحتمالاتِ الممكنة، بصرف النّظر عن الاتّفاق مع ذلك الفكر إن كليًّا أو جزئيًّا أو حتّى اللّاتفاق! وهو بلا شكّ يختلفُ عن ذلك الفكر الّذي حين تطّلعُ إليه ترى نفسك – تلقائيًّا- لم تزددْ منه إلّا توكيد الاصطفاف المألوف إنْ بالمعيّة معه أو بالتّضاد منه. الكتابُ الّذي بين يديّ هو من ذلك الفكر المنتج، خاصّةً وأنّه يتّسم بالجدّ في الاتّزان، والاجتهاد في التمسّك بتلابيب التّواضع والموضوعيّة، وهما قيمتان جوهريتان في جديّة الطّرح وأصالتهِ.

في كتابهِ «منهجُ العلم والفهم الدّيني، العبورُ من العلم إلى الفهم ومن الفهم إلى العلم» الصادر عن مؤسسة الانتشار العربي في بيروت عام 2014؛ تجشّم المفكر الإسلامي يَحيى مُحمّد عناء التّحليل لكلّ من المنظومتين المعرفيّتين العلميّة والدّينيّة ببراعةٍ وإتقان لا يخلو من إمتاع، فكان مُنقّبًا عن عناصر الحقيقة، فاضًّا لخيوط الالتباس الّتي تَشكل على كثيرين، سائرًا بِحرفيَّةٍ في ميدانٍ تتراكبُ فيه الألغام، شاقًّا طريقهُ نحو إبراز أفكارٍ ومفاهيم ورؤىً موضوعيّة، تضعُ كثيرًا من النّقاط فوقَ حروفها المناسبة، وتفتحُ في أحايين عديدة أبوابًا أو منافذَ لإمكانيّةِ الارتقاء في كلٍّ من منهجِ العلم والفهم الدّيني.

في الحقيقةِ؛ إنّ عنوان الكتاب لا يدلّ على المضمون الشّائع لهذه المفاهيم، فهو لا ينطلقُ في مجال استعراض طبيعة العَلاقة بين العلمِ والدّين، وهل هي اختلافٌ أم ائتلاف؟ تكاملٌ أم تعارض؟ صراعٌ أم وفاق؟ وإنْ كان مجمل الدّراسة يُعطي الانطباع عن هذا النّوع من العلاقات، بل الأحرى القول: إنّ منطلق الباحث هو المقارنة التّحليليّة الدّقيقة بينَ أداتي العلم، وهي: **المنهج**، والدّين، وهي: **الفهم**. وهو في تحليله المعمّق هذا لا يَعمد إلى التّفكيك في

معناه النّقضي الباحث عن البدائل، بل يجتهدُ في إبراز أوجه التّمايز أو التّشابه بين المنظومتين، بما يجعل البحث وكأنّه مرجعٌ معجميٌّ حاوٍ مَفاتيحَ فكّ الاشتباك الشّائع- مُسوّغًا كان أو غير مُسوّغ- بين العلم والدّين، بل وحتّى الفلسفة والكلام والعرفان.

لعلّهُ من الأفضل أن أكتفي بهذا القدر من الوَصف العام المستحقّ لمضمون هذا الكتاب القيّم، وأنّ أُباشر في التّشمير عن ساعد الجدّ في إعادِة قراءة أهمّ مفاصل هذا الكتاب بالأسلوب الّذي أُسمّيه (القراءة تحويلية)، وفيهِ أحاول مناقشة المحاور المنتقاة منه وَفْقَ آليات الفهم التّضامري وأدواته، في مُحاولةٍ للوصول إلى نتائجَ مُتوازية، يكشفُ جانبٌ منها عن أهميّة تلك التّفصيلاتِ التي تناولها الباحث فيكون بمنزلةِ تسليطٍ للضّوء عليها، وجانبٌ يتداخل فيه مع الفكر التّضامري بغية اكتشاف المزيد عن طريق التّفاعل بين المنظورين البحثيّين. إذ قد وفّر هذا الكتاب بالفعل فضاءً رحبًا لإنتاج مثل هذه القراءة، وكما مُبيّن في النّقاطِ أدناه:

أوّلًا: ينصُّ المبدأ الثّاني من مبادئ التّضامر على: (إذا تكرّرت علاقة التّضامر تتابعيًّا؛ فإنّ العلاقة المكرّرة لا تُماثل الأولى). في القراءة الّتي ذهبَ إليها الأستاذ يحيى بشأن نظم التّفكير العلمي مصداق مُناسب لهذا المبدأ، فقد ذهبَ إلى أنّ هناك ثلاثةَ أنظمةٍ للعلم بعد مرحلة النّظام القديم الّذي استمرّ منذ *أرسطو* إلى العصر الحديث، وهي كلّ من: النّظام الإجرائي، والنّظام الافتراضي، والنّظام التخميني أو الميتافيزيائي كما صنّفها.

حلّلَ يحيى محمد تلك النّظم وْفَقَ المنظور القائل: إنّ منهجيّة النّظام القديم كانت تُصادر على مسلمة التّطابق بين العقل والواقع، استجابة لمبدأ إنقاذ الظّواهر، وخلاصتها: أنّ الظّاهرة إذا خالفت ما هو معروف في العقليّة المعرفيّة في تلك المرحلة أدينيّة كانت أم فلسفيّة؛ فإنّهم يجتهدون ليُؤولوا التّفسير بحيث يُنقذ الظّاهرة ويُحافظ على مفهومهم العقلي قائمًا، ولكي يُحقّقوا ذلك فإنّهم ينصحون بالنّظر إلى الظّاهرة على اعتبار أنّها فرضيّة وليست حقيقة واقعيّة، ومن ذلك ما ذهب إليه الكاردينال (بلارمين) في نقده لغاليلو عندما قال: إنّنا عندما نفترضُ أنّ الأرضَ مُتحرّكة والشّمس ساكنة نُنقذ جميع

الظّواهر إنقاذًا أفضل ممّا تُتيحه دوائر كوبرنيك، أمّا تأكيد أنّ الشّمس تبقى ساكنة بالفعل في مركز العالم، وأنّها تدورُ حول نفسها فقط من دون أن تَجري من الشّرق إلى الغرب، وأنّ الأرضَ تدورُ بسرعةٍ فائقةٍ حولها؛ فذلك في غاية الخطورة! حيثُ إنّه لن يغضب جميع الفلاسفة واللّاهوتيين المدرسانيين ولكنّه يُنذر كذلك بإفساد الإيمان وتسفيه الكتاب المقدّس. إنّ ما يذهبُ إليه الكاردينال هُنا، وبصريح العبارة هو: قولوا يحتملُ أنّ الأرض تتحرّك حول الشّمس ولا تقولوا أنّ هذا ما يحدث حقيقة، وذلك أنّ الافتراض يحتملُ التّشكيك، ولا ينفي الظّاهرة، على حين التّأكيد يوقعهم في أزمةٍ فكريّةٍ وعقائديّةٍ لا رغبة لهم في قَبولها. كان هذا هو منطق النّظام القديم، يُقدّم الميتافيزيقيا على الواقع. وقد شقّ العلم طريقة منذ القرن السّابع عشر لينفض عنه غبارَ تلك المرحلة ولينتقلْ إلى النّظام الإجرائي، وهو منهج انقلب فيه النّظام على سابقه، أي: انقلبَ على الفروض الّتي تُنقذ الظّواهر ميتافيزيقيّة كانت أو حتّى فيزيائيّة، وتَحوّل إلى الإجراءاتِ الّتي تتضمّن المشاهدات والأرصاد والتّجارب، ثُمّ البناءُ عليها لإطلاق تعميماتٍ وَفْقَ المنهجيّة المعروفة بالاستقراء. مثالها أنّنا إذا علمنا أنّه باجتماع ذرّة أوكسجين مع ذرتي هيدروجين فإنّ النّاتج هو: جزئيّة الماء، وذلك على كوكب الأرض فهذا يعني أنّ هذه العمليّة يُمكن أن تتكرّر في أيّ جزءٍ من أجزاء الكون. فالاستقراء هو الانتقال من الجزء إلى التّعميم على الكل؛ وذلك لما لاحظه العُلماء من النّجاح المضطّرد للتّجارب ضمن ظروفها. مع مطلع القرن العشرين، ضُرِبَ النّظام الإجرائي بزلزالٍ بسبب نظريّة النّسبيّة ونظرية الكوانتم، واللاتان أعادتا إدخال الفرض والاحتمال كأسسٍ معرفيّة مُجدّدًا إلى الفضاء العلمي. النّسبيّة –مثلًا- لم تُكتشفْ نتيجة تجاربَ أو رصد أو مُشاهدات أو أيّ إجراءاتٍ، بل بالاعتماد على ما أسماهُ الأستاذ يحيى (المنهج الخيالي – الرّياضي)، حتّى إنّه صرّح بذلك قائلًا: «**لا توجد مجموعة من الحقائق التجريبية، مهما كانت مفهومة، يمكن ان تؤدي إلى صياغة تلك المعادلات المعقدة**» [ص: 35]. بصورة محايثة انتقلنا مع ميكانيكا الكم ومبدأ هايزنبرغ إلى اللّايقين، إذ لم يعدْ بالإمكان قياس سرعة جُسيم وموقعه في الوقتِ نفسه، إذ الدّقة في قياس أحدهما تعني اللّادقة في قياس الآخر، وبخلاف ما كان سائدٌ في الأجسامِ الكبيرة، وما كان يُظَنُّ بأنّه تعميمٌ كونيٌّ لأجزائهِ وجُزيئياته كافّة. من مُنتصف القرن العشرين –تقريبًا-

وما يليه، دخلَ إلى ساحة الفيزياء ما أسماه الكاتبُ (نظام التّخمين الميتافيزيائي)، إذ ولأسبابٍ عديدةٍ، انطلق جمهرة من الفيزيائيّين النّظريّين في وضع صياغاتٍ تُشبه أساطير النّظام القديم، منها: نظريّة مُتعدّد الأكوان، ونظريّة الأوتار الفائقة، وإمكانيّة أن يكون الكائن حيًّا وميْتًا في الوقتِ نفسه، أو أن يُوجد في أكثر من مكان، ونظريّة الانفجار العظيم، والقول بالثّقوب الدّوديّة وغرائبها، وهناك الأكوان التّمثيليّة أو الحاسوبيّة، حتّى علا صوت التّنازع بين الفيزيائيّين أنفسهم وهل ما يقومون به فيزياء أم فلسفة؟ وكما يصفُ الكاتبُ فإنّ هذا النّظام يبحثُ عن حافَة العلم لا تخومه.

الآن... القراءةُ السّريعة لتحوّلات النّظم العِلميّة تُعطينا التّصوّر الآتي: انتقلَ العلمُ من النّظام الميتافيزيقي القديم إلى النّظام الإجرائي(التّجريبي)، ثمّ تحوّل إلى الافتراضي الّذي يتضمّن التّخيّل المقترن بالرّياضيّات كعنصرٍ أساسي، ومنه عاد كما يبدو ليحتضن الميتافيزيقا من جديد، فهل مآل العلم مُستقبلًا إلى العقليّة الأسطوريّة الّتي غادرها بتخلّيه عنِ النّظام القديم؟

وَفْقًا لمبدأ التّضامر الثّاني الّذي قدّمنا له، فإنّ النّظام إذا ما تكرّر فإنّه –قطعًا- لن يكون كالسّابق، بل سيكون لا مماثل له، أي سيكون تكرارًا مُتغيّرًا. وهذا ما أكّده لنا الأستاذ يحيى في بحثه، فقد أثبت عددًا من النّقاط تُبيّن أنّ العلمَ وإن سار في طريق التّخمينات الميتافيزيقيّة في نظامه الثّالث؛ إلّا أنّ هناك فوارقَ جوهريّة بين القديم والثّالث، ومنها: أنّ النّظام القديم دوغمائي لا يتقبّل احتمال الخلاف، أمّا النّظام الحديث فهي نزعة تخمينيّة تحتملُ الخلاف بل حتّى الإنكار. كما أن النّظريات القديمة محكومة بالسّلطة العقليّة القبليّة، ما لا نجده لدى النّظام الثّالث التّخميني الّذي يستندُ إلى الرّياضيات ومُحاولاتٍ جادّةٍ للتّجريب، والنّظام الثّالثُ لا يسعَى سعيًا حثيثًا إلى إنقاذِ الظّواهر كما كان يهدفُ النّظام القديم. استنادًا إلى هذه الرّؤية، نعتقدُ أنّ النّظام الثّاني لو عاد إلى الظّهور مُجدّدًا بطريقة قويّة فإنّه لن يكون على الوجهِ الّذي كان عليه، بل سيكون نسخةً محدثة أو تكرارًا مُتغيّرًا، وهكذا أمرُ النّظام الافتراضي أيضًا.

إنّنا في التّضامرِ نقرأُ هذه الأنظمة على أنّها مُتضامرة، القديم يضمرُ الثّلاثة الّتي أتت فيما بعد تباعًا، وعلامة الإضمار فيها هي: اللّاتماثل، أي: اللاحق لا يُماثل السّابق بدلالاتٍ

مُحدّدة، وكما بين تلك الدّلالات الأستاذ يحيى في قراءته، فالإجرائي –مثلًا- لا يُماثل القديم بدلالة الاستقراء، والافتراضي لا يُماثل الإجرائي بدلالةِ الاحتمال، والتّخميني لا يُماثل الافتراضي بدلالة الإمكان، ... وهكذا دواليك، اللّاحق لا يُماثل السّابق بدلالةٍ مُحدّدة، وفي التّضامر كلّ لا مُتماثلين بدلالةٍ مُحدّدة، مُتضامرين.

ممّا يترتّب على قولنا بهذا التّضامر هو: إنّ جميع الأنظمة صحيحة نسبانويًا بدلالاتها. فلو نظرنا إلى النّظام القديم مثلًا، لأمكننا -وَوَفْق مُعطياتِ ما قبل العصر الحديث- أن نقول بصحّة نسبانويّة لمنظورهم العلمي آنذاك، والأمر ذاته ينطبقُ على جميع الأنظمة، ونحنُ اليوم ووَفْق مُعطيات العلم الحديث أكثر ثقة من ذي قبل بأنّ ما بين أيدينا من نظامٍ هو ليس الصّحيح المطلق بل النّسبانوي، فنحنُ لا نستطيع أن نُشكّك فيه إلى القدر الّذي نُساويه مع الأسطورة مثلًا، ولا نستطيع أن نتيقّن من أنّ معطياته تُعطينا اليقين المطلق فنركن إليه دونما قلق أو تردّد. إنّنا نضعُ أيّ نظام علمي على الحدّ الوسط بين الحواف والتّخوم.

ثانيًا: وَفْقًا للنّوع الأوّل من أنواع التّضامر الثّلاثة وهو المسمّى (التّضامر الذّاتي) الّذي يكون بين الشّيء وذاته بدلالةٍ مُحدّدة؛ فإنّ المعلومة -أيّ معلومة- تُعطي تصوّرًا عن إمكانيّة توقّع لا مثيلها كانعكاسٍ عنها.

ضمن هذا السّياق، أتاح لنا الأستاذ يحيى أكثر من معلومةٍ مُهمّةٍ ينطبق عليها هذا الفرض التّضامري، ومنها على سبيل المثال لا الحصر: قضيّة العلم والميتافيزيقيا، إذ التصوّر الّذي يُراد له أن يكون سائدًا دائمًا هو أنّ العلم بمجيئه حقّق -من أهم ما حقّق- القطيعة التّامة أو المطلقة أو الكليّة مع الميتافيزيقيا، وأُسبغت عليه النّظرة الماديّة في جوانبه وحيثيّاته كافّة، حتّى إنّها وصلت إلى مستوى البيولوجيا، وأبعد من ذلك الجانب السّيكولوجي.

وَفْقًا للتّضامر، إنّ مقولة: «**العلم معزول عن ميتافيزيقيا**» الّتي تبناها النّظام الإجرائي -كما بينه الأستاذ يحيى- تُضمر لا مثيلها بدلالة الميتافيزيقا، فينتجُ عنها مقولة نصّها: «**العلمُ معزول لا معزول عن الميتافيزيقيا - نسبانويا**». في الحقيقة المقولة الأولى جاءت

كحالة إضماريّة كاشفة عن وضعٍ سابقٍ لها ضمن مقولة: «**العلم غير معزول عن الميتافيزيقيا**»، فيكون تسلسل المقولات كالآتي:

- العلمُ غير معزولٌ عن الميتافيزيقيا، كما في النّظام القديم.
- العلمُ معزولٌ عن الميتافيزيقيا، كما في النّظام الإجرائي.
- العلمُ معزولٌ لا معزول عن الميتافيزيقيا – نسبانويًّا، كما في النّظام التّضامري.

إنّ المقصود بالمقولة الثّالثة، هو: أنّ العلم لن يستطيع أن يتخلّص كليًّا من الميتافيزيقيا كما يظنّ النّظام الإجرائي، والعلم لن يعتمد على الميتافيزيقيا اعتمادًا كليًّا أو مُطلقًا، بل سيبقى لها حضور في الأطروحات العلميّة مهما حاول بعضهم أن يُنزّهه منها. الحقّ لقد برع الأستاذ يحيى في تعرية هذه النّقطة في غير ما موطن من كتابهِ ليجعلها واضحة جليّة للأفهام، ومن ذلك المثال الّذي تحدّث به عن منهجيّة نيوتن الّتي عُرِفَت بأنّها إجرائيّة استقرائيّة، ومع هذا تضمّنت قوانينه فروضًا لم تُكتسب بالاستقراء، كفرض القصور الذّاتي، وقد كان هذا الفرض لدى نيوتن هو القانون الأوّل من قوانينه الثّلاثة، وفيه افترض: أنّ الجسم يبقى على حاله ما لم تكن هناك قوّة تُؤثّر فيه، فإذا كان ساكنًا فسيبقى ساكنًا، واذا كان مُتحرّكًا فسيبقى يسير بحركةٍ مستقيمةٍ منتظمةٍ دون توقّف إلى الأبد؛ مع أنّه عند مُحاكمة هذا القانون لا نجد أيّ تجربة استند إليها نيوتن في افتراضه، ولا أيّ ظاهرة كونيّة يُمكن أن يَبني عليه استقراءه هذا؛ لأنّ كلّ الأشياء محكومة بالقوى المؤثّرة (لا مُتعازلة)، وعلى هذا خلص الباحثُ إلى أنّ هذا الفرض ميتافيزيقي مادام لا يُمكن التحقّق منه على الصّعيد التّجريبي. كذلك فرض نيوتن حول الزّمان والمكان وكونهما مُستقلّين ومُطلَقين؛ ما وضع نيوتن في مرمى المتمسّكين بالإجرائيّة البحتة مثل: (إرنست ماخ) الّذي انتقد نيوتن على أخذه بمثل هذه المطلقاتِ الميتافيزيقيّة الّتي لا يُمكن إثباتها بالتّجربة، وغير ذلك فنيوتن معروف بالتجائه عند العجز عن التّفسير إلى ما يعرف بإله الفجوات، وبالتأكيد فهناك العديد والعديد من الشّواهد على هذه القضيّة، لعلّ من أشهرها الجاذبيّة؛ إذ لا يزال يُقال إنّها: «**فرضيّة ميتافيزيقيّة وليست كيفيّة فيزيائيّة**»، وغيرها. لقد أحسنَ الباحثُ حين أتى بمقولةِ مُؤسّس نظريّة الكوانتم ماكس بلانك الّتي قال فيها: «**مثلما وراء كلّ إحساس موضوعًا ماديًّا، فكذلك يُوجد واقع ميتافيزيائي وراء كلّ ما تُقدّمه لنا**

التّجربة على أنّه واقعي»، وزاد على ذلك بأن قال: «**إنّ عالم الميتافيزياء الواقعي ليس منطلقًا، بل الهدف لكلّ مشروع علمي، ومنار تلوح إلينا وتهدينا السّبيل»**، فأجد هذا المنطق مُتّسق مع المنظور التّضامري.

في جانبٍ آخر تعرّضَ له الباحث إلى ما أسماه (هرمنة العلم)، من الهرمنوطيقيا، أي: التّأويل، وفيه يصلُ الباحث -بعد تقديم شروحات وأدلّة مُفصّلة ومن تحليل مستند- إلى رؤيته باعتماد العلم على منهجين بحثيين مُترابطين هما المنهج: (الرّياضي–الخيالي)، والمنهج: (الخيالي–الرّياضي)، واستنتاجه منهما أنّ كلّ من الأبستمولوجيا والهرمنوطيقيا غير متعازلين، وكلّ ما هنالك من فرق بينهما أنّه في الأوّل نرى البستمة الهرمنوطيقيّة، وفي الثّاني نمسك بالهرمنة الأبستمولوجية. وهو تحليل بارع حقًّا، فضلًا عن أهميّته الّتي تتطلّب الوقوف عندها واستثمارها في أكثر من قراءة؛ إلّا أنّ الأهم بالنسبة لنا في هذه التفصيلة هو: النّتيجة الّتي خلص لها الباحث من ذلك وهي رأيه القائل: «هكذا تجعلنا المقارنات السّابقة نُدرك أنّ التّفاسير الفيزيائيّة هي أشبه بتأويلاتِ النّص المختلفة، فكلّ تفسير هو تأويل يقابله آخر، ويُمكن تفسير أيّ شيء بتأويلاتٍ مُختلفة»، وهي نتيجة غاية في الرّوعة الّتي توصّل إليها بعد استعراضه لسلسة من الشّروحات والتّفصيلات العلميّة الّتي تقود بلا ريب إليها. منها على سبيل المثال: التّأويلات المتعدّدة حول طبيعة الشّيء أو الجُسيم وموضعه وَفْقًا لنظريّة الكوانتم، إذ فيها ينبغي أن نتقبّل أن هناك عالمًا للامكان أو الاحتمال يكون فيه الشّيء قابلًا لاتّخاذ موضوع هنا وهناك من دون تحديد. ثمّ تطوّرت الفكرة لتُقلب إلى الإمكان إلى الوجود، فأصبح بدلًا من أن نتحدّث عن الشّيء بأنّه يُمكن أن يكون هنا أو هناك من غير تحديد، تحدّثنا عنه بأنّه موجود هنا وهناك، فهي مرحلة يُصنّفها الباحث على أنّها تطوير للتّأويل من الإمكان إلى الوجود. ثمّ هذه المرحلة من التّأويل تطوّرت أكثر، فبدلًا من قول إنّ الشيء موجود هنا وهناك، أصبح الحديث يتطوّر إلى قول إنّ للشيء نسخة مُضادة وَفق عدد الإمكانات، فنسخة هنا، ونسخة مُضادة هناك؛ وهو ما دفع للقول بإمكانيّة وجود نسخ بلا نهاية ولا حدود. هكذا تترى التّأويلاتُ للواقع الموضوعي الّذي لا نلمس فيه ضمن مستوياته الكبيرة مثل هذه الظّواهر الغرائبيّة.

حقيقةً: إنّ التّضامر يضع فرضيّة التّأويل للنّصّين العلمي والدّيني كشرطٍ أساسي ضمن الاحتمالات الممكنة في أيّ علاقةٍ يتناولها. وبيان ذلك كالآتي:

إذا كان (أ) يضمر (لا أ) بدلالةٍ محدّدة وهي المتغيرّ (د).

حيثُ إنّ (أ) هي فكرة، قضيّة، نظريّة، حدثُ، كيان ... إلخ. (لا أ) لا مثيل أ.

فإنّ الاحتمالاتِ الممكنة لـ (لا أ) ينبغي أن تكون:

(1) (نقيض أ): أي مُضادها وفي هذا الاحتمال تضمر جدل هيغل.

(2) (ليس أ): أي نفيها وفي هذا الاحتمال تضمر جدل النّفي الديالكتيكي.

(3) (حياد أ): وهو ما لا هو (أ) ولا هو (نقيض أ). وفي هذا الاحتمال تضمر التّعميم النيوتروسوفي.

(4) (أ لا أ): وهو الإثبات النسبانوي لكلٍّ من الاحتمالات المذكورة سلفًا، مضافًا لها (أ).

(5) (تأويلانوية أ): أيّ القراءات المتعدّدة لكلّ من الاحتمالاتِ المذكورة سلفًا، وفي المستويين العلمي والدّيني.

(6) (+ 1): الاحتمال الآخر الّذي من الممكن أن يكتشف من أيّ كان في أيّ وقتٍ ممكن.

خلاصةُ هذه المنظومة، أنّ النّتيجة الّتي استخلصها يحيى محمد في بحثهِ حول إمكانيّة تأويل العلم كتأويل الفهم، هي نتيجة لها ما يدعمها في التّضامر. وإن كان الأستاذ يحيى قد اقترح إمكانيّة إخضاع النظم الفيزيائيّة لآليات القراءة كما تمارس في الفهم وَفقًا لعلم الطّريقة الّذي ابتكره، فإنّني بعد تأييد ذلك، أقترحُ إمكانيّة استثمار ذلك الإخضاع في القراءاتِ التّضامرية، لتكامليّة الأمرين كما أرى.

ثالثًا: المحور الأساسي في هذه الدّراسة هو المقارنة اللّافتة الّتي استخلصها الباحث بين العلم والفهم، وقبل الحديث عنه يجدرُ توضيح مراد الباحث بكلّ من لفظتي: العلم والفهم. فأمّا (العلم) فعنده يُطلق على ما هو موضوع خارج الذّهن أو الذّات وهو الطّبيعة أو الفيزيقا، وفي المقابل فإنّ (الفهم) يُطلق أيضًا على موضوع خارج الذّهن أو الذّات وهو النّص، فيقال: علم الطبيعة وفهم النّص. ثمّ إنّه كلّ من العلم والفهم يمتنع التعرّف إليه من غير الذّات البشريّة وقبليّاتها واعتباراتها، سواء أدى ذلك إلى الابتعاد عن معرفة كنه الشّيء أم الاقتراب منه، كما يقول.

في الحقيقة تنطلقُ القراءة التضامريّة من أصل أساسي وهو الّذي نصطلح عليه اسم (اللاتماثل)، فإن أمسكنا به، أمكن استخدام أدوات التّضامر وقوانينه في الفهم والاستنتاج. واللاتماثل مفهوم يتضمّن التّشابه واللاتشابه بين أمرين مشتركين في نقطةٍ مُعيّنة -أو كما- نُسمّيها (دلالة مُحدّدة). فأمّا الدّلالة المحدّدة فقد بيّنها الأستاذ يحيى في أنّ مناط العلم والفهم هو **العقل**، بمعنى: أنّ الأصل في الانطلاق لمعرفة الطّبيعة أو النّص الدّيني هو العقل. وأمّا التّشابه واللاتشابه، فقد أفاض الأستاذ يحيى في بيانها باتقان محكم. ومن ذلك على سبيل المثال لا الحصر:

1) التّقابل بين إنقاذ الظّواهر في العلم وإنقاذ المظاهر النّصية، وكلاهما تأويل، فالأوّل يخصّ الواقع الموضوعي، والثّاني تأويل يخصّ النّص الدّيني، كالّذي تُمارسه الفلسفة والمتكلّمون دفاعًا عن مسلماتهم العقليّة، فإذا كان النّصّ هو من يُحدّد طبيعة المجال الّذي يتضمّنه عبر فعل القراءة، فإنّ الكون هو من يُحدّد طبيعة المجال الّذي يتضمّنه عبر الملاحظة والتّجربة والاختبار.
2) التّقابل بين النّظام العلمي الإجرائي وبين المنهج البياني للفهم الدّيني، والتّقابل – أيضًا- بين النّظام العلمي الافتراضي والمنهج العقلي في الفهم، بدلالة التّشابه من وجوه.
3) التّقابل بين آليات القراءة الثّلاثة: الاستظهار والتّأويل والاستبطان بين العلم والفهم، فالاستظهار يُمكن أن يطبّق على (البيان/ الإجرائي) والتّأويل على (العقلي/ الافتراضي) والاستبطان يطلق على (العرفاني/ التخميني).
4) يتّصف الفهم بالثّبات والدّوران على نفسهِ، فما يظهر من فهم جديد ليس بإمكانه إلغاء القديم، وغالبًا لا يُعتدّ بالمعاصر قدر الاعتداد بالقديم، والاستقطاب المتعارض يركّز الثّبات والدّوران كالّذي بين المذهبَين السّنة والشّيعة، وعامل القوّة في الفهم أنّ القديم يعتمدُ كدلالةٍ على الأصالةِ والقوّةِ المقرّبة للحقيقة، على حين يجري العكس – نسبيًّا- لدى العلم الطّبيعي؛ فلو أنّنا استثنينا النّظام الثّالث الميتافيزيائي لقلنا إنّ كلّ ما هو جديد في العلم يُصبح موردًا للاعتماد مقارنة بالقديم، فالعلم لا يدور بل يتقدّم خطيًّا. والعلّة في

الحركة الخطيّة للعلم -كما يرى الباحث- عائدة إلى تمجيد الأحياء والاهتمام بهم دون الموتى، والعكس صحيح لدى الفهم. العلّة الأخرى، أنّ العلم يتعلّق بالمدنس الخاضع للاختبار، على حين ينتمي الفهم إلى المقدّس الّذي يتّسم بالثّبات وعدم الخضوع للفحص أو النّقد أو الاختبار. فميزة النّظم الدّورانيّة هي: البقاء ثابتة لا تتبدّل عبر الزّمن، خلافًا للنّظم الخطيّة المتقدّمة؛ إذ أنّها تُزيح بعضها بعضًا للتقدّم.

5) ينزع العلم إلى البرجماتيّة، بينما ينزع الفهم إلى التماثلية.
6) العلم والفهم كلاهما لديه من القضايا ما يسكت عنها.
7) يتقبّل العلم النّظريات المتناقضة معًا، على حين لا يتقبّل الفهم ذلك.
8) مثلما يجري في العلم من السّعي إلى توحيد الظّواهر الكونيّة المختلفة ضمن تفسيرٍ يسيرٍ موحّد بالمعنى الشّمولي، فكذا هو الحال في الفهم الدّيني، إذ يتقبّل توحيد المظاهر اللّفظيّة ضمن تفسيرٍ يسيرٍ موّحد وَفْقًا لذات المعنى المشار إليه، مثل عصمة الأنبياء الّتي وردت نصوص كثيرة في القرآن تُبدي أنّ الأنبياء لم يكونوا معصومين في سلوكهم وعلمهم ومواقفهم.
9) السّببيّة في العلم والقصديّة في الفهم.
10) يعتمدُ العلمُ على الشّواهد كحقائق مسلّم بها وثابتة، على حين لا يعتمدُ الفهم على الحقائق فقط، بل غالبًا ما يُضيف إلى ذلك الشّواهد غير الثّابتة، كأن يعتمدُ على رواية لم تثبت صحّتها.
11) التّكافؤ معتمد عليه في العلم، بينما في الفهم لا يعتمد عليه دائمًا.
12) النّظام النّسقي مقبول أحيانًا في العلم، بينما هو غير كافٍ للقَبول في الفهم.

هناك كثيرٌ من نقاط التّقابل، وفي مُقَابلةٍ أجريت بهذا الشّأن، تبيّن أنّ كلًّا من العلم والفهم يتقاربان ولا يتقاربان، يتشابهان ولا يتشابهان، يتخالفان ولا يتخالفان، يتعاكسان ولا يتعاكسان ... إلخ، والوصف الشّامل لمثل هذه التّقابل -كما ذكرنا- هو اللاتماثل. وإن كانا لا متماثلين وبينهما دلالات مُحدّدة؛ فإنّ العلاقة بينهما هي علاقة تضامر؛ لأنّه وبحسب التّضامر: أي لا متماثلين بينهما دلالة مُحدّدة هما مُتضامران. وإن كانا متضامرين فإنّ

قوانين التضامر الثّلاثة يُمكن أن تستخدم للاستفادة من اكتشاف مجهول أحدهما من معلوم الآخر وكما في المثال الآتي:

لنأخذ قضيّة النّظريّات المتناقضة، فقد ذكر الأستاذ يحيى أنّ العلم يتقبّل وجود نظريّتين مُتناقضتين ما دام لا سبيل إلى توحيدهما أو استبدالهما. أمّا في الفهم فعند التّعارض الثّابت أو المؤكد ينقسم العلماء والباحثون حولهما، بحيث لا نجد شخصًا يعول على نظريّتين وهو يعلم بأنّهما متعارضتان تمامًا، ومثل هذا المضمون يُصاغ وَفق ما نسمّيه (التضامر اللاذاتي)، وعلاقته تكتب بالصّيغة:

العلم ا|ا الفهم ⟵ النّظريّات المتناقضة

وتقرأ: العلم يتضامر تضامرًا لا ذاتيًّا عكوسًا مع الفهم بدلالة النّظريّات المتناقضة.

وحين نقرأ هذه العلاقة في ضوء قانون التّضامر الأوّل مثلًا، نستنتجُ ما يأتي:

1) بما أنّ العلم لا يتقبّل من حيث المبدأ النّظريّات المتناقضة لأنّه يسعى حثيثًا لإيجاد نظريّة شاملة أو بديلة يرتفع فيها التّناقض، فهذا يضمر الدّلالة على أنّ الفهم لا يرتكزُ على التعدّد المتمايز في النّظريات كما هو شائع، بل إنّ الفهم في ذاته يتضمّن خاصيّة البحث عن النّظرية الشّاملة الّتي يرتفع فيها التّناقض بين السّنة والشّيعة في قضيّة عصمة الإمام وعدالة الصّحابي على سبيل المثال.
2) لو افترضنا أنّ الفهم قطع وبيقين أنّه لا مجال لوجود نظريّة مُوحّدة حول نظرياته المتناقضة ولا بأيّ حال من الأحوال، فهذا يُضمر الدّلالة على أنّ العلم لن يصلَ إلى نظريّته الموحّدة الّتي يبحثُ عنها، وسيبقى التّناقض حاضرًا بطريقةٍ أو بأخرى، وكلّما اكتشف حلًّا ظهرَ النّقيض مقابله.

من جانبٍ آخر: بما أنّ العلم يتقبّل من حيث الأمر الواقع التّعامل مع النّظريّات المتناقضة، فإنّ هذا يُضمر الدّلالة على أنّ الفهم سيُحاول الحذو حذو العلم مستقبلًا في هذا -إن لم تكن هناك مُحاولات بهذا الصّدد أصلًا- بل وإنّنا نحثّ على ذلك، شريطة أن تُؤخذ نقطة مُهمّة في الاعتبار وهي: أنّ العلم حين يتعامل مع النّظريّات المتناقضة لا يفرض واحدة منهما على الأخرى، فهو يقصر –مثلًا- نسبيّة أينشتاين في الأحجام الكبيرة، على حين يفرض في المستوى الجسيمي نظريّة الكوانتم؛ ما يعني أنّه يأخذ بالمبدأ النسبانوي وإن كان

يطمح إلى التّوحيد. وبالمثل، فإنّ تقبل الفهم للنّظريّات المتناقضة ينبغي أن يكون على أساس مُناظر لذلك، بأن يتقبّل فرض أيّ نظريّة ضمن حيز نسبانوي من الأدلّة دون الجزم أو القطع ببطلان المناقض. بعبارة أصرح: يُمكن القول إنّ عصمة الإمام صحيحة نسباونيًّا وكذلك عدالة الصّحابي، ونسبانويّة كلّ منهما منسوبة لأدلّة كلّ منهما، وما يضاف في هذا المضمون هو التّنازل عن افتراض خطأ المقابل. أي أنّ قَبول النسبانويّة يعني تقبّل اللانكار للآخر.

هكذا نستمرّ، في القراءة واستنباط الاحتمال المقابل، لمعرفة مجهول أحدهما من معلوم الآخر، وفي الحقيقة فإنّ الأستاذ يحيى مهّد الطّريق في بحثه هذا لدراسة تضامريّة مستفيضة ومُعمّقة على قدر كبيرٍ من الأهميّة، وربّما إن سنحت لي الفرصة فسوف أخوض غمار هذا البحث.

تضمّنت دراسة يحيى محمد تفصيلاتٍ كثيرةٍ، منها: إنتاج آراء ومُصطلحات وتحليلاتٍ ومُقارناتٍ غاية في الأناقة والسّلاسة والمقبوليّة العلميّة، والخلاصة هذا الكتاب من نوع الكتب الّذي لا يكون فيها الكاتب مُجرّد ناقل ومرجّح بين الآراء؛ بل من النّوع الّذي نلمسُ فيه الشّغف للإنتاج المعرفي.

لعلّي في هذه القراءة التّضامرية الموجزة أكون قد سلّطتُ ولو شيئًا من الضّوء على منظورينا الفكريين أنا ويحيى محمد ضمن هذا الموضوع المُهم، آملًا أن يكون لغيرنا وقفة أكثر توسّعًا بشأن هذه المقارنة.

PANORAMA DE L'IDENTITE

Jean-Yves **BEZIAU**
(Université du Brésil, Rio de Janeiro
Chercheur invité à l'Université de San Diego, Californie)

Abstract. We start by discussing in which sense two things or beings can be considered as identical. This leads us to the so-called Leibnizian principle of identity according to which two things are identical when they have exactly the same properties. This identity is not trivial identity according to which an object is identical to itself and different from all the other ones, identity which is understandable but difficult to express. We then go to an analysis of the sign "=". After some semiotic remarks, we point out that one possible interpretations, but which is not the one corresponding to the mathematical use, is that the two signs of each sides of "=" design the same object. This designating identity can be used to explain « François Hollande = the president of France », which has nothing to do with the equality of the declaration of the human rights, also different from personal identity and identification to a country or a religion.

Keywords: Leibniz, identity principle, semiotic analysis, designating identity.

ملخّص. نبدأ بمناقشة إشكالية المعنى الذي به نعتبر شيئيين أو كائنين متماثلين، و يقودنا هذا الأمر إلى مبدأ الهويّة عند لايبنيتز ومؤدّاه أنّ شيئين يكونان متماثلين متى اشتركا في ذات الخصائص. هذا المعنى للهويّة مغاير للمعنى السطحي الذي يكون الموضوع بمقتضاه مشابها لنفسه و مختلفا عن سائر الآخرين، إنّها هويّة قابلة للفهم غير أنّها عسيرة التشكيل. ننتقل لاحقا إلى تحليل العلامة "=" ونبيّن عقب بعض الملاحظات السيمائية انّ تحليلا ممكنا غير ذلك الذي يناسب الاستعمال الريّاضي، يتمثّل في القول بأنّ العلامتين في كلّ جهة من "=" تمثّلان نفس الموضوع. و يمكن استعمال هذه الهويّة التعيينية في تحليل التصريح "فرانسوا هولاند = رئيس الجمهورية الفرنسية" و الذي لا علاقة له بالمساواة في اعلان حقوق الإنسان و يختلف أيضا عن الهويّة الشخصية أو الانتماء إلى بلد أو دين.

كلمات مفتاحية : لايبنتز ، مبدأ الهويّة ، تحليل سيميائي، الهويّة التعيينية.

Résumé. Nous commençons par discuter la question de savoir en quel sens deux objets ou êtres peuvent être considérés comme identiques. Cela nous amène au principe d'identité de Leibniz suivant lequel deux choses sont identiques lorsque toutes leurs propriétés sont les mêmes. Cette identité n'est pas l'identité triviale selon laquelle un objet est identique à lui-même et différent de tous les autres, identité compréhensible mais difficile à formuler. Nous passons ensuite à une analyse du signe "=". Après quelques remarques sémiologiques, nous indiquons qu'une interprétation possible, mais qui n'est pas celle correspondant à l'usage mathématique, consiste à dire que les signes de chaque côté de "=" désignent le même objet. Cette identité désignative peut être utilisée pour l'analyse de « François Hollande = le président de la république française », qui n'a rien à voir avec l'égalité de la déclaration des droits de l'homme, différente également de l'identité personnelle et de l'identification à un pays ou à une religion.

Mots-clés : Leibniz, principe d'identité, analyse sémiotique, identité désignative.

Une vision panoramique

L'identité est une notion fondamentale. Elle a de nombreux visages : logique, mathématique, philosophique, culturelle, qui ne sont pas forcément faciles à mettre en relation. C'est ce que nous essayons de faire ici. Notre but n'est pas de faire une synthèse des idées reçues ou établies sur l'identité mais d'essayer d'éclaircir cette notion en ayant une perspective d'ensemble, que nous qualifions de « panoramique ». Si nous ne voulons pas nous perdre dans les détails historiques et/ou techniques, nous ne voulons pas non plus être superficiels. Ce que nous faisons n'est pas une simple énumération. Un panorama n'est pas un diaporama. Ce qui nous importe c'est de mettre les choses en rapport les unes avec les autres. Notre objectif n'est pas forcément d'apporter des réponses mais de poser de bonnes questions.

Espèces, propriétés et substances

Deux choses peuvent être plus ou moins différentes, plus ou moins identiques. Le chat de mon voisin ressemble à celui de mon cousin, mais un chat est un animal bien différent d'un chien. D'un autre côté un chat est plus similaire à un chien qu'à une casserole.

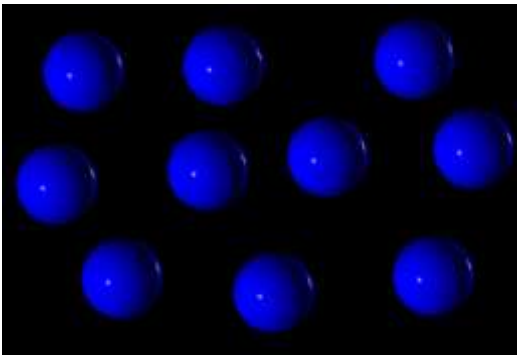
Certains objets, certains êtres, peuvent être considérés comme identiques, cette identité peut sembler artificielle ou authentique. On peut croire qu'il existe l'espèce des chats. Chats et chiens font partie des animaux, une classe qui peut aussi être considérée comme une certaine réalité, sans pour autant être une espèce. Toutefois on peut également dire qu'une chose n'est identique qu'à elle-même et que toute autre forme d'identification est subjective. Mais que sont ces choses individuelles, ces entités atomiques ? Par ailleurs identifier toutes les choses rouges semble différent d'identifier l'ensemble des casseroles même si l'on ne croit pas en l'espèce des casseroles.

Le langage ordinaire distingue le substantif du qualitatif. L'identité d'une "substance" telle qu'un chat, un chien, une casserole, n'est pas donnée de prime abord par une propriété, bien que l'on puisse vouloir la capter et/ou la réduire à une propriété (ou un groupe de propriétés).

Si l'on considère une propriété (ou un groupe de propriétés), on peut considérer l'ensemble des objets correspondants. Quelle propriété doit avoir cette propriété pour que l'ensemble des objets réunis qu'elle chapeaute puissent être considérés comme non superficiellement identiques ? C'est une question difficile, voire insoluble.

Identité de Leibniz

Le principe d'identité dit de Leibniz[1] s'énonce ainsi : deux objets sont identiques si et seulement s'ils ont les mêmes propriétés[2]. Ce principe totalisant semble vouloir épuiser toutes les différences et on risque de se retrouver avec une identité où chaque objet n'est plus que face à lui-même. Une échappatoire est de considérer que deux objets peuvent être différents seulement parce qu'ils sont localisés en deux endroits différents, le temps et l'espace n'étant pas considérés comme des propriétés propres. L'atomisme physique peut se développer sur cette base.



Une autre échappatoire plus générale et plus relative est de considérer le partage des propriétés du point de vue d'une certaine classe de propriétés. On en revient alors à la batterie de casserole ou à une espèce naturelle.

En logique moderne le principe de Leibniz se formule ainsi :

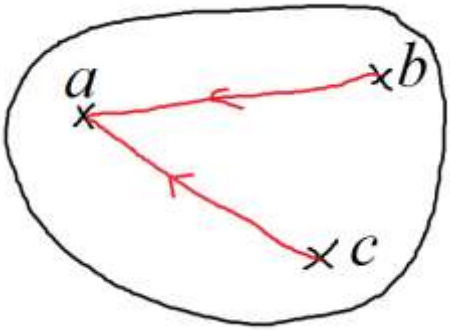
$$\forall x \forall y \, (x=y \leftrightarrow (\varphi x \leftrightarrow \varphi y))$$

[1] Comment Leibniz a formulé ce principe et en quoi la formulation originale de Leibniz est similaire ou différente de la version moderne que nous présentons, nous n'en discuterons pas ici.

[2] Généralement on sépare en deux cette définition de l'identité, une moitié étant appelée "l'identité des indiscernables" et l'autre "l'indiscernabilité des identiques". Notons que le mot "indiscernable" est fortement ambigu, car il incite à une interprétation subjective des propriétés. Si l'on parle simplement de propriétés comme nous le faisons ici, nous préservons la neutralité : il peut s'agir de propriétés subjectives ou objectives.

Cette formule de la logique du premier ordre[1] laisse la possibilité que deux objets différents soient identiques, sans que cette différence soit nécessairement une différence spatio-temporelle comme dans le cas de l'atomisme physique. Dans la formule ci-dessus la lettre grecque "φ" désigne n'importe quelle propriété exprimable dans un certain langage de la logique du premier ordre, cela correspondant en fait à certaines relations que les objets peuvent avoir les uns avec les autres.

Considérons trois objets *a*, *b* et *c* tels que *b* soit en relation avec *a* et *c* soit en relation avec *a* et qu'il n'y ait pas d'autres relations entre ces trois objets. Dans ce cas *b* et *c*, bien qu'au départ différents, sont les mêmes, car ils ont les mêmes propriétés : ils sont en relation avec *a* et c'est tout.



Le principe d'identité de Leibniz ne correspond donc pas à ce qui est appelé le principe d'identité tout court et parfois exprimé par A=A.

Identité triviale

Il n'est pas possible en fait d'axiomatiser en logique du premier ordre la notion d'identité suivant laquelle tout objet est identique à lui-même et différent des autres. Nous pouvons qualifier cette identité de "triviale" pour la distinguer d'autres identités. Ce résultat est peu connu des philosophes de la logique et n'apparaît pas dans les ouvrages de logique pour philosophes. Mais on peut le

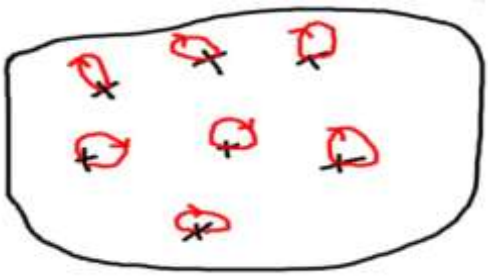
[1] Le principe de Leibniz en logique du premier ordre est un " schéma" d'axiome, on considère l'ensemble des variations sur φ de cette formule.

trouver par exemple dans l'article de Wilfrid Hodges, « Elementary predicate logic [1] » (1983).

En fait l'expression « Tout objet est identique à lui-même et différent des autres » est équivalente à l'expression « Tout objet est identique à lui-même ». Expliquons cela. « L'objet *a* est différent des autres » est en fait une expression qui n'a aucun sens parce qu'elle revient à dire que si nous avons un "autre" objet *b*, c'est-à-dire un objet différent de *a*, alors il est différent de *a*. Cette expression est donc une tautologie et une tautologie accouplée à une autre expression conduit à quelque chose d'équivalent à cette expression, phénomène similaire à la multiplication par le chiffre 1 qui ne multiplie rien du tout. Donc nous nous retrouvons avec « Tout objet est identique à lui-même ». Et cette expression ne définit l'identité que pour quelqu'un qui se laisse emporter pas l'illusion des mots. C'est là qu'un langage formel peut nous aider.

Nous avons : $\forall x(xRx)$. Cette expression définit en fait une relation réflexive, et beaucoup de relations réflexives ne sont pas l'identité. Par exemple on peut considérer que le coiffage est une relation réflexive : tout le monde peut se coiffer soi-même mais coiffer aussi quelqu'un d'autre.

Cela étant dit, l'identité triviale même si elle n'est pas exprimable en logique du premier ordre et peut-être ne l'est-elle pas non plus en langue naturelle est compréhensible et peut être décrite par un dessin :



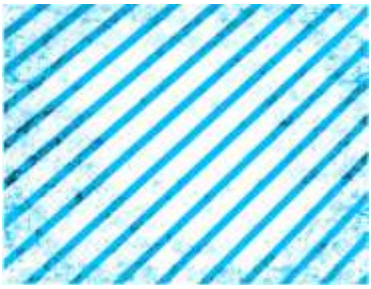
Ce diagramme indique des objets représentés pas des croix. La relation d'identité est exprimée par des flèches : on *voit* que chaque objet est en relation avec lui-même et aucun autre.

[1] D'autres notions ne sont pas axiomatisables en logique du premier ordre, comme la notion de bon ordre, mais c'est une notion mathématique que l'on ne rencontre pas forcément dans la vie quotidienne.

Le signe « = » peut être utilisé comme signe pour désigner cette idée. C'est ce qui se passe lorsque les logiciens disent qu'ils considèrent l'identité comme primitive. On peut comparer cette situation avec celle du vide, désigné par ∅ et l'infini désigné par ∞. La situation n'est pas exactement la même car le vide peut être défini en théorie des ensembles ainsi que l'infini (qui prend de multiples visages notés par des omégas et des alephs).

La double symbolique du signe « = »

Le signe « = » n'est pas propre à la logique moderne ; il a été repris des mathématiques. C'est l'un des signes les plus utilisés dans cette discipline. Il est attribué au mathématicien gallois Robert Recorde. Il symbolise l'identité en présentant deux lignes, de même longueur, de même épaisseur, mises en parallèles. L'identité est symbolisée par la duplication et le parallélisme.



Lorsque nous disons que ce signe "symbolise" l'identité nous employons ce terme dans un sens fort et double. Un symbole peut être considéré par opposition au signe arbitraire comme un signe où il y a un rapport entre le signifiant et le signifié, comme dans le cas de nombreux pictogrammes. Donnons l'exemple du dos d'âne :

Mais lorsque nous disons que la balance est un symbole de la justice, c'est en un autre sens que nous employons le mot « symbole ». Nous associons à l'idée abstraite de la justice un objet concret, une balance, établissant un parallèle, une analogie entre les deux choses ; on peut aussi dire que la balance est une métaphore pour la justice.

Le signe

est donc un symbole en un double sens, c'est un symbole au sens pictogrammatique, et c'est un symbole au sens métaphorique. C'est ce qui se passe aussi avec le signe « = ». Ce n'est pas ce qui se passe avec le dos d'âne où la métaphore est présente dans l'expression mais pas dans le signe.

La signification mathématique de « = »

Le signe « = » est appelé signe d'identité par les logiciens mais plutôt d'égalité par les mathématiciens. Quelle est la différence entre « identité » et « égalité », s'il y en a une ?

En mathématique l'expression « 3+4 = 7 » se lit plutôt « Trois plus quatre égale sept »[1] que « Trois plus quatre est identique à sept ». D'ailleurs est-ce que 3+4 est vraiment identique à 7? En tous les cas « 3+4 » n'est pas identique à « 7 », ce sont deux signes différents. On peut dire par contre que « 7 » est identique à « 7 ».

Mais cette identité entre signes peut prêter à controverse. Quelqu'un qui serait très pointilleux, dirait que ce ne sont pas deux signes identiques mais deux signes équiformes. (Cette idée a été émise par Leśniewski et se retrouve chez ses élèves, notamment chez Presburger). Il est vrai que la mécanique de techniques telles que l'imprimerie et l'informatique nous permet de produire

[1] Nous adoptons ici l'accord sylleptique en usage au lieu d'écrire « Trois plus quatre égalent sept », ce qui n'est pas forcément un bon choix, car cela a tendance à réduire "3+4" à un terme singulier.

deux signes quasiment identiques, la seule différence étant qu'ils se trouvent à des endroits différents, on se retrouve alors dans un cas semblable à celui de l'atomisme physique. Ces deux signes en tant qu'objets matériels sont les mêmes et cela indépendamment de leur signification, de même que "□ " et "□ " ou les deux lignes du symbole « = ». Mais dans l'écriture on admet également les différences de formes : **7**, *7*, 7 sont considérés comme étant des variations d'un même signe et dans l'écriture manuelle les variations sont grandes. Il en est autrement de VII, qui est considéré comme un (groupe de) signe(s) différent(s) de 7, mais désignant le même objet.

On peut soutenir que dans les quatre expressions suivantes

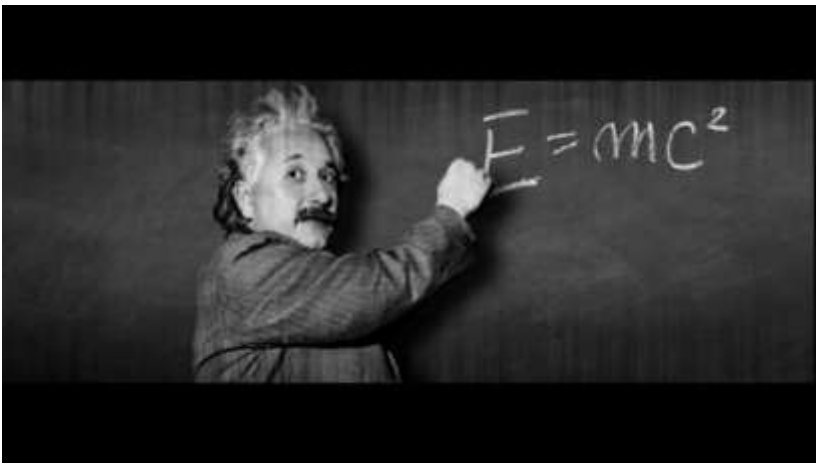
3+4 = 7
7=7
"7" = "7"
VII = 7

le signe "=" fonctionne de la même façon, indiquant que les objets désignés par les signes à droite et à gauche sont les mêmes, une identité que l'on peut appeler « de désignation » : deux signes différents désignant la même chose.

Ce n'est pas en ce sens que le logicien emploie le signe « = » et ce n'est sans doute pas non plus en ce sens que le mathématicien l'emploie. Bien que le signe "=" soit l'un des signes les plus connus et utilisés des mathématiques, se retrouvant dans les "équations", symbole pour beaucoup des mathématiques, son sens n'est pas forcément clair. Et il n'a pas été vraiment éclairci par les logiciens, qui l'utilisent en d'autres sens : identité de Leibniz ou identité triviale. Ce n'est pas ce que fait le mathématicien lorsqu'il l'utilise pour exprimer la commutativité de l'addition :

$$a+b = b+a$$

Cela peut se lire « $a+b$ font la même chose que $b+a$ » de la même manière que l'on dit aussi que « 3+4 font 7 ». Cela ne semble pas être une identité désignative. Les choses se compliquent lorsqu'il est question d'équation mathématique ayant un rapport direct avec la réalité physique, cas célèbrement illustré par l'équation d'Einstein.



Deux égalités différentes

Le signe « = » n'est pas couramment utilisé hors du domaine de la logique et des mathématiques, si ce n'est comme abréviation. Est-ce une abréviation correspondant à une identité désignative ?

Par exemple nous pouvons écrire après

Le Président de la France = François Hollande

Cela peut se lire « Le Président de la France est François Hollande ». On peut interpréter cela en disant que la *description définie* "Le Président de la France" a la même *référence* que le *nom propre* « François Hollande », mais que ces deux expressions ont un *sens* différent. Les philosophes du langage ont développé de nombreuses discussions à ce sujet depuis plus d'un siècle, un point d'ancrage étant la fameuse distinction de Frege entre *Sinn* et *Bedeutung*.

Cette égalité est à différencier de celle de la déclaration des droits de l'homme et de l'identité personnelle. Lorsque nous disons que tous les hommes sont égaux, nous disons qu'indépendamment de certaines différences apparentes, ils ont un fond commun, ce sont par exemple des animaux rationnels. Là nous sommes ramenés à une identité proche de celle entre chats, voire entre casseroles. Remarquons que la déclaration des droits de l'homme ne nous dit pas que tous les hommes sont *identiques*, sans doute parce qu'identité

serait trop fort. De ce point de vue le mot "égalité" est employé pour parler d'une forme faible d'identité, mais qui peut être considérée cependant comme plus forte que la simple similarité. Le politiquement correct promeut identité et différence.

Identification n'est pas identité

Mais quelle est l'identité personnelle de François Hollande ? Comme tous les citoyens français il a une carte d'identité, qui l'identifie à travers le nom de ses parents, sa date et son lieu de naissance, l'empreinte de son pouce, une photo, […] Un ensemble de propriétés qui tentent de cerner l'individu. Mais cela ne suffit pas toujours, si bien que l'on a créé des passeports biométriques, qui sur la base de certaines données physico-biologiques permettent de désigner/reconnaître univoquement un individu.

Toutefois ces données aussi précises et infaillibles soient-elles ne *caractérisent* pas le personnage qu'est François Hollande. On n'envisagerait pas d'élire un président sur la base de ses données biométriques. On ne choisirait pas non plus un pilote d'avion sur cette base. L'identification est donc différente de l'identité.

Cette différence n'est pas forcément mise en évidence par le slogan de Quine « Pas d'entité sans identité », surtout si l'on pense que Quine a promu les énoncés en tant qu'assemblages de signes par opposition aux propositions en tant que significations, parce que plus facilement identifiables entre eux. Il a ainsi milité pour que l'on remplace l'expression " logique des propositions" par "logique des énoncés" (en anglais : *propositional logic* vs. *sentential logic*). Quine promeut ainsi une philosophie au ras des pâquerettes, où l'apparence est plus importante qu'autre chose, cet autre étant considéré comme nécessairement

fantasmagorique, mystique ou idéologique, attribué aux philosophes des cavernes. Mais la philosophie de l'apparence est aussi une idéologie.

Identité et singularité

L'identité d'un individu est ce qui fait qu'il est lui-même, qu'il a sa propre personnalité, sa propre singularité. Dans ce cas il ne s'agit pas d'identifier deux choses différentes, mais plutôt de caractériser une "chose" par différence aux autres. Cela dit un individu constitue souvent son identité en s'identifiant : à un pays, une culture, une équipe de football, un type d'alimentation, une religion. Dans ce cas on crée son identité en niant sa pure individualité, en se noyant dans une masse, par exemple « être italien », ou bien en la construisant comme un patchwork : Alain Martin peut se définir comme végétarien, mathématicien et supporter du Paris Saint-Germain. Et il y a tout un tas d'alternatives. Quelqu'un peut s'affirmer athée, identité négative qui le distingue des croyants, mais qui ne l'identifie pas pleinement et positivement. Une simple propriété même positive, être végétarien, ne suffit pas non plus forcément à constituer une identité.

Ce genre d'identité fluctue entre chats, casseroles et objets rouges, s'élevant parfois cependant à la stature d'une tour Eiffel, objet singulier dont l'identité s'affirme par elle-même, pouvant être considéré comme un symbole de

l'affirmation de soi. La statue de la liberté à côté d'elle ne fait que noyer le poisson dans l'océan d'une identité diffuse pour ne pas dire confuse.

Bibliographie

BEZIAU, J.-Y., « Identity, logic and structure», *Bulletin of the Section of Logic* 25, 1996.
BEZIAU, J.-Y., « Do sentences have identity ? », in *Proceedings of the XXth World Congress of Philosophy*, The Paideia Project, Boston, 1998.
BEZIAU, J.-Y., « Quine on identity», *Principia*, 7, 2003.
BEZIAU, J.-Y., « What is the principle of identity? (identity, logic and congruence », , in *Logica: teoria, aplicaçõoes e reflexões*, F.T.Sautter et H. de Araujo Feitosa (eds), CLE, Campinas, 2004, pp.163-172.
BEZIAU, J.-Y., « Sentence, proposition and identity», *Synthese*, 154, 2007.
BEZIAU, J.-Y., « Mystérieuse identité », in *Le même et l'autre, identité et différence - Actes du XXXIe Congrès International de l'ASPLF*, Eotvos, Budapest, 2009, pp.159-162.
BEZIAU, J.-Y., *La pointure du symbole,* Paris, Petra, 2014.
ENGEL, P., *Identité et référence, la théorie des noms propres chez Frege et Kripke,* Presses de l'École Normale Supérieure, Paris, 1985.

FREGE, G., « Über Sinn und Bedeutung », *Zeitschrift fur Philosophie und philosophische Kritik*, 100, 1892.
HODGES, W., « Elementary predicate logic », *in* Gabbay, D., Geunthner, F., *Handbook of philosophical logic I*, Dordrecht, Reidel, 1983.
KRAUSE, D. et BEZIAU, J.-Y., « Relativizations of the principle of identity », *Logic Journal of the Interest Group in Pure and Applied Logics*, 5 (1997), pp.327-338.
QUINE, W.V.O., « Ontological remarks on the propositional calculus », *Mind*, 43, 1934.
QUINE, W.V.O., *Philosophy of logic*, Cambridge, Mass., Harvard University Press, 1970.
RODRIGUEZ-PEREYRA, G., « Leibniz's Argument for the identity of Indiscernibles in his Correspondence with Clarke », *Australasian Journal of Philosophy*, 77, 1999.
WIGGINS, D., « Identity, individuation and substance », *European Journal of Philosophy*, 20, 2012.
ZYGMUNT, J., « Mojżesz Presburger: life and work », *History and Philosophy of Logic,* 43, 1934.

Remerciements Je remercie mes collègues Jean-Marie Chevalier, Fabien Schang, José Veríssimo Teixeira da Mata et Denis Vernant pour leurs commentaires qui ont permis d'améliorer cet article.

IS SOMETHING NEW IN ETHICS POSSIBLE?
Epistemological Ethics

Cornelia Margareta **GASPAREL**
(Romanian Academy, Iaşi Branch)

Résumé. Dans cet article, je me propose de porter à l'attention de la communauté scientifique, le concept d'éthique épistémologique et la façon avec laquelle nous pouvons fonder ce que nous appelons l'architectonique de la théorie - une nouvelle théorie en éthique. Je souhaite systématiser l'apparition de la notion et les nombreuses possibilités que cette nouvelle idée peut se développer, à la fois dans la philosophie, et surtout dans l'histoire et la science. La triade conceptuelle mémoire-oubli-angoisse utilisée dans la construction de la théorie est conçue pour faire la transition entre la perspective utilitariste à l'éthique ontologique, en mettant l'accent sur le rôle de l'éthique dans la théorie de la connaissance.

Mots-clés : jugement, mémoire, pardon, connaissance, éthique, éthique épistémologique, théorie.

ملخّص. سأقوم في هذه الورقة بلفت انتباه المجموعة العلمية نحو الآتيقا الابستمولوجية والأساس الذي ستقوم عليه نظرية نسقية جديدة في الآتيقا. سأحاول القيام بتنسيق مختلف تمظهرات هذا المفهوم والامكانات المتعدّدة التي يمكن أن تطوّرها هذه الفكرة في ميدان الفلسفة وميادين التاريخ والعلوم على حدّ السواء. يعتبر الثالوث المفهومي ذاكرة-غفران-قلق كما هو مستعمل في بناء النظرية عامل تحوّل من المنظور النفعي إلى الآتيقا الأنطولوجية مع التركيز على دور الآتيقا في نظرية المعرفة.

كلمات مفتاحية : حكم ،ذاكرة،عفو،معرفة ،آتيقا ، آتيقا ابستمولوجية ، نظرية.

Abstract In this paper I propose to bring to the attention of the scientific community the concept of *Epistemological Ethics*[1] and the foundation way of what we call the architectonics of theory - *a new theory in Ethics*. I intend to systematize the occurence of the concept and the many possibilities that this new idea can develop, both in philosophy, and especially in history and science. the conceptual triad *memory-forgetfulness-anguish* used in constructing

[1] Cornelia Margareta Găşpărel, *Etică epistemologică. Teorie şi proiect de studiu al omului/Epistemological Theory. Study Project of Man*, Editura Academiei Române, Bucureşti, 2014.

the theory is designed to make the transition from the utilitarian perspective to the ontological ethics, focusing on the role of ethics in theory of knowledge.

Keywords: judgment, memory, forgetfulness, knowledge, ethics, theory, epistemological ethics.

> For a theory to be a revelation or a step forward, it must enter a conflict with the previous ones, i.e. to lead to at least some conflicting results. Which logically means that it should contradict and overthrow previous theories.[1]
>
> Karl POPPER

We think that the "epistemological ethics"[2] involves an assessment ratio between the *part and* the *whole,* between the *individual* and the *collective,* between *true-false* and *error* and above all, between *freedom, independence* and *respect. The argument, justification* or *ethical reasoning* determine evaluations, interpretations, therefore *perception and representation* of moral judgment that can only belong to the human being! The force of values meaning "positive" or "negative" values covers only their existence in this world dimension. The positivity or negativity of values comes from the closeness or farness of thought and action - so of "knowledge", implying that "positivity" or "negativity" of the soul comes from the representations we have of *matter and form.* Our perspective of epistemological ethics is that according to which the ethical values come from the relations of *similarity* (size, color, shape) and of *contiguity* (part-whole, element-unity, near-far, cause-effect) where *the principle of virtual speeds* (distance, speed and time) emphasizes the relation between "space" and "time" and the so called "relativity of ethical values." Therefore in this paper, I propose to describe the manner in which I got to the concept of "epistemological ethics" as a preliminary stage *to the idea, the essence* which is contained within the "architectonics of theory." What I want to stress here is that in the early stages of this research I have not proposed the idea of "conceptual innovation" or what turned out to be at the end of the research: a new theory in ethics. These two moments that have come on the way of *intuition* and hard work were

[1] Karl Popper, *Mitul contextului. În apărarea ştiinţei şi a raţionalismului / The Myth of the Framework. In Defense of Science and Rationality*, Editura Trei, 1998, pp. 33-34.

[2] Cornelia Margareta Găşpărel, *Etică epistemologică. Teorie şi proiect de studiu al omului /Epistemological Theory. Study Project of Man*, Editura Academiei Române, Bucureşti, 2014.

determined by my professional and personal experience, by the manner of doing research and by overlapping readings as an effect, which created conditions of synthesis and convergence between theories, schools of thinking and a common guideline, characterized by analysis, critical reflection and creation. In this regard I would say that Kant's statement proves to be valid: *intuition without a concept is blind and the concept without intuition is empty!* Because in the process of writing my first book by author and throughout this research I found the relationship established between *the world of essences* and *the world of appearances,* which largely confirms the statement that: the *royal road to knowledge and science is virtue.* First of all was *the concept* and then *the theory* and *principles of research* have often been the key state of creation, imagination and intuition to a lengthy reflection characterized by a continuing search and infinite possibility. That is why I believe that the great theories, big ideas often occur just outside these main principles[1], because the act of intuition or revelation in the way of hard work and of a structured long term reflection is a special moment of great intensity and difficulty in understanding.

The spirit of this paper is to determine the different forms of knowledge and thinking on some moments of life and history[2] which, on a smaller scale, with high or low intensity variation were presented throughout society from the particular to the general, based on an ideological program[3]. And we believe that this knowledge shape can add something to the scientific knowledge. And the

[1] Serghei Musskii, *Laureaţi ai Premiului Nobel / Nobel Prize Laureates*, Editura EuroPress, Bucureşti, 2008.

[2] During the Communist Romania, says Nicu Ioniţă, " the political detention exceeded the limits known in the history of repressions and it was a real programmed genocide, knowingly practiced, which has fallen prey to over 10% of the population. The field of traumatic experiments was extremely extensive and varied from continuous psychological terror to the wild abominable torture received by all political prisoners in the same way, but differently managed, because the inmates were very different from each other." Nicu Ioniţă, *Psihotrauma de detenţie şi urmările ei – mărturia personală şi ştiinţifică a unui supravieţuitor al experimentului Piteşti / Detention-induced Psycho-trauma and Its Consequences – the Personal and Scientific Confession of a Survivor of the Piteşti Experiment*, Fundaţia Academia Civică, Bucureşti, 2008, p. 9.

[3] "Sudents who had returned from captivity were denied the school training, being forced to continue living in other professions than those aspired to by vocation. Humanities faculties (Philology, History, Philosophy, Law) had become inaccessible even to the relatives of political prisoners. Communism belabor the destinies of two generations of Romanian citizens, mutilated lives of millions of young people." Romulus Rusan, *Cronologia şi geografia represiunii comuniste în România. Recesământul populaţiei concentraţionare (1945-1989)/Chronology and Geography of Communist Repression in Romania. Census of the Concentrationary Population (1945-1989),* Editura Fundaţia Academia Civică, Bucureşti, 2007, pp. 63-64.

optimism and the moral judgment of the academic community give us hope that the "Epistemological Ethics. Theory and Study Project of Man" will find the optimum place to determine the most fair and equitable matching to this new and ethical theory totaling the entire life and the ethical values specific to the human being and societies.

1. Intuition - Concept - Theory - Innovation

1.1. Concept

It is often given acertain relativity to ethical principles without deeply reflecting on the nature and consequences of this "relativity", which suggests new directions for ethical analysis and debate. In this paper I propose to systematize: (1) the context of developing *the concept of epistemological ethics;* (2) the source of idea regarding a new theory in ethics; (3) the role and scale of the used concepts (memory-forgetfulness, anguish); (4) the used methodology; (5) the coverage of the theory at a methodological level. I will try to highlight the many possibilities that this new idea can develop, both in *philosophy* and especially in *history* and *science.*

In philosophy there were two great constructive movements, "the Cartesian skepticism which had dissolved the medieval belief systems, and the Kantian one, consecutive to the skepticism of the seventeenth century (...). The philosophical Kantian movement was fulfilled during the past fifty years after the publication of the *Critique,* and its influence spread in the field of historical studies and humanities, as the Cartesian one had propagated within the natural sciences."[1] The relationship between *man* and the *world* is often based on the principles of ethics, philosophy or physics in general. And inevitably this view of *man-world* relationship passes through one of these paths of interpretation and understanding, where "experience" has different forms of *knowledge* and *truth.* Within this conglomerate of theories of ethics, man's position in the world in terms of *space* as Max Scheler states according to the three times: *cosmic, historical* and *existential time*[2] remains uncertain in relation to religious, social and

[1] R. G. Collingwood, *Eseu despre metoda filosofică/An Essay on Philosophical Method,* Editura Humanitas, 2015, Bucureşti, 2015, pp. 10- 11.

[2] The *cosmic time* is mathematically calculated according to the Earth's rotation around the Sun, calendars and clocks rely on it, and it is symbolized by a whirlwind. The *historical time* is as embedded within the cosmic time, it can be mathematically counted in decades, centuries and millennia, but any event cannot repeat within it and it is symbolized by a line directed to the future, to novelty. The *existential time* is not mathematically calculated, its course depends on the intensity with which it lives itself, it depends on our sufferings and joys, within it the creative momentum is going to produce and the ecstasies occur, it can be symbolized by a point, which

historical values, which is why the concept of "epistemological ethics" creates conditions for knowledge beyond the so-called hierarchy of moral values, beyond "good" and "evil" assigned to ethical judgment.

Starting from the Popperian perspective on ethics in relation to logics merely stating that "(...) ethics is not a science. But although there is no rational scientific basis of ethics, there is an ethical basis of science and rationalism"[1], we got the idea, the concept of epistemological ethics whose construction should be analyzed in strict correlation with the underlying problem,[2] of the ethical implications arising from the totalitarian regimes, the implications of which we cannot offer here a descriptive and analytic coverage as this paper is focused on the axiomatic manner of designing and structuring the theory, focusing on the conclusions drawn here on current theories regarding the truth:[3]

- *truth-correspondence;*
- *truth-coherence* and *pragmatic-truth;*
- Petre Botezatu's *four-dimensional theory of truth* etc.

According to Petre Botezatu the "truth is the evaluation of the correlation degree between the constructs and objects gifted with representative skills, with referential power and information conveyance."[4]

---

expresses a movement in depth." Nikolai Berdiaev, *Încercare de metafizică eshatologică / Essay on Eschatological Metaphysics*, Editura Paideia, Bucureşti, 1999, p. 226.

[1] Karl R. Popper, *Filosofia socială şi filosofia ştiinţei/ Social Philosophy and Science Philosophy*, Editura Trei, Bucureşti, 2000, pp. 30-39.

[2] The initial form of the introductory study *Memory-forgetfulness-anguish. Philosophical Landmarks on Political Imprisonment in Romania*, can be found in English in the Library of the Romanian Academy, Iaşi Branch (in manuscript - share MS 120 under the heading *Piteşti Experiment 1949-1952. From Memory to Forgetfulness and Angst*) or within the plenary conference records entitled *The Victims of Communism and Resistance Memorial - Knowledge of Historical Self,* which took place in a public debate which had as its place the *Memorial of the Victims of Communism and Resistance* http://maramures.citynews.ro/eveniment-23/sighetu-marmatiei-filosofia-catusele-totalitarismului-102324. The summary of this introductory study stood as the foundation of my lecture entitled "Piteşti Experiment 1949-1952 - From Memory to Forgetfulness and Angst", presented in the series of conferences held within the project *Knowledge-based Society - Research, Debates, Prospects*, under the aegis of the Romanian Academy - Iaşi Branch, in collaboration with Baia Mare North University.

[3] I recommend a full scroll of the book focusing on the chapter § "Memory - Historical Fact or Philosophical Truth?" of the *Epistemological Ethics. Study Project of Man*, Editura Academiei Române, Bucureşti, 2014, pp. 91-112.

[4] Petre Botezatu, *Discursul metodei: un itinerar logico-filozofic / The Discourse of the Method: A Logical and Philosophical Itinerary*, Editura Junimea, Iaşi, 1995, p. 332. This is Petre Botezatu's *four-dimensional*

> Within the construction of the author, ethics retains its main feature of normativity, but also it approximates scientific values, *truthfulness* being the main value. In this way, ethics, designed to make both admonitions and restrictions, can enter into the epistemological and analytical objective and reduce its sympathy that sometimes certain forms of totalitarianism showed it to humanize its ideologies, convertible into utopias by many historians and interpreters unwilling to notice their dramatic and even tragic consequences. It follows that ethics can give a scientific dimension, i.e. especially the alethic testing of statements that have no imperative or deontic form. In this context, we urge readers to approach the pages in which the author refers to some types of truth, in the light of which an epistemology of ethics might be.[1]

Why such research refers to ethics and epistemology as well as to their scientific coverage?

The *result* of such research may be one with a *rigorous coverage and foundation*. The research result is required by those areas dealing with the *description* and *indexing* of some events and *facts of history* that can cause changes in the entire knowledge as information and *training* the *historical* and *identitarian mental*." (...) Arrived in the West after 1922, Berdiaev will consider Communism a fighting against the moral spirit and life, because *its moral consequences are more terrifying than its political, legal and economic consequences, as they will extend in the future.* Unfortunately, Berdiaev's prophecies came true, first in Germany, then gradually worldwide."[2]

The *fundamental problems* that can develop at a philosophical level, within this part of existence and human coexistence, are thus requiring clarifications at the ethical, logical and epistemological level.

1.2 Intuition and Method

The idea of an epistemological ethics had Karl Popper's *The Logic of Research* as a source of insight, reflection and inspiration. The idea of ethical theory followed the concept and it was due to the parallel readings made at that time in a

theory of truth, the logician whose memory can be assigned to that of intellectuals in the Communist prisons - as *separation of what is different* and *bringing together what is identical.*

[1] Academician Teodor Dima, excerpt from the preface of the book *Epistemological Ethics. Study Project of Man,* of Teodor Dima, academician and member of the Romanian Academy, p. 10.

[2] Academician Teodor Dima, short reference from the Preface to *Epistemological Ethics. Study Project of Man,* Editura Academiei Române, București, 2014 p. 10.

manner of reflection and analysis, such as: Nicu Ioniță[1], Albert Einstein, Nae Ionescu.[2] Starting from this the argument, the text and the entire research[3] determined varied readings among which those of: Nicolaus Cusanus, Galileo Galilei, Giordano Bruno, Francis Bacon, Arthur Schopenhauer, Benedict Spinoza, Max Scheler, Rudolf Steiner, Charles Darwin, W. Heisenberg, Thomas Kuhn, Karl Popper, Bertrand Russell, Jean Piaget, Carl Gustav Jung etc. The connections made while studying these works led me to resort to what we call the architectonics of theory in terms of epistemological ethics. I briefly produce here the three big moments that led me to turn to the idea of *Theory and Study Project of Man.*

1. Nicu Ioniță:

> The continuously and long-term exercised terror in Communist prisons, be it on the entire population of Romania, for half a century, led to the accumulation of huge amounts of negative stimuli and when it reached its critical point, it acted like a time bomb, ruining the biological and psychological fund of the human being deeply shaking the architectural building on the ruins of which, through a process of negative psycho-induction and directed conditioning, dosingly and perversely, a new set of ideas and beliefs, aspirations and motivations, wholly contrary to previous ones were grafted, requiring both individual and community, a new

[1] Nicu Ioniță, *Psihotrauma de detenție și urmările ei – mărturia personală și științifică a unui supraviețuitor al experimentului Pitești / Detention-induced Psycho-trauma and Its Consequences – the Personal and Scientific Confession of a Survivor of the Pitești Experiment*, Fundația Academia Civică, București, 2008.

[2] Nae Ionescu, *Prejudecăți 31 ianuarie 1931. Din volumul Roza vânturilor 1926-1933 / Misconceptions January 31, 1931. Of the Cardinal 1926-1933,* Culegere îngrijită de Mircea Eliade / Collection edited by Mircea Eliade.

[3] Given the novelty of the concept and the route that *the idea* must go through and the whole content of the book, we recall that during the construction of the theory (introductory study, axioms, methodology) were promoted at national and international conferences and partially published in several specialized journals or books at home and abroad: *Tendințe actuale în etică - conceptul de persoană la Roberto Poli / Current Trends in Ethics - Roberto Poli's Concept of Person,* Iulian Boldea (Editor), *Studies on Literature, Discourse and Multicultural Dialogue,* Editura Arhipelag XXI, Tg. Mureș 2013, *Libertatea ca manifestare etică a memoriei - apel la conceptul de etică epistemologică / Freedom as an ethical manifestation of memory - appeal to the concept of epistemological ethics*, Revista Intertext, Nr. 3/4, Universitatea Liberă Internațională din Moldova, Chișinău, 2013; *Epistemological Ethics. New Ethical Dimension of Knowledge*, in Vihren Bouzov, Luchezar Andreev (Editors), Philosophy and Society, Editura St. Cyril and St. Methodius University Press, Veliko Turnovo, 2015.

orientation, a new mentality and a new way of life that were corresponding to the intentions and pressure group interests that established the terror.[1]

2. Albert Einstein:

The way in which the ethical axioms are founded and tested is not very different from the way the axioms of science are founded and tested. Truth is what stood at the test of experience"[2], the relativity of the ethical values being linked at this stage of research with the scientific meaning of relativity in physics. In explaining the manner of operation, of founding his theory Einstein states: "I attributed to reason and experience their determined place within the system of theoretical physics. The system structure is the work of reason, the experience data and their mutual relations must find their representation within the conclusions of the theory. Just on the possibility of such representations the value and justification of the whole system and, in particular, the value concepts and fundamental laws that make up its base are grounded. The latter are otherwise free creations of the human spirit, which cannot be *a priori* justified by the nature of the human spirit, in any other way. These concepts and fundamental laws which cannot be logically further reduced become the essential part of a theory that cannot be rationally designed. The main objective of any theory is to make these fundamental elements irreducible to minimum possible simple elements, without renouncing to a proper representation of any empirical fact.[3]

3. Nae Ionescu:

The human mind is naturally turned towards generalization. It starts from simple facts and rises quickly to theory. Unfortunately, most often these theories are false; because the fact that everything started is not essential. But man believes that his theory prevails and that reality must obey. There are more than 300 years since all humanity is the victim of a "theory"; that of individualism which caused, is causing and will cause yet more disasters and deep misery in all fields of human existence.[4]

---

[1] Nicu Ioniță, *Psihotrauma de detenție și urmările ei – mărturia personală și științifică a unui supraviețuitor al experimentului Pitești / Detention-induced Psycho-trauma and Its Consequences – the Personal and Scientific Confession of a Survivor of the Pitești Experiment*, Fundaţia Academia Civică, Bucureşti, 2008, p.19.

[2] Albert Einstein, *Cum văd eu lumea. Teoria relativității pe înțelesul tuturor / The World As I See It. Relativity Explained,* Editura Humanitas, București, 1996, p. 289.

[3] Ibid., p.74.

[4] Nae Ionescu, *Prejudecăți (31 ianuarie 1931, Din volumul Roza vânturilor 1926-1933,* Culegere îngrijită de Mircea Eliade) / *Misconceptions (January 31, 1931. Of the Cardinal 1926-1933,* Collection edited by Mircea Eliade), as cited in Revista *Memoria gândirii arestate / The Memory of Arrested Thought Journal*, nr. 2, Editată de Uniunea scriitorilor din România, pp. 89 - 92.

These are the three moments that influenced me in building the theory.

1.3. The Architectonics of Theory: Epistemological Ethics

The *epistemological ethics* is impartial in terms of analysis and social groups because it aims to link the *ethical* and *epistemological values.*

Thesis:
(i) the human nature endowed with reason and soul can be seen in conditions of freedom or adaptation / survival, within the size of what perception, representation, intention and action can bring about.
(ii)the entire contents of the ethical theories (theories of action or theories of virtue)
and the size of the researcher's/ scientist's thought as a manifestation of moral judgment and everything that accompanies the scientific viewpoint about man's position from particular to universal, in terms of his dignity and personality can be seen within the coverage of this continuum

The recourse to the three concepts of *memory-forgetfulness-anguish* that build the universe of discourse and create representations of the world ethical values during Communism find their reason in conceptual landmarks and major ethical issues about *freedom, truth, good, justice, equity* etc. After World War II, the insight on revolutions and all forms of ideological or scientific upheaval seems to have changed too much because the three great forces in Popper's period of time and in the history of Europe[1] remained the same: *our industrial civilization, our science and the idea of individual freedom.* And the repeated use of qualifiers classify the speech universe in *true* or *false*, without realizing the level of probability in matters of classification, that can lead us into history and that can justify over the years the degree of our children's identity. And this on the basis that "the scientist's work does not begin with data collection, but with a careful selection of future *problems,* a significant problem within the current *problem situation* which, in turn, is entirely placed below our theories. My opinion is that the methods, both those of the natural sciences and the social sciences can be clearly understood if we admit that science always starts and ends with a problem."[2] But this method of selection is a matter of thinking structure and *representation* - of what we call epistemological ethics. It seems that the logical method is fair in the relationship between science and knowledge subject,

[1] Karl Popper, *Mitul contextului. În apărarea ştiinţei şi a raţionalităţii / The Myth of the Framework. In Defense of Science and Rationality,* Editura Trei, Bucureşti, 1998, p. 250.
[2] Ibid, p. 205.

because the set of problems can have *different referentials* and the framework may be just a *myth*. The framework can be "limited" or "explanatory", "evidence", or just this difference can create dissensions. Here, the epistemological ethics can intervene as a *method* - as *principle*.

The human being is structured in such a way that it selectively *stores* (knows) and *forgets* (recalls) selective, hence its relative capacity to forgive, as a way to help avoid *anguish* (the German Angst) and living in a hostile environment. The spring, the vitality of memory equally resides in the act of knowledge and in the forms of forgetfulness involving and bringing manifestations of the spirit, of an ethical reasoning specific to the *time, people* and *age,* which explains the force of history as well as the endless possibility of philosophy and philosophizing:

(i) *memory* implies knowledge, leading to the foundation of all knowledge/science and experience. The force of values, meaning positive or negative values (Scheler) only concern their existence in this world dimension. The positivity or negativity of values comes from the closeness or farness of thought and action - so of "knowledge". Implying that, the "positivity" or "negativity" of the soul comes from the representations we have *of matter and form*. Our perspective of epistemological ethics is that according to which the ethical values come from the relations of *similarity* (size, color, shape) and of *contiguity* (part-whole, element-unit, near-far, cause-effect)

(ii) The Platonic forgetting or remembering involves the Baconian survival and / or progress, evolution (from the perspective of the genetic / evolutionary epistemology). An axiom of forgetting is that: *the law dictates the course of existence and who rejects it may be surprised.* "From 1968 to 1972 three hormones secreted by the hypothalamus were isolated: the hormone that regulates the secretion of thyroid, the hormone regulator of gonadal secretions, and the hormone "watching" on growth. The discovery of these "hormones" of the brain, which we owe to Roger Gillemin, Andrew Schally and Rosalyn Yallow - holders of the 1977 Nobel Prize - opens a new perspective for the researchers. The impetuous development of neurochemistry is expected to clarify many mysteries related to memory, emotion, aggression, sleep, pain, and others."[1]

Within the *psychic universe*, Ştefan Lupaşcu compares forgetting with a *memory alleviation* and identifies three forms of forgetfulness: 1.) forgetting identical data; 2.) data exchange forgetfulness, of variations; 3) and "there is a third kind of limbo, where identical data and heterogeneous data whose update is only

[1] Eugenia Grosu, *Tainele intelectului / The Mysteries of Reason,* Editura Albatros, Bucureşti, 1881, pp. 54-55.

halfway in the state T (1 / 2A) and force up into consciousness also halfway, i.e. in the state T (1 / 2P) of augmentation, that of consciousness coexists at the subconscious, conscious, and infra-conscious levels."[1] This is what Ştefan Lupaşcu called *knowing the knowledge at the level of knowledge ignorance.*[2] We think that the forms of forgetfulness go through the details of *symmetry* which "is not a number or a shape, but a special kind of changing - a way to move things around. If the object looks the same after being changed, then that change is a symmetry. For example, a square looks the same if it is rotated with a right angle. This expanded and embellished idea is then fundamental to the scientific understanding we have today on the universe and its origins."[3] This paper is about the symmetry of this forgetfulness.

(iii) *Anguish* and its opposite - *detachment* and the various forms of *perfection*, of *human excellence* are representations of man's position in relation to the world, to this life, as a prelude to the afterlife. Any ethical theory cannot only get life hence without regard to the "soul value", ontologically speaking, and this precisely because in this context the man gets different religious and customary values. The *theories about the soul have the perspective of the medieval soul as a model!* "The model of the soul remains the medieval one, as it was polished, without being changed by the great mystics, precursors of those times: St. Teresa of Avila and Juan dela Cruz (de Yepes), as well as by the mystics of the Russian Church."[4] But the human value from an ethical and religious dimension is in what the soul stores and reflects within the process of knowledge and the scale of the action - of *facts*. The *human mind,* regardless its denomination, stands between two great moral responsibilities that it scientifically or mythologically changes and these are: *the origin and manifestation of the original sin* and *the representations of the afterlife as punishment or reward.*

The action and *virtue* are related to *here* and *over there.* This is the key to which ethics must be seen which includes and brings the ontological content of the soul, of the value of life and of the human being as its vehicle. What carries a

[1] Ştefan Lupaşcu, *Universul psihic / The Psychic Universe*, Institutul European, Iaşi, 2000, p. 172.

[2] "*Knowing the knowledge at the level of knowledge ignorance* - which generates the subconscious of consciences - is what becomes the prefered realm of genesis and inventions - and we must know that we do not know how to do as a new knowledge to be born in the knowledge of knowledge, i.e. a discovery or an invention, as well as to create the worlds of art, of speech, of sight and sound." Ştefan Lupaşcu, *Universul psihic / The Psychic Universe*, Institutul European, Iaşi, 2000, p. 174.

[3] Ian Stewart, *De ce frumuseţea este adevărul. O istorie a simetriei / Why Beauty is the Truth. A Hystory of Symmetry,* Editura Humanitas, Bucureşti, 2010, pp. 7-8.

[4] Constantin Bălăceanu-Stolnici, *Incursiune în lumea sufletului. O abordare antropologică / Inside the World of Soul. An Anthropological Approach*, Editura Paideia, Bucureşti, 2004, p. 50.

record of the way we are different and we jointly form the concept of man, which is characterized by the universality of some concepts such as - *memory and forgetfulness* and the various forms of *perfection* - of *human excellence.*

Definition: *Any approach that regards man and his relationship with the environment, where we identify phenomena, causes and relationships that involve development and survival (in terms of assimilation-adaptation which also implies the presence of two basic instincts - the instinct of reproduction and nutrition) requires an argument on ethical criteria. Starting from the criterion that the very difference be it either otherness or opposition to an opinion, we were saying that the very difference can play an important role because it can be: beneficial, neutral or dangerous*[1] *as an expression of something that sits between understanding and conflict, between two or more parties, between the part and the whole seen in a broad sense as any ethical issue would be required to be seen.*

Method: If we were to answer which was the method that represented the foundation of this epistemological ethics, then our answer would be as follows:
- *observation* was the basis of both the substance of the matter, especially as the manner of content analysis of the material that I had access through those who have experienced Communist prisons (especially by working methodology) of what these intellectuals left within their content work.
- *experimentation* and *laboratory work* is included in the decryption as the content of the book describes, compares and analyzes, whether we consider the Piteşti experiment, the idea of creating *the new man* or the experience of the Communist prisons as coverage and understanding.
- *realistic* or *objective interpretation,* as some would say, comes from the convergence of this knowledge material which is strictly related to the experience of the Romanian Communist prisons, to express the whole human life and the value *of the Idea,* of what the soul reaches to archive, and the reason, to recall as a simple *reminder* or remembrance. The great works that we had access to and which shaped the universe of knowledge in terms of a plurality of ethical thinking and world values were those of: Nicolaus Cusanus, Galileo Galilei, Giordano Bruno, Francis Bacon, Arthur Schopenhauer, Benedict Spinoza, Max Scheler, Rudolf Steiner, Charles Darwin, Albert Einstein, W. Heisenberg, Thomas Kuhn, Karl Popper, Bertrand Russell, Jean Piaget, Carl Gustav Jung etc. which came in addition to this methodology. Even if some of these works are related to popularizing theories or ideas, the ethical journey of ideas through the issues and policy research reveals the author's intention to

[1] Solomon Marcus, *Paradigme universale / Universal Paradigms*, Editura Paralela 45, Piteşti, 2011, p. 131.

accede to the world of knowledge through plans of ordering contents, understanding, living and experience.

Specializations and innovations arise where there is a vacuum between two related fields[1] and where the amount of information can lead to a certain stagnation of research, where the separation or delineation in terms of a new "specialization" must be taken into account.

1.4. Innovation in Ethics

> So, what did Kant actually do: Did he clarify our conception on moral or did he truly revise it? I think it is not even worth answering such a question. According to the point of view maintained by the last, Wittgenstein and, subsequently, by Quine, it is not necessary to determine whether a suggestion of change in the order of linguistic practice pertains to a clarification or to a revision act. This change has contributed to the evolution of our moral discourse and the sole question that we must ask ourselves is the following: was this change useful from a social standpoint or not? [2].

In order to see what *epistemological ethics* can determine, as a *method* in history and science, I would recommend practicing the concept under the aspect of the following three directions: genetic adaptation; adaptive behavioral learning; and, finally, scientific discovery[3].

We consider that the study of the phenomenon regarding forgetfulness in the contemporary acceptance of what we call forgetting and that could actually mean *remembrance*, according to Plato, we underscore that this study is absolutely necessary to knowledge and non-knowledge, as well as to the investigation in terms of *aprioric axioms*, as it is related with *time/length*[4] and the concept of *space.*[1]

---

[1] *Specificitatea ştiinţelor psihosociale privind caracteristicile eticii lor / The Specific of Psychosocial Sciences Regarding their Ethics* and *Definierea noţiunii de intervenţie psihosocială / The Definition of Psychosocial Intervention* in Cornelia Margareta Găşpărel, *Fundamente etice în domeniul intervenţiilor psihosociale. Perspective critice asupra intervenţiilor psihosociale / Ethical Foundations in Psychosocial Interventions. Critical Perspectives on Psychosocial Interventions*, Editura Institutul European, Iaşi, 2014, pp.75- 83.

[2] Engel, Pascal, Rorty, Richard, *La ce bun adevărul? / What's the Use of Truth?,* Editura Art, Bucureşti, 2007, p. 64.

[3] Karl Popper, *Mitul contextului, În apărarea ştiinţei şi a raţionalităţii / The Myth of the Framework. In Defence of Science and Rationality,* Editura Trei, Bucureşti, 1998, p. 17.

[4] "The existential time, that everyone knows from experience ("those who are content do not read time") claims that time is in man, and not man in time, and time depends on the changes

On the other hand, according to Berdyaev, any experience, and suffering is such and experience, "it vanishes, but the fact that you suffered never vanishes."[2] Within this ethical dimension where man presents himself in his absolute dignity, it becomes necessary to designate and re-designate forgetfulness as *remembrance* or *anamnesis*. If we were to think to only a part of what is revealed to us by nature, then we could notice that there is the Sky and the Earth, day and night, Sun and Moon, which also induce the presence of the man's life programme, perception and representation – of *knowledge* and *thought*.

> Physicists have long questioned why there are three dimensions of space and one of time – the reason why we live in a four-dimensional time-space."[3] As a reflection, we could state that the answer to this question has a hidden substrate within the forms and functioning mechanism of forgetfulness, which is conventionally and terminologically strictly bound to the three moments: *present, past* and *future*. And yet, man can survive without their denomination, though not without the contents of what these three can store and archive, not without the rational-affective contents: "the patient is clinically dead when his brain is dead, even though other organs and tissues continue functioning.[4]

Albert Einstein[5] speaks of two types of theories in physics: "constructive theories" and "principle theories", and provides explanations regarding each contents. The *theory of relativity* pertains to the category of principle theories.

The Kantian theory has received countless criticisms among which perhaps the most relevant to our argument is the following: *Kant introduces a new skill to the man where he lacked a principle*. This is the role of higher level concepts that introduce and explain the contents of lower level concepts, such as *memory* in comparison to *forgetfulness*, or forgetfulness in analogy and comparison with

---

that occur in man." Nikolai Berdiaev, *Încercare de metafizică eshatologică / Essay on Eschatological Metaphysics*, Editura Paideia, Bucureşti, 1999, p. 22.

[1] The entire universe is characterized by the four dimensions and is dominated by the four forces: gravity, electromagnetic force, weak nuclear force and strong nuclear force (A. Einstein).

[2] Nikolai Berdiaev, *Încercare de metafizică eshatologică / Essay on Eschatological Metaphysics*, Editura Paideia, Bucureşti, 1999, p. 179.

[3] Ian Stewart, *De ce frumuseţea este adevărul. O istorie a simetriei / Why Beauty is the Truth. A Hystory of Symmetry,* Editura Humanitas, Bucureşti, 2010, p. 11.

[4] Karl R. Popper and Konrad Lorentz, *Viitorul este deschis / The Future is Open*, Editura Trei, Bucureşti, 1997, p. 105.

[5] Albert Einstein, *Cum văd eu lumea. Teoria relativităţii pe înţelesul tuturor / The World as I See It. Relativity Explained,* Editura Humanitas, Bucureşti, 1996, pp. 91-92.

anguish. We have decisively correlated the idea of "forgetfulness" to that of "memory", as a form of knowledge that surrounds us worldwide. A world that Popper calls the "world 3"[1], namely that world or universe that refers to: the world of objects and physical states; the world of conscience states, of mental states or behavioral dispositions to act; the world of objective contents of thought. Because forgetfulness is the opposite of memory. Forgetfulness is a cognitive reaction with effects on the physical and psychical state of health that links to the exterior as a physical and objectual medium, among which *otherness* is perhaps the most important. Forgetfulness can be a source of *evolution*, but also of *survival adaptation*.

> Resorting to the memory and the past is replaced by resorting to the majority's agreement and option. By no means, all traces of legitimization via tradition are not removed; however, and this is crucial, it is allowed to question tradition in the name of common will or common good (…). Science is another area in which memory has lost many of its prerogatives. It would not be mistaken to claim that modern science has been constituted during the Renaissance by a progressive liberation from the too harsh domination of memory. It was precisely by stopping the repetition of the scholastic learning, the so-called wisdom of the ancients, by leaving aside Ptolemy's system and Aristotle's classifications, that sciences could gain new impetus.[2]

Under these conditions an analysis of the *Kantian categories* in comparison with the entire contents of Aristotelian *categories* would impose, in strict correlation with the *theory of relativity*, thus with the notions of *space* and *time*. The validity of any ethical categories or ethical theories is confirmed in terms of *top-bottom*, *left-right*, in the nature of what *distance* (movement), *speed* and *time* (especially affective time: *past*, *present*, *future*) involve. The truth as an ethical or epistemological argument is at the crossroads of what would involve the analogy with the *virtual speeds principle*.

And if we take into consideration the various forms of defining memory we could automatically obtain a description of different forms of truth, even that of Michel Foucault who states that the notion of truth is in fact "an instrument of power". This leads us into thinking that when assigning something with a

[1] Karl R. Popper, *Filosofia socială şi filosofia ştiinţei / Social Philosophy and Science Philosophy*, Editura Trei, Bucureşti, 2000, p. 60.

[2] Tzvetan Todorov, *Abuzurile memoriei / The Abuses of Memory*, Editura Amarcord, Timişoara, 1999, p. 19.

value of truth, one can use quantity, the numeric, thus making the propositional content known to a number of persons, so that the effect may be equivalent to what is happening in the *self-fulfilling prediction*. In this case we are dealing with what is called propositional knowledge, where the logical criteria according to which we define truth are not present. Here memory has the role of an instrument, and truth has instrumental value. In these conditions: "the concept of truth is so "thin", so unsubstantial, resulting the fact that the epistemic role we customarily attributed to truth – that of representing a norm or purpose of our investigation, especially of scientific research – simply cannot be accomplished. Truth is neither norm nor ultimate goal."[1]

Therefore *memory-forgetfulness-anguish!*
In this line of argumentation follows the idea according to which "the hierarchy of ethical values" does not solve the problem of "the relativity of ethical values"; here, I illustrate with Ian Stewart's perspective on the matter: "*the symbol 2 does not have a context-independent fixed sense. Within the number representing the speed of light, the figure "2" which is immediately before the comma means two. But the other "2" in the number means "two hundred thousand." In the date 2006, the same figure denotes «two thousand». It would be very inconvenient to have a writing system in which the sense of a letter would depend on the place where it appears in a word. Imagine, for instance, what reading would be like if the two «a» letters in the word «alphabet» had completely different meanings. However, the positional notation for numbers is so convenient and powerful that it is difficult to believe someone ever used another method."*[2] The perspective of structuralism applied to the problem of knowledge architecture, that can accept matrices specific to that of a structuralist knowledge of a scientific type, shows us the complexity of the *memory* mechanism according to criteria of archiving and of evoking a part or the entire reality you participate to alone or with others – as a *historic fact*. We can say that within the mathematical structuralism we can distinguish three great fundamental types of structures:

a.) *order structures (a precedes b)*;
b.) *algebraic structures (relative to the different possible operations between the elements of a set)*

[1] Engel Pascal, Rorty, Richard, *La ce bun adevărul? / What's the Use of Truth?,* Editura Art, Bucureşti, 2007, p.23.
[2] Ian Stewart, *De ce frumuseţea este adevărul. O istorie a simetriei / Why Beauty is the Truth. A Hystory of Symmetry,* Editura Humanitas, Bucureşti, 2010, p. 24.

c.) *and topological structures (relative to the idea of proximity); topology is a type of qualitative geometry, where the stress is on aspects that do not imply distances and measurements (in fact, distances also lead to a topology, but of a very particular nature). What we must emphasize here is the fact that any structure, any relation becomes a restriction, a reduction of the arbitrary*[1]. For a better comprehension of the manner in which the theory was constructed and its manner of functioning, a full reading of the book would be called for, consistently considering ideas and chapter order, assuming of course its translation in an international language.

Survival is the clause that determines the emphasizing of one of the two doctrines – the *doctrine of the soul* or the *doctrine of reason*. Their separation determines a schism within the same *analytic-discursive body*. Criton declares *Socrates is mortal because he is human*, thus classifying the general and nature, the natural in man – *the law of man*. Whereas, Socrates is mortal under this law, it confirms the inductive inference according to which *Man is mortal, since Socrates is mortal as well*. The *man of science*, says Noica: „did nothing else than to search, in the individual of an experience, properties that could be transferred to a general nature."[2] In order to see the essence of the epistemological ethics of what I consider a new theory, I resort to the following suggestion: practice the concept in history, biology and all other subjects that involve man in relation to the environment, to existence that can mostly be defined by what we call *fighting*, *adaptation* and *survival*!

The ethical argument or reasoning determines evaluations, interpretations, thus representations of moral judgment. And identifying relations between *part* and *whole*, *good* and *bad*, *near* and *far*, *cause* and *effect*[3] would determine a better perception and representation of the ethical universe, where man and his position are in agreement with his dignity, with what his personality imposes to knowledge and the societies he is part of, filling the concepts of *man* and *worlds*. And if we accept the existence of some universal principles, then ethics cannot be considered purely theoretical anymore. In this respect, we can distinguish at least four different directions of testing a theory. The first, says Popper, is "the logical comparison of conclusions among themselves, through which the

[1] Solomon Marcus, *Paradigme universale / Universal Paradigms*, Editura Paralela 45, Piteşti, 2011, p. 160.

[2] Constantin Noica, *Devenire întru fiinţă, Scrisori despre logica lui Hermes / Becoming into Being. Letters on Hermes' Logic,* Editura Humanitas, Bucureşti, 1998, p.460.

[3] Solomon Marcus, *Paradigme universale / Universal Paradigms*, Editura Paralela 45, Piteşti, 2011, p. 160.

internal consistence of the system is tested. The second is the investigation of the logical form of the theory, in order to determine whether it has the character of an empirical or scientific theory, or whether it is, for instance, tautological. The third is the comparison with other theories, especially in order to determine whether the theory is considered a scientific progress. The last step is testing the theory via empirical applications of the conclusions that can be derived from it."[1] One must not omit that the degrees of *proximity* and the relations that such a theory can develop implies scientific relations and alliances that involve perceiving man as a *personality – person*, as a whole that refers to life and all that this entails. As Bacon would say, the role of science is not that of storing a sum of unrelated truths, but that of creating *relations* between them and to search for progress in knowledge. This is yet another way of perceiving *the world as will and representation*.

2. How Could Something New Be Possible in Ethics?

The theory genesis, its nature and strength lies within life dimension during the Communist prisons as experience and referential that science has the problems of man and societies in mind when it builds its theories and approaches. This idea of epistemological ethics springs from a labor of thought and feeling and has in its subsidiary the charity of thought and appreciation of the act of faith and suffering, what we call truth in lower-case or upper case. It is a way to validate the act of knowledge and of appreciating the thinking currency as an exchange currency between nations and religions, between science and religion, between ethics and epistemology. This theory has its roots in intuition which may or may not have a link to knowledge or it rather emerges from a phenomenon identified in the world of theory and practice, because both are self-determining and justified to the extent of which the weight of the first is validated within the manifestation of the latter. Because it is a "known law of the intellect when extremely complex phenomena are presented, which, however, would be made to an *order* or mediated simplicity by using a particular concept, that concept, sooner or later, arises with the application of the phenomena."[2]

[1]Karl R. Popper, *Filosofia socială şi filosofia ştiinţei / Social Philosophy and Science Philosophy*, Editura Trei, Bucureşti, 2000, p. 60.

[2]Charles Pierce, *Semnificaţie şi acţiune / Significance and Action*, Editura Humanitas, Bucureşti, 1990, p.50.

The architectural theory that I called epistemological ethics is a solid architectural that does not revolutionize or flip past or future architectural, but strengthens and *reminds* of a foundation that is in almost all the major theories so far, and the difference lies only in the way of looking at and understanding the man – as "species" or *personality*, as a man endowed with reason and soul, with freedom and fate – *character*. Epistemological ethics gives value to knowledge and of the whole that is made of the sides and various branches of science, because this ethics equally accompanies, the science and practice – the man and the world. There is a fairly high probability that some approaches and attempts to argue having the role to initiate research and methodological developments and of ethical thought to contain errors, which is why I would appreciate if those who identify and argue would help the critique they supports with written and documented works to determine a progress and a certain type of ethical knowledge at the human and social level.

2.1. Theory Axioms – Epistemological Ethics

I. Memory – a knowledge of memory is required as a resource of the internal memory that is or not connected with the outside as a collective memory or history of the world.
(1.) Memory is not history, perhaps in the same way that history is not memory. And the difference would consist in the methodology of the ethical knowledge of consciousness. This is because "the ethical premises (...) play in ethics a similar role to that played by the mathematical axioms."[1] (2.) Through memory man regains his right to *self-defense* looking retrospectively to the past with the degree of *will and freedom* he is endowed in a world where constraints are or are not justified. (3.) Memory as a form of knowledge gives meaning to the existence, it is a catalytic mechanism in the relationship between mind and body, because if it were not so man would mimic existence and thought would be primary. (4.) The way of the man's reporting to the otherness, based on what he experienced, learned is one of the key criteria that makes the differences between people, because due to this man memorizes and stores realities and because of them they perform their existence, *its becoming into being.*

II. Forgetting is part of the survival of the human species and it is a feature of it. Forgetting is formed in the axiom of understanding the ethical values and in what the knowledge content reveals in the whole human thought and the moral manifestations. In other

[1]Albert Einstein, *Cum văd eu lumea. Teoria relativității pe înțelesul tuturor / The World as I See It. Relativity Explained,* Editura Humanitas, București, 1996, p.289.

words: (1) Forgetfulness has two forms of interpreting human reality: i.e. health or suffering – illness, insanity. (2) Forgetting may be amnesia or *lapse* (according to Freud) in the same way that forgetting may involve forgiving – overcoming *resentment*. (3) Forgetting is strictly related to memory; of cognitively and physically *signifying or redefining experience* (this includes the idea of adapting to the physical environment and its relation to his own *self* as a living being in a world made of other *selves*). (4) Forgetting is strictly about *knowledge* and what this entails in terms of *perception, selection, archiving and deletion – missing*. (5) Forgetting involves links to the essential forms of survival, in terms of: *solidarity, struggle and indifference.* All these connect with what forgetting involves in terms of a thinking that focuses on the linguistic evolution or involution and on human endowment forms. When we say this we have in mind the extended perspective of Richard Dawkins' genetics according to which "language seems «to evolve» by non-genetic means and at a rate of several faster orders of magnitude than genetic evolution."[1] (6) Forgetfulness is *non-universal – All people have the ability to forget*. (7) Forgetfulness has a *necessity* aspect*; it* organically and cognitively aims to streamline the thinking approach, of knowledge in terms of assimilation-adaptation ratio (Piagetian perspective on *conjuring memory*[2]). (8) Forgetfulness is *religious* – it allows *repentance*, sorrow, equally in determining remission.

III. Anguish, Detachment, Perfection – Stages of Human Development

The meaning and significance of the three concepts connect with the selected matter from the knowledge archive and create situations of contiguity and resemblance between what we might call scientific knowledge and practice. We thus see, in anguish, the explanation of some the reasons for that: (1) Anguish is the opposite of freedom, of its most profound forms. (2) Anguish kills memory and the mysteries of the intellect because it occupies the entire thought and human life. (3) In anguish, the beauty of truth and the act of creation are impossible. (4) Anguish is possible because we have not clarified on the idea of freedom and of the man's responsibility in all the twists and turns of his life that is often historical, economic, and political. (5) In anguish, the man no longer finds himself on the list of social life based on lies, *error and negligence*, and then he isolates in the crowd. (6) Anguish is not just a transitional period, but it is found in the structure of thought and its lifetime, which involves among all to understand the value of moral judgment and the

[1] Richard Dawkins, *Gena Egoistă / The Selfish Gene*, Editura Tehnică, Bucureşti, 2006, p. 320.

[2] Jean Piaget, *Biologie şi cunoaştere, Eseu aupra relaţiilor dintre reglările organice şi procesele cognitive / Biology and Knowledge, Essay on the Relations between Organic Regulations and Cognitive Processes,* Editura Dacia, Cluj, 1971.

product of knowledge. (7) Anguish as a manifestation can confuse in the "ethical concepts" and it can be anything of what the architectural knowledge wants to be[1]. (8) Anguish is related to the soul and the forms of reason cannot be sufficient to clarify it to see the causes and sources of knowledge or ignorance. Anguish is specific to the man, because it aims to future events and present references that are accompanied by a content of life and its thought. (9) Anguish requires solitude with himself and with others. It is about faith and the so-called *alienation* where man is not closely related to God and no one expects and understands him anywhere. It's an everywhere without today or yesterday and the worst without a tomorrow, it's an over here and wherever you are, which deepens the helplessness and gets off the depths of anguish that shows the new divine value of us and the value of life beyond, of an immortality of the soul. (10) Anguish is related to memory, freedom and variations of the *will to live*, with faith and suffering. In anguish, the man cannot be free because he has not a landmark, but limits that do not provide openings, but rather closings and subjective obtuseness that reduces the universe of knowledge to schemes of thought that almost all lead to one place, to one *state of being*. (11) Anguish is a constant pain that cannot be controlled, or even rejected, it is an evil which no man can pass but in *things, ideas and people,* for that anguish does not differentiate between life and death, it is undefined, it is something that pushes and you cannot escape from, it's something that occurs when a person is not allowed to love and be loved, it is the sands of life between some painful boundaries. (12) Anguish is not doubt and uncertainty because it goes beyond these and it develops more in the living plan, of a scheme of thought where the ethical values may be outdated and may lack even the *value-necessity*. (13) Anguish was an established, determined and grown evil in the communist societies, of which our contemporaries are trying to escape, but they do not have the necessary method to treat a disease that does not exist in the scripts of some drug indications. The anguish is the soul's disease and it is related to the way of understanding and perfecting the life – it has to do with the way of producing the knowledge and of understanding freedom and truth. (14)In anguish, the man does not know the truth and he is not free to do so.

The second step of human becoming is formed in the various forms of detachment.

[1]Roberto Poli meets our vision because he claims that "values are timeless, ideal existences, they are not built and they do not destroy, the values do not change. What changes is our ability to see and to objectify them – i.e. to achieve the values in our world which are historically contingent, to give them a reality. And the ideal is objective, although it is unreal as ideal." Roberto Poli, *Între necesitate şi responsabilitate / Between Necessity and Responsibility,* Editura Curtea Veche, Bucureşti, 2009, p.37.

(1.) The detachment would require breaking from the mundane reality that complicates thinking and feeling and sometimes it even cancels it. (2) Detachment would also be that knowledge of the facts that makes you be quiet and to overlook when by this *an ethical manifestation of memory* would not be affected. (3) Detachment could also be, as well, that expression of forgetting those painful facts that hinders the existence and causes the anguish or fear. (4) Human nature can be seen within the manifestations forms of detachment and the expression of what life and ideologies determine and build at a social and human level.

The whole divine of man and the value of what suffering and love decimate within the depths of its life and thought can be seen in the perfection of the man.

(1)*Perfection* is in a mysterious relationship with freedom that acts and brings a depth of knowledge that reveals man's relationship with God.(2) Within perfection, the man knows beyond words and the *meaning* or the *signification* sits in the three times – *the cosmic, historical and existential time.* (3) Within perfection, the man knows and loves beyond words and the meaning of what the world gives love in terms of *here and now*. (4) Perfection requires freedom, and suffering, love and sacrifice, manifestations of virtue, i.e. reflections of the soul – meanings of fate, from the particular to the general. (5) Perfection gives meaning to faith and truth and all these are connected with the fate, with the way of going through life – in relation to the world and to God. (6) Perfection involves love, faith, truth in those of the human and of the world. (7) Perfection requires the access to that recalling of that something which stands on the three stages of man, that *I, ego and alter-ego.* While ethics will only get human values in terms of *me* and maybe *you*, it will preserve its individualist nature. (8) Perfection as the stage of human becoming is the expression of his character, a way of being and living – as *fate* and *world.* The state of perfection shows that God's law is written in the hearts of men.

This theoretical novelty means that the epistemological ethics is related to *the principle of virtual speeds*[1] which consists in *distance, speed and time.* This ethical conception refers to the risks of human transformation that comes from the idea of species, in which he basically loses his individuality force which consists in *distance* (ethical value of man over life in the existence of the periods), *speed* (human nature) and *time* (fate in terms of the person's biography regarding the three dimensions of time: present, past and future).

[1]Galileo Galilei, *Dialoguri asupra ştiinţelor noi / Dialogues Concerning Two New Sciences*, Editura Academiei Române, Bucureşti, 1961.

Man survives based on memory and forgetting as a function of thinking, a form of knowledge and understanding of himself and his surroundings. It*'s a privilege of man's moral genius*, said Albert Einstein, "personified by inspired individuals of advancing so comprehensive and well founded ethical axioms, that people accept them as being based on the huge mass of their individual and emotional experiences. The way in which the ethical axioms are funded and tested does not differ from the way of founding and testing the axioms of science. The truth is what stood the test of experience."[1]

3. The Force of History and the Infinite Possibility of Philosophy and Philosophizing

The future, the present and sometimes even the past take their toll in the architectonics of theories on the ethical value of those theories, concepts and notions/words that incline to regarding man in the specific of the "species" and less in the order of a thought that involves *destiny, freedom* and *dignity*. According to Charles S. Pierce there is a "known law of the intellect namely that when extremely complex phenomena are presented, that, nevertheless, could be brought to an *order* or mediated simplicity by applying a given concept, that concept will sooner or later occur applying to those phenomena."[2] The epistemological ethics is such a concept. None of the studied works and reference theories taken into account in the construction of the epistemological ethics as a new ethical theory refers to Communism or political detention, but the majority of these theories have evolved in the shadow of WWII.

Freedom as a product of world history or religion comes to confirm the forms of freedom and its various meanings. *Freedom, truth, justice* and the entire construct of such argumentations are major topics in any era with the *will to live* specific to each society. A will to live which Petre Botezatu, resorting to H. Höffding's line of thinking, explicits it as a liberation of will, as a *prelude of the idea of moral liberty* in the senses of all possible alliances. Whereas, he claims, the meanings of *freedom of will*[3] consist of: (1.) *The will that does not depend on any antecedent, the will that is only the cause, without knowing the effect. In this sense to exercise*

[1] Albert Einstein, *Cum văd eu lumea. Teoria relativității pe înțelesul tuturor / The World as I See It. Relativity Explained,* Editura Humanitas, București, 1996, p. 289.

[2] Charles Pierce, *Semnificație și acțiune / Significance and Action*, Editura Humanitas, București, 1990, p. 50.

[3] Petre Botezatu, *Preludiul ideii de libertate morală / The Prelude of Moral Freedom*, Junimea Publishing House, Iași 1976, p.10.

free will means to exercise will without a cause. (2.)*The lack of external constraint. In this sense, the causes extrinsic to personality are excluded.*(3.) *The lack of internal constraint. In this sense, what caused sorrow or fear is not free.* (4.)*The strength, the capacity of the will. It refers to how much the will can do, its efficiency in the evolution of universe.* (5.) *Freedom of choice. In this meaning, free will is mature, conscious will, that deliberates and does not blindly proceed to action.* (6.) *Will governed by moral reasons. Freedom opposes, in this case, to the rule of selfishness and instinct.*

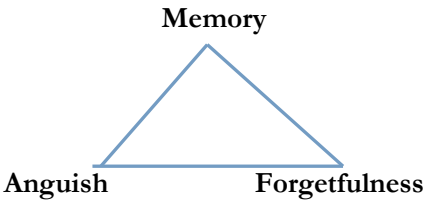
Emotions are essential for mankind, considers Philip Zimbardo, as they are in relation to the subsidiaries of thought that set man to action. *The Force of History and the Infinite Possibility of Philosophy and Philosophizing!*

*****

Academician Solomon Marcus asks himself: *Is it possible to imagine the world as a completely amorphous agglomeration*, *devoid of any organization?* "It is of course a limit state. Perhaps, in the first stage of life, the infant precisely sees the world in this manner. Yet even the remotest childhood memories place us in an universe where we operate certain distinctions, though they be among the most basic. Everything happens as if we imposed the world a certain organization. We are in front of a strategy game. Initially, the world is hiding. We try to approach it, but it adds a clause: to discover certain of its relations, such as those of similarity (size, shape etc.) or contiguity (part-whole, element-unit, near-far, cause-effect etc.)"[1] In this ordering, memory and forgetfulness and all forms that join in discovering the surrounding world, become the fundamental ways of *survival* and *adaptation*, but especially of human *progress* and *transformation*.

The Ethical Triangle

on the three great concepts *Memory-Forgetfulness-Anguish (detachment and completion)*



[1] Solomon Marcus, *Paradigme universale / Universal Paradigms*, Editura Paralela 45, Piteşti, 2011, p. 160.

According to the way of perceiving this conceptual triangle one can observe the role and significance of forgetfulness which is or not conditioned by the other two (memory and anguish) that create the premises for what the *redefinition of forgetfulness* would imply in its most profound content. Because, according to this triadic relation, the sign leads us to the three classes mentioned by Charles Pierce[1], namely:

Those that can be interpreted as thoughts or other signs of the same type in infinite series.
Those that can be interpreted as real experiences.
Those that can be interpreted as sensing and appearance qualities.

The ethical knowledge is founded on such knowledge that attempts to insert order between *part* and *whole, element* and *unit*, *my near – my far, but also yours, the others',* etc. The *ethical argument* is in relations of "convergence" and "resemblance" with the *epistemological argument* since both target the vast world of objects and relations, where the order or the chaos of the world or of the person performing the knowledge may pervade. The theoretical experience involves the intellect at all these levels of inference and scientific knowledge – of epistemological ethics without which we cannot understand and perceive any part of reality, be it scientific or political, philosophical or historical.

I have been skeptical for a while regarding the course of our past history under Communism and political detention based on criteria that elicit the idea of *objective* or *subjective truth*, however the debate between the historian Neagu Djuvara şi Boris Pahor[2] had a clarifying effect and determined me to understand that there is *a common face of Communism and political detention under the form of suffering and memory*, regardless of climate, geographical area, language, nationality and all this because the reaction of those who opposed to Communism was targeting a certain *historical fact* that was then presented as truth, as "certain truth" and as "ideological truth".

But "certainty represents, apparently, another dimension of truth, that cannot be assimilated with correspondence. The degrees of correspondence are not degrees of certainty and partial truth is not a probable truth. A partial truth

[1] Charles Pierce, *Semnificaţie şi acţiune / Significance and Action*, Editura Humanitas, Bucureşti, 1990, p. 241.

[2] *Through the Centenarians: Identity, Freedom and Democracy,* public debate between the Slovenian writer Boris Pahor and the historian Neagu Djuvara, organied by the Slovenian Embassy in Romania and Romanian Cultural Institute. http://www.icr.ro/pahor_djuvara.

may be certain or probable, and a probable truth may be total or partial."[1] Thus, there is the possibility to have the *plausibility* presupposition hovering over the *historical fact*, that can potentially have our agreement to be labeled as truth or not. *It is a matter that pertains to different degrees of plausibility*. As a consequence, our method is that of having identified the *problem*, of proposing the *epistemological ethic* as a method, as a *new theory among the theories of virtue*. In the trail of this methodological outline *new philosophical problems* will take shape because a new and revolutionary theory determines new "representations" and "perceptions" of some knowledge paradigms that are well established and well set in the scientific mindset - in *the dross of historic languages*.

References:

Al-Mukhatabat, Revista *Logic-Epistemology-Scientific Thought / Logic-Epistemology Scientific Thought* Journal, Nr. 11 July 2014, Editura Arabesques, Tunisia.
Botezatu, Petre, *Discursul metodei: un itinerar logico-filozofic / The Discouse of the Method: A Logical and Philosophical Itinerary*, Editura Junimea, Seria Humanitas, Iaşi, 1995.Botezatu, Petre, *Preludiul ideii de libertate morală / The Prelude of Moral Freedom*, Junimea Publishing House, Iaşi, 1976.
Collingwood, R. G., *Eseu despre metoda filosofică / An Essay on Philosophical Method,* Editura Humanitas, Bucureşti, 2015.
Dumitriu, Anton, *Eseuri. Alétheia. Cartea Întâlnirilor admirabile / Essays. Alétheia. The Book of Great Meetings,* Editura Eminescu, 1986.
Einstein, Albert, *Cum văd eu lumea. Teoria relativităţii pe înţelesul tuturor / The World as I See It. Relativity Explained,* Editura Humanitas, Bucureşti, 1996.
Engel, Pascal, Rorty, Richard, *La ce bun adevărul? / What's the Use of Truth?,* Editura Art, Bucureşti, 2007.
Galileo, Galilei, *Dialoguri asupra ştiinţelor noi / Dialogues Concerning Two New Sciences*, Editura Academiei Române, Bucureşti, 1961.
Găşpărel, Cornelia Margareta, *Etică epistemologică. Teorie şi proiect de studiu al omului / Epistemological Ethics. Theory and Study Project of Man*, Editura Academiei Române, Bucureşti, 2014.
Găşpărel, Cornelia Margareta, *Fundamente etice în domeniul intervenţiilor psihosociale Perspective critice asupra intervenţiilor psihosociale / Ethical Foundations in Psychosocial Interventions. Critical Perspectives on Psychosocial Interventions*, Editura Institutul European, Iaşi, 2014.

[1] Petre Botezatu, *Discursul metodei: un itinerar logico-filozofic / The Discouse of the Method: A Logical and Philosophical Itinerary*, Editura Junimea, Seria Humanitas, Iaşi, 1995, p. 295.

Grosu, Eugenia, *Tainele intelectului / The Mysteries of the Reason,* Editura Albatros, Bucureşti, 1881.
Ioniţă, Nicu, *Psihotrauma de detenţie şi urmările ei – mărturia personală şi ştiinţifică a unui supravieţuitor al experimentului Piteşti / Detention-induced Psycho-trauma and Its Consequences – the Personal and Scientific Confession of a Survivor of the Piteşti Experiment*, Fundaţia Academia Civică, Bucureşti, 2008.
Lupaşcu, Ştefan, *Universul psihic / The Psychic Universe*, Institutul European, Iaşi, 2000.
Marcus, Solomon, *Paradigme universale / Universal Paradigms*, Editura Paralela 45, Piteşti, 2011.
Noica, Constantin, *Devenire întru fiinţă, Scrisori despre logica lui Hermes / Becoming into Being. Letters on Hermes' Logic,* Editura Humanitas, Bucureşti, 1998.
Piaget, Jean, *Biologie şi cunoaştere, Eseu aupra relaţiilor dintre reglările organice şi procesele cognitive / Biology and Knowledge, Essay on the Relations between Organic Regulations and Cognitive Processes,* Editura Dacia, Cluj, 1971.
Pierce, Charles, *Semnificaţie şi acţiune / Significance and Action*, Editura Humanitas, Bucureşti, 1990.
Poli, Roberto*, Între necesitate şi responsabilitate / Between Necessity and Responsibility,* Editura Curtea Veche, Bucureşti, 2009.
Popper, Karl R. *Filosofia socială şi filosofia ştiinţei / Social Philosophy and Science Philosophy*, Editura Trei, Bucureşti, 2000.
Popper, Karl R., *Mitul contextului, În apărarea ştiinţei şi a raţionalităţii / The Myth of the Framework. In Defence of Science and Rationality,* Editura Trei, Bucureşti, 1998.
Popper, Karl R. and Konrad Lorentz, *Viitorul este deschis / The Future is Open*, Editura Trei, Bucureşti, 1997.
Rusan, Romulus, *Cronologia şi geografia represiunii comuniste în România. Recesământul populaţiei concentraţionare (1945-1989) / Chronology and Geography of Communist Repression in Romania. Census of the Concentrationary Population (1945-1989),* Editura Fundaţia Academia Civică, Bucureşti, 2007.
Stewart, Ian, *De ce frumuseţea este adevărul. O istorie a simetriei / Why Beauty is the Truth. A Hystory of Symmetry,* Editura Humanitas, Bucureşti, 2010.
Todorov, Tzvetan, *Abuzurile memoriei / The Abuses of Memory*, Editura Amarcord, Timişoara, 1999.

الكيمياء والتصوّف
إكسير المعادن وإكسير الأرواح

Asma **KHOUALDIA**
(Université de Kairouan)

Résumé Depuis l'aube des temps, l'homme n'a jamais cessé sa quête de la perfection. Une telle quête n'a été cependant possible qu'à travers le recours à la chimie et au mysticisme; deux disciplines, entre autres, entre lesquelles nous avons tenté de tisser des liens qui semblaient extrêmement précis. Semblables aux chimistes qui étaient subjugués par l'extraction de matériaux biologiques et de leurs transformations, les soufis, quant à eux, étaient impressionnés par leurs découvertes, y compris l'élixir, ce breuvage qui les mènerait au bonheur et à la preuve irréfutable de leur bienfaisance (la dignité). Et c'est pour cette raison que les soufis ont cru fermement que parmi les transformations les plus recherchées sont celles de l'âme, principal facteur favorisant l'auto-transfert jusqu'au trépas. Ce dont nous avons traité dans cette comparaison entre ces deux formes de savoir, et ce que nous avons démontré comme étant leurs limites, justifient la nouvelle approche réalisée et soutenue dans cette étude.

Mots-clés : chimie, mysticisme, soufis, élixir, comparaison des savoirs.

الملخص .لطالما سعى الإنسان – منذ وجوده - إلى تحقيق الترقّي والتمكّن من الكمال، تمّ ذلك عبر علوم جمّة الكيمياء والتصوّف إحداهما. علمان تدبّرنا ما بينهما من صلات بدت غايةً في الدقّة والتّشابه، فمثلما ظلّ الكيميائيون مأخوذين بالمواد المستخرجة من الأنظمة الحيّة أو المحوّلة منها، ظلّ الصّوفيّة مدهوشين من كشوفاتهم بما هي إكسير الأكاسير، بها يعرجون إلى السّعادة، وبها يستدلّون على كراماتهم.ولهذا أُخذ الصّوفيّة بفكرة تحويل العناصر معتبرين النفس العنصر الأجدر بالتحويل وصولا إلى الفناء. إنّ الجديد في طرحنا هذا هو المقارنة بين العِلمين وبيان حدود القدرة فيهما تعبيرا ومصطلحا وإنجازا.

كلمات مفتاحية : كيمياء، تصوف، متصوفة، اكسير ، مقارنة اشكال المعرفة.

Abstract Since his existence, man has tried to reach perfection through different sciences among which are chemistry and Sufism. While chemists concern themselves with the substance of which matter is composed, the investigation of their properties and reaction, Sufis concern themselves with spiritual transmutation as a way to Happiness and Immortality. This paper studies the affinity between chemistry and Sufism and the achievements and limitations of each.

Keywords : chemistry, mysticism, elixir, comparaison between knowledges.

المقدمة

لطالما سعى الإنسان -منذ وجوده -إلى تحقيق الترقّي والتمكّن تدريجيّا من الكمال، تمّ ذلك عبر جهود جمّة وأعمال شاقّة السّمتُ فيها هو اكتساب المعرفة والتوصّل إلى حقائق الأشياء وأكناهها. وإذا اعتبرنا أن للعلم غايتين: إحداهما عقلية، وهي التحرّي عن الحقيقة لذاتها ومحاولة الوصول إلى كُنْهِ هذا العالم ومعرفة سرّ الوجود ونظام الكون، والأخرى إنسانية وهي خير البشر واستحكام الحضارة، نتبيّنُ أنّ الكيمياء والتصوّف كلاهما ساهما في هذا الجهد الإنسانيّ ولكن بمنهجين مختلفين ولهذا تحديدا سنرصد العلاقة بين الكيمياء إكسيرًا للمعادن[1] والتصوّف إكسيرا للأرواح.

والواقع أنّ جوانب التشابه بين النّشاط الذي مارسه الإنسان في الكيمياء والنّشاط الذي مارسه في التصوّف أساسها الخيال ملكَةً ذهنيّةً لازمتهُما وخَصّبتْهُما، فقد ظلّ الكيميائيون

[1] زعم السّالكون طريقة جابر من أهل الكيمياء أن هناك بزورًا تفعل في الجسم فعل الخميرة في العجين، وتقلبه ذهبًا . وهذا ما يعبرون عنه بالإكسير، ويسمونه أيضًا الصبغ والحجر المكرم أو الكريم والإفرنج منهم يقولون له الحجر الفلسفي، أو حجر الفلاسفة، أو الإكسير الكامل، والعلم الأكبر، والعنصر الخامس . وإذا لم يقلب الجسم المعدني إلا للفضة فقط سموه حجر الفلاسفة الصغير، والإكسير الناقص، والعلم الأصفر. وأختلفوا في ماهية هذا الإكسير، إلا أن فحول المشتغلين بعلم جابر من مسلمين وإفرنج يشهدون على وجوده بالفعل لا بالقوة فقط، وعلى مشاهدتهم له واستعمالهم إياه. قال ابن بشرون في هذا المعنى: "ينبغي لطلاب هذا العلم أن يعلموا أولًا ثلاث خصال، أولها :هل تكون؟ والثانية : من أي شيء تكون؟ والثالثة : كيف تكون؟ فإذا عرف هذه الثلاث وأحكمها فقد ظفر بمطلوبه، وبلغ نهايته من هذا العلم . فأما البحث عن وجودها والاستدلال على تكونها، فقد كفيناك بما بعثنا به إليك من الإكسير" .

روجي الخالدي: الكيمياء عند العرب، ط:1، مؤسّسة الهنداوي للتعليم والثقافة، مصر 2012. ص:59.

دائما مأخوذين بالمواد المستخرجة من الأنظمة الحيّة، مثلما ظلّ الصّوفيّة مأخوذين دائما بالمِنن الإلهيّة مدهوشين من كشوفاتهم بما هي إكسير الأكاسير، بها يعرجون إلى السّعادة وبها يستدلّون على كراماتهم .

لقد أفاد الصّوفيّة من أُسّ فكرة الكيمياء، ألا وهي إحداث تغيير في نسب العناصر الأربعة (النّار والماء والتّراب والهواء) لتخليق مادّة جديدة جرّاء، واستلهموها لتحقيق تلاشي الجسم في الحقّ بعد انسلاخ النفس عن عالمها التّرابيّ الكَدِرِ الثّقيل. وبالتّالي يصير التصوّف سيرورة تفُكّ النّفس من إسارِها بعد أن غشيها البدن بكثافته. إنّ فناء الجسد بهذا الاعتبار هو حقيقة الحقائق بحثا وإكسير الأكاسير سرّا.

1 في ماهية الكيمياء

إختلف مؤرخو العلم حول أصل كلمة كيمياء. فمنهم من ردها إلى الفعل اليوناني chio الذي يفيد السبك والصهر، ومنهم من أعادها إلى كلمتي kmt , chem المصريتين ومعناهما الارض السوداء، ومنهم من يرى أنها مشتقة من كلمة كمى العربية أي ستر وأخفى[1]. ويقول الخوارزمي في كتابه "مفاتيح العلوم": اسم هذه الصناعة، الكيمياء، وهو عربي، واشتقاقه من كمي يكمى، إذا ستر وأخفى، ويقال: كمى الشهادة يكمها، إذا كتمها[2]. أما المعاجم الأجنبية فقد فرّقت بين مصطلحين: الكيمياء وهي العلم المعروف (Chemistry) وعلم أخر (Alchemy) وهو يرمز إلي ما كان يسمّي عند العرب بعلم السيمياء وهو علم كيمياء القرون الوسطي. وربما سموه (الخيمياء) لقرب اللفظتين لفظاً ومعني[3]. وقد تمّ التفريق بين المصطلحين من خلال أداة التعريف، فـ Alchemy اسم يطلق على علم الكيمياء القديم، وكيمياء/ Chemistry إسم يطلق على علم الكيمياء الحديث، الذي أحكم

[1] جابر. بهزاد: الكافي من تاريخ العلوم عند العرب، دار مصباح الفكر 1986، بيروت، ص:61.

[2] الخوارزمي(محمّد بن أحمد بن يوسف) ، (ت287هـ): مفتاح العلوم، تحقيق: إبراهيم الأبياري، ط:2،دار الكتاب العربي، بيروت، 1989. ص:277.

[3] *The American Heritage R Dictionary of the English Language*, Fourth Edition Copyright 2000. By Houghton Mifflin Company. Updated in 2009. Published by Houghton Mifflin Company.

قواعده العلاّمة الفرنسيّ لافوازييه/ Antoine Lavoisier (1843-1794)في النصف الأخير من القرن الثامن عشر[1].

ويعرّف ابن خلدون الكيمياء بأنها "علم ينظر في المادة التي يتم بها كون الذهب والفضة بالصناعة"، ويشرح العمل الذي يوصل إلى ذلك[2].

لقد تأثرت الكيمياء العربية بالخيمياء اليونانية والسريانية وخاصة بكتب دوسيوس وبلنياس الطولوني الذي وضع كتاب "سرّ الخليقة ". غير أن علوم اليونان والسريان في هذا المجال لم تكن ذات قيمة لأنهم اكتفوا بالفرضيات والتحليلات الفكرية. وتلجأ الخيمياء إلى الرؤية الوجدانية في تعليل الظواهر، وتستخدم فكرة الخوارق في التفسير، وترتبط بالسحر وبما يسمى بعلم الصنعة، وتسعى إلى تحقيق هدفين هما:

أ - تحويل المعادن الخسيسة كالحديد والنحاس والرصاص إلى معادن شريفة كالذهب والفضة عن طريق التوصل إلى حجر الفلاسفة.

ب - تحضير أكسير الحياة، وهو دواء يراد منه علاج كلّ ما يصيب الإنسان من آفات وأمراض، ويعمل على إطالة الحياة والخلود[3].

2. أصالة الكيمياء في التصوف

ردّ ماسنيون/ Louis Massignon(1962-1883) وُرود التصوّف لقبا مفردا للمرّة الأولى إلى جابر بن حيّان(ت200هـ)، وذلك في النصف الثاني من القرن الثامن الميلادي، "إذ نُعت به جابر بن حيّان وهو صاحب كيمياء شيعيّ من أهل الكوفة، له في الزهد مذهب خاصّ "[4].

وفي ذات السّياق تلازم النعتان: الكيميائيّ-الصّوفي عند جابر بن حيّان، فتقلّد -كما ذو النّون من قبله- علم الباطن الذي يطلق عليه القفطيّ مذهب المتصوّفين من أهل الإسلام[5].

فقد كان يثق في قيمة التجريب لكنّه لم يستطع التخلّص تماما من التأثيرات الباطنيّة

---

[1] روجي الخالدي : الكيمياء عند العرب، مرجع سابق، ص:11.

[2] جابر بهزاد : الكافي من تاريخ العلوم عند العرب ، الاتّحاد العربي للملكيّة الفكريّة،1986 بيروت، ص61.

[3] جابر. بهزاد: الكافي من تاريخ العلوم عند العرب ،ص61.

[4] لويس ماسنيون : التصوف، ، دار الكتاب اللبناني، 1984 ، ص:26 .

[5] التصوف الإسلامي وتاريخه، ترجمة : أبو العلا عفيفي، ص: 11.

الصّوفيّة التي كانت مسيطرة زمنئذٍ. ومجموع الرّسائل المنسوبة إلى جابر مكتوبة بأسلوب ممعن في الصّوفيّة[1].

واستتباعا لهذا التأصيل ذي السمت الشّيعي ذهب كلّ من بي كراوس/P. Kraus و م. بلاسنر /M. Plessner إلى أنّ جابر بن حيّان من غلاة الشّيعة...ويعتقد مثل غلاة النصيرية عقيدة تناسخ الأرواح"[2]. وعنه ينقلان إقراره بأخذه جميع علومه عن جعفر الصّادق معدن الحكمة، وأنّه ليس إلاّ النّاقل المُمحّص والمرتّب، حتّى عدّه الشّيعة من أعيانهم[3].

ولمّا كان اتّهام الصّوفيّة بممارسة الكيمياء بابا للطعن في سلامة إيمانهم ورميهم بالزندقة والشّعوذة فإنّا نرى الأمر أوضح وأقسى في التجارب الصّوفيّة الثّائرة من مثل تجربة الحلاّج، فهو من أرباب السّحر والكيمياء[4]، يحرّك يده فينثر على من عنده دراهم[5]، ويدخل يده في كُمّه فيخرجها مملوءة مسكا، ويقول :" هذا ترابٌ اجعليه في طيبك...."[6].

هكذا نتبيّن أنّه بين التصوّف مجاهَدَةً ورياضاتٍ وبين الكيمياء ممارسةً واختباراتٍ قُدّم جابر بن حيّان نموذجا صوفيّا/ أستاذًا سار على نهجه اللاّحقون بنِسب متفاوتة "متقلّدين علم الباطن مذهبَ المتصوّفين من أهل الإسلام من قبيل الحارث المحاسبيّ وسهل بن عبد اللّه التستسري ونظرائهم"[7].

والجدير بالملاحظة أنّ كثيرا من كرامات الصّوفيّة تمّ تقبّلها زكورة كيميائيّة، وبالمثل تماما كثير من الخدع/الحيل البسيطة عُدّت من الكرامات، الأمر كان وباستمرار مثار ريبة وشكّ وحرص على الإخفاء والتعتيم، لا تسترّا فحسب، بل خوفا أن تشيع الأسرار بين من

---

[1] كاتي كوب و هارولد جولد وايت : إبداعات النّار، تاريخ الكيمياء المثير من السّيمياء إلى العصر الذريّ، ترجمة: فتح اللّه الشّيخ و شوقي جلال، عالم المعرفة (سلسلة كتب ثقافيّة شهريّة يصدرها المجلس الوطني للثقافة والفنون والآداب بالكويت)، العدد: 26، الكويت 2001. ص: 79.

[2] ننظر دائرة المعارف الإسلاميّة، أردو، ج:7 ، مقال: "بي كرؤواس" و " م. بلنسر".

[3] إحسان إلهي ظهير: التصوّف: النشأة والمصادر،ط:1،إدارة ترجمان السنّة، لاهور 1986. ص:139.

ننظر ترجمته الوافية في أثر السيّد محسن الأمين الشيعي : أعيان الشّيعة،ج:15،دار المعارف للمطبوعات ، بيروت، ص ص:87-88.

[4] الذهبي : سير أعلام النبلاء، ج:14، تحقيق : أكرم البوشي،ط:1 ، مؤسّسة الرّسالة، بيروت 1983، ص:322.

[5] المرجع السّابق، ص: 312.

[6] المرجع السّابق، ص:338.

[7] القفطي: أخبار الحكماء،ص:111.

ليسو أهْلا لها وممّن يقصرون التقصير كلّه في فهمها وتقييمها، ولهذا تحديدا قال الحلاّج :" أسرارنا بكر لا يفتضّها وهم واهم ولا فهم فاهم"[1]. ولعلّ هذه المعطيات المتداخلة هي التي كانت سببا في انتهاج خطاب طلسميّ اختصّ به الصّوفيّة انزاح عن المدلول الممكن إلى المدلول المعمّى فكانت السّيمياء هي السّبيل.

3 . من الكيمياء إلى السيمياء

لئن كانت كلمة "سيمياء" في كل من القران الكريم و المعاجم العربية والشعر العربي القديم ذات مدلول واحد وهو العلامة فإنّه بالعودة إلى المصطلح علمًا قديما وتحديدا عصر العالم الجليل جابر بن حيان نراه من السحر حيث "أنفق وقتا كبيرا وجهودا كثيرة في إحالة الأجسام النوعية من صورة إلى أخرى، فوقع في طلب المستحيل، وتحول عنده علم الكيمياء إلى علم السيمياء الذي كان في مفهوم ذلك العصر يقترب من السحر، كما تحول علم الفلك عند العرب إلى علم التنجيم"[2]. والجدير بالاهتمام في هذا السّياق هو هذا الرّبط الغامض بين علم السّيمياء والسّحر في تجربة جابر بن حيّان، بل واعتبار السّيمياء صناعة تابعة لعلم الكيمياء "لأن إحالة الأجسام النوعية من صورة إلى أخرى إنما يكون بالقوة النفسية لا بالصناعة العملية فهو من قبيل السحر"[3]. أو لنقل صارت السّيمياء بديلا تعويضيّا عمّا قصُرت الكيمياء على تحقيقه من مثل تحويل المعادن الخسيسة إلي معادن ثمينة، ولذا كان مفهوم هذا العلم وقتئذ قريباً من السحر.

يقول صاحب كتاب أبجد العلوم : " السيمياء هي اسم لما هو غير حقيقي من السحر ... وسيمياء لفظ عبراني معرب أصله (سيم به)[4] ". وجاء في كتاب: كشاف اصطلاحات الفنون، أن السيمياء هي "علم تسخير الجن... وأنّ بعض أنصاف العلماء

[1] الحلاّج : الأعمال الكاملة , تحقيق: قاسم محمّد عبّاس، ط:1، دار رياض الريس للكتب والنشر، بيروت 2002. نصوص الولاية ، ص: 252.

[2] مجلة التراث العربي: عدد: 95، منشورات اتحاد الكتاب العرب، دمشق، 2004 ، ص ص: 15 - 16.

[3] صديق بن حسن القنوجي: أبجد العلوم ،جزء:2 ، دار الكتب العلمية بيروت، لبنان 1296 هـ ، ص ص: 319 ،320.

[4] المرجع المرجع، ص: 392.

أدخلوا تحت السيمياء علوماً عدة منها علم أسرار الحروف وهو تفاريع السيمياء، ولا يوقف علي موضوعه ، ولا تحاط بالعدّ مسائله"[1] .

وبالتّالي فإنّا نلحظ تباين الآراء بشأن الهدف من ممارسة هذا العلم ، ففي أكثر الأحيان كان الهدف إنتاج الذهب، ومع ذلك قد يكون الهدف طبيّا من قبيل المحافظة على الشّباب وتجديده وبالتالي فقد اختلفت تقنيات التحوّل، إذ نجد بعض السّيميائيين قد اتّخذوا طريقا عمليّا وذلك بالذوبان والصّهر والاتّحاد والتقطير واستخدم البعض الآخر التعاويذ السحريّة والطّلاسم. بل وقد يستخدم الاثنين معا.

ولقد حاول الممارسون -بكلّ الطّرق- إخفاء وسائلهم ونتائجهم جاعلين الممارسة مفعمة بالسرّية والغموض والحوادث الغريبة ، لذا فقد تعرّضوا إلى متاعب كبيرة وتضييقات جمّة كلّما زاد شغفهم بتجاربهم وطلسموا نتائجهم. وهنا تحديدا يمكننا تفهّم الجهد المرهق غير المشكور الذي بذلوه.

4 بين السيمياء بمعناها اللّغوي والسيمياء بمعناها الطلسمي

تحدث كلّ من الغزالي وابن سينا عن اللفظ بوصفه رمزا وعن المعنى بوصفه مدلولا. ولابن سينا مخطوطة عنوانها "كتاب الدر النظيم في أحوال علوم التعليم", ورد فيها فصل تحت عنوان: علم السيمياء يقول فيه :"علم السيمياء يقصد فيه كيفية تمزيج القوى التي هي جواهر العالم الأرضي ليحدث لها قوة يصدر عنها فعل غريب ،وهو أيضا أنواع فمنه ما هو مرتب على الحيل الروحانية والآلات المصنوعة على ضرورة عدم الخلاء ومنها ما هو مرتب على خفة اليد وسرعة الحركة ،والأول من هذه الأنواع هو السيمياء بالحقيقة والثاني من فروع الهندسة ..."[2]

أما ابن خلدون فقد خصص فصلا في مقدمته لعلم أسرار الحروف ويقول عنه :" المسمى بالسيمياء نقل وضعه من الطلسمات إليه في إصطلاح أهل التصرف من غلاة المتصوفة ،

---

[1] محمّد عليّ التهانوي : كشاف اصطلاحات الفنون والعلوم، تحقيق: رفيق العجم وعليّ دحروج،ط:1،مكتبة لبنان 1996،مجلّد: 1، ص: 999.

[2] انظر تقديم عز الدين مناصرة لكتاب، ميشال أريفيه جان لكود جيرو : السيميائية، أصوله وقواعدها، ترجمة رشيد ب مالك، مراجعة وتقديم: عز الدين المناصرة منشورات الاختلاف الجزائر 2003، ص: 23.

فأستعمل إستعمالا في الخاص وظهر عند غلاة المتصوفة عند جنوحهم إلى كشف حجاب الحس، وظهور الخوارق على أيديهم والتصرفات في عالم العناصر وتدوين الكتب والاصطلاحات ومزاعمهم في تنزيل الوجود عن الواحد... فحدث بذلك علم أسرار الحروف وهو من تفاريع السيمياء لا يوقف على موضوعه ولا تحاط بالعدد مسائله، وتعددت فيه تآليف البوني وابن العربي، ومن فروع السيمياء عندهم استخراج الأجوبة من الأسئلة بارتباطات بين الكلمات حرفية يوهمون أنها أصل في المعرفة..."[1].

وبالرغم من غموض بعض ما جاء في هذه النصوص،إلا أنه يكفينا منها أنها دليل ساطع على ريادة علماء العربية -قبل دي سوسير /Ferdinand de Saussure بقرون طويلة - وتفصيلهم له بدقة تحدّد أنواعه المختلفة، وتبين ارتباطاته بعلوم أخرى مثل الهندسة والطب والفلك والتصوف والسحر والطلاسم.

وهكذا نجد أن السيمياء موجودة في علوم المناظرة والأصول والتفسير والنقد، فضلا عن ارتباطها الوثيق بعلم الدلالة الذي كان يتناول اللفظة وأثرها النفسي كذلك، وهو ما يسمى بالصورة الذهنية والأمر الخارجي عند المحدثين، فالواقع يقول أن :"المساهمة التي قدمها المناطقة والأصوليون والبلاغيون العرب مساهمة مهمة في علم الدلالة انطلاقا من المفاهيم اليونانية، وقد كانت محصورة ضمن إطار الدلالة اللفظية، وتوصل العرب إلى تعميم مجال أبحاث الدلالة على كل أصناف العلامات، ومن الواضح أنهم اعتمدوا اللفظية نموذجا أساسيا. كذلك فأقسام الدلالة عند العرب قريبة من تقسيم بيرس، وتبقى أبحاثهم التي تتناول تعيين نوعية دلالة الألفاظ المركبة أو بوجه عام العلامات المركبة وتحليل الدلالة المؤلفة من تسلسل عدة توابع دلالية مدخلا جديدا ذا منفعة قصوى للسيمياء المعاصرة "[2].

[1] ابن خلدون: المقدمة ، الجزء الأول،الطبعة الثالثة ،دار نهضة مصر 1979، ص:556.

[2] عادل فاخوري : علم الدلالة عند العرب، دراسة مقارنة مع السيمياء الحديثة،دار الطليعة، بيروت ط 2 1994م ص: 70.

بين السّيمياء تمزيجا للقوى الكامنة في جواهر العالم الأرضيّ استخراجا للقوّة الكامنة فيها[1] وبين السّيمياء علما استسراريّا تراوح بين الشّعوذة و "علم أسرار الحروف" تتمظهر السّيمياءُ محايثةً لعلم الكيمياء متساوقة معه.

وهذا التحوّل موصول في نظرنا سببيّا بالتطوّر النوعيّ الذي شهده التصوّف مع غلاته ممّن جعلوا علم أسرار الحروف مرادفا لعلم السيمياء، علما طلسميّا جنحوا بموجبه إلى كشف حجاب الحس وإظهار الخوارق والتصرف في عالم العناصر، ودوّنوا الكتب والاصطلاحات. وهو لاتّصاله بالتصوّف ظلّ في إطار التجربة الفرديّة ذات المنحى التّصاعديّ المترقّي بالرّياضات والمجاهدات.

5 . **كيمياء المواد، وكيمياء النفوس**

لطالما عيب على الصّوفيّة اهتمامهم بالكيمياء علما، وطُعن في سلامة إيمانهم وسرائرهم بسببه. فلقد تراوحت الكيمياء عندهم بين ألعاب الخفّة والكرامات، ممّا أثارت معارضة السّلفيين من الصّوفيّة الذين رفضوا تقديم هذه الأعمال علنيّةً[2]، إذ هي في نظرهم مِن يُمنع إفشاؤها علنًا جَهارا، وذلك تحت طائلة جريمة إفشاء سرّ الرّبوبيّة والجسارة الوَقِحَةِ.

ولقد ذهب بعض الصّوفيّة إلى اعتبار هذه الكيميائيات المتعثّرة والبسيطة مجرّد وسائط تُحبّب النّاس في التصوّف وتقوّي قبولهم به وإقبالهم عليه. ولئن كان وازع بعض المريدين من صُحبتهم شيوخهم هو الطّمع في تعلّم سرّ كيميائياتهم/قُدراتهم الخارقة، فإنّا نرى الشّيوخ قد استثمروا هذا الوازع ونمّوه، بل ومحّضوهُ من كيمياء المعادن والخواصّ إلى كيمياء النّفوس. وهذا ما كان سببا مُكثِرا لتُبّاع الشّيوخ، فقد أثر عن الحلاّج مثلا أنّه دخل مكّة ومعه أربع مئة رجل[3].

---

[1] ميشال أريفيه وآخرون : السيميائية أصولها و قواعدها ، ترجمة: رشيد بن مالك، منشورات الاختلاف ، الجزائر ، 2002 ، ص: 23 .

[2] Louis Massignon : *La Passion de Husayn ibn Mansur Hallâj*; martyr mystique de l'Islam exécuté à Bagdad le 26 mars 922; Etude d'histoire religieuse. T: I , *La vie de Hallaj*, nouvelle édition. Gallimard 2010. Paris.p. 342.

[3] شمس الدّين الذهبي: سير أعلام النّبلاء،ج.14، تحقيق: أكرم البوشي، ط:1، مؤسّسة الرّسالة، بيروت 1983.ص:320.

إنّ استبيان الغامض وكشف الأستار عن المحجوب ونُشدان الترقّي والكمال ....خصائص/ وشائج قاربت بين كيمياء المواد وكيمياء النفوس، السّمت عندهما واحد والمنهج مختلف. كلاهما يحارب الكُدورات والشّوائب. الكيمياء عبر العقاقير والأصباغ والمستحضرات، والتصوّف عبر الرّياضات والسّياحات والصّوم وصنوف التّخلية....الأوّل يصقل المعدن والثاني يصقل النّفس من شوائبها العالقة من مثل الكِبر والعَجب والفخر والخيلاء والبخل والغش والبغض والحرص والحقد والحسد والضجر والجزع والهلع والطمع والجمع والمنع والجبن والجهل والكسل والجفاء والسفه والحدة والطيش والغلواء والتحكم والظلم والعداوة والمنازعة والمعاندة والمغالبة واللؤم والغدر والخيانة والشماتة....منهج الأوّل تجريبيّ ومنهج الثاني تعليميّ.

وما كيمياء النفوس إلاّ مراحل مَحْوٍ مدروسة تُنقّى فيها النفس من علائقها الماديّة عبر تمثّل "طبيعة الكون الكائنة في كيفيات الحركة والسّكون وفي امتزاج العناصر الأربعة (حرارة وبرودة ويبوسة ورطوبة) "[1].

إنّ موضوع علم الكيمياء إذن هو تحليل الجسم بالعمليات الكيميائيّة إلى العناصر التي يتألّف منها. ولقد جاء في التاريخ العام أنّ الرازي وجابر أول من وضعا أسُسَ الكيمياء الحديثة وحاولا كشف الإكسير الذي يهبُ ألحياة ويعيد الشبابَ، مثلما حاولا معرفة حجر الفلاسفة الذي يحوّل المعادن إلى الذهب. ولم تذهب هذه الأبحاث الوهمية سدى؛ لأنهم عرفوا بها التقطير والتصعيد والتجميد والحلّ، وكشفوا الكئول من المواد السكرية والنشوية الخاثرة[2]. ناهيك عن تقسيم الكيمياويات تبعا لأصلها(حيوانيّة، معدنيّة، نباتيّة...) وتقسيم أجسام الفلزات (قابلة للانصهار ويمكن طرقها) وأرواح الكبريت والزرنيخ والزئبق (مواد تتطاير في النّار)...

كما أنّ للإكسير/حجر الفلاسفة خواصّ علاجيّة دوائيّة من قبيل إطالة الأعمار، أمّا إذا رُشّ أو صُبّ منه على المادّة القابلة للاستحالة صيّرها ذهبًا أو فضّة، وبهذا الاستتباع تكون

[1] / مختار رسائل جابر بن حيّان، عُني بتصيحه ونشره: ب. كراوس ، مكتبة الخانجي ومطبعتها . القاهرة 1354 هـ ص:15.

[2] / المرجع السّابق، ص:8.

غاية الكيمياء تحقيق تغيير مقصود لذاته قصد تحقيق تغيير في أمر آخر، وبالتّالي حصولها متوقّف على ممارسة العمل تكميلا للتفكير وتتويجا له.

ولمّا كان التصوّف علما يُعرف به الحقّ سبحانه بأسمائه وصفاته، به تُنقّى الأخلاق والمعاملات وتُخلّى النفس من أوصاف البشريّة لإظهارها بنعوت الرّبوبيّة وتُصفّى البواطن من الرّذائل وتُحلّى بأنواع الفضائل، فإنّ كلّ ما من شأنه أن يُعين على تحقيق هذه الغاية يحرصُ الصّوفيّة على الاستفادة منه واستلهام مناهجه، لذا كثيرا ما استحضر الصّوفيّة أساليب الرّياضيين العدديّة والهندسيّة وأساليب الأدباء الرّمزيّة والتصويريّة وأساليب الشّعراء التخييليّة والتعبيريّة....وهو ما يسمح لنا بالقول إنّ العلوم تتغذّى من بعضها البعض وتتلاقح مناهجها لأنّه مهما تباعدت غاياتها فإنّ الغاية واحدة ألا وهي تحقيق جُذوة الكمال.

وفي سياق موازٍ عدّ الصّوفيّة الكيمياء صنعة إلهيّة وفرعا من فروع العلوم الرّوحانيّة، وقالوا إنّه في اصطلاحهم أحد العلوم الملهمة السريّة كالسّيمياء والسّحر والتنجيم والطلسمات، وُجِدَ في النوع الإنسانيّ منذ كان عمران الخليقة ووجودها ملازمٌ وجودَ العمران.

6 . الطّلاسم أُسا تعبيريا عن السيمياء الصوفية

ما السّيمياء الصّوفيّة إلاّ ضربًا من ضروب القراءة تستهدي بالقرآن و تتقوّى بالرّياضات والمجاهدات، ولعلّي لا أجانب الصّواب إذا اعتبرت قوله تعالى: " إنّ في ذلك لآيات للمتوسّمين " [1]. دليلا مهمّا استهدى به صوفيّة كُثُرٌ.

غير أنّ الأمر لا يقف عند هذا الحدّ، ففضلا عن كلام الله اللّغويّ / القرآن يرى الصّوفيّة أنّ كلمات الله منشورة في الوجود، ونجدهم يوازنون بين الكلام اللّغويّ والكلام الوجوديّ وضرورة قراءتهما معًا بل وفهم كلّ منهما في ضوء الآخر [2].

---

[1] الحجر (15) ، الآية : 75 .

[2] القاضي عبد الجبّار : شرح الأصول الخمسة، تحقيق : عبد الكريم عثمان ،ط: 1، مكتبة وهبة،القاهرة 1966، ص ص : 5 - 66 .

إنّه في ظلّ هذا الرّبط المحكم بين العلامة المعمّاة ودلالاتها الكونيّة والإيمانيّة لا يصير الرّمز أمارةً على اكتناز المعاني فحسبُ بل هو صونٌ لها وتضييقٌ على سُبل بلوغها ، حتّى أنّ فكّ طلاسمها صار علما تماما كعلم وضْعها. وهنا يكون التعقيد مضاعفًا لأنّ تحصيل الدّلالة لا يكون بالتحوّل من الظّاهر إلى الباطن بل بمناجاة الرّموز والتّماهي معها فتصير الذّات تماما كما الرّمزُ رمزًا.

ما الحرف وما العدد إذن إلاّ علامةٌ تمارسُ أقصى سُبُلِ التضييق على المتقبّلين لأنّها دالّةٌ بشروط وغيرَ مُعَدّةٍ لتداولٍ واسعِ الآفاق مثلما أنّها لا تكتنزُ سرّا فحسب بل قدرةً على التصرّف في النّفوس والأكوان والطّبائعِ.

وإنّه بتحوّل الرّمز من الإغراب إلى التّعمية صار التصوّف من العلوم السرّية التي تعِزّ الكتابة فيها مثلما يعزّ فهمها ناهيك عن كشفها وإظهارها. وإنّ استخراج المعمّى من الرّمز الصّوفي هو فكّ لتشفير، تشفير ماعاد مداره الكلمة بل الحرف بل النّقطة التي عليه، صارت كلّها رموزا وعلوما .

بهذا الاستتباع صار ت للحرف صفات وحالات ومادّة وتفسير وتأويل كما له قوّة عقليّة تشير إلى العالم الرّوحانيّ والعالم الجسمانيّ . وقد ذهب القلقشندي (ت821 ه) إلى اعتبار استخراج المعمّى ترجمةً [1].

ولعلّنا لا نجانب الصّواب إذا سلّمنا بأنّ تمحّض الرّمز الصّوفي من مدلوله التعبيريّ الإيمانيّ إلى مدلول إنجازيّ {من قبيل سحر الحروف وسحر الأعداد وسحر الطّلاسم وسحر الأوفاق (أو الجداول السّحريّة)وسحر الأسماء وسحر الدّعوات...}مردّه ما رافق الخطاب الصّوفي منذ بداياته من قدرات خارقة تجلّت في الكرامات التي اختصّ بها بعض الصّوفيّة والتي جانست المعجزات التي اختصّ بها الأنبياء، وبالتّالي فإنّ الخطاب الصّوفي

[1] قال : " .....الكتابة بقلم اصطلح عليه المرسلُ والمرسَلُ إليه لا يعرفه غيرُهما ممّن لعلّة يقف عليه، ويسمّى التّعمية، وأهل زماننا يعبّرون عنه بحلّ المتَرجَم ، وفيه نظرٌ، فإنّ الترجمة عبارة عن كشف المعمّى، ومنه سُمّي المعبّرُ لغيره عن لغة لا يعرفُها بالتّرجُمان، وإليه ينحلّ لفظ الحلّ أيضًا، إذ المراد بالحلّ إزالة العُقد، فيصير المرادُ بحلّ المتَرجَمِ أو حلّ الحلّ، ولو عُبّر عنه بحلّ المعمّى لكان أوفقَ للغرض المطلوب".

أحمد بن عليّ القلقشندي: صبح الأعشى في صناعة الإنشاء، وزارة الثّقافة والإرشاد القومي، المؤسّسة المصريّة العامّة 1985(نسخة مصوّرة عن الطّبعة الأميريّة)، ج: 9، ص: 230.

لازمته منذ بداياته طقوس مخصوصة سواء أكان شفويا أو كتابيا أضفت عليه هالة من القداسة استمدّها من الخاصيّة السّحريّة للّغة العربيّة بما هي لغة القرآن الكريم ، ولذلك نجد في أغلب الوصفات المكتوبة أو الشفوية آيات من كتاب الله وأسماء الله الحسنى جنباً إلى جنب مع الأرقام أو الرموز الغامضة لاعتقادهم أن اجتماعها كلها في نفس الوقت والمكان يُحدِث الأثر المطلوب.

ولئن شاع البحث في السّحر بما هو أحد مفاهيم الخطاب الأنثروبولوجي بما هو مجموعة من الممارسات والتمثّلات التي نادرا ما يتمّ تحديدها قياسا بالعلم أو قياسا بالدّين ، فإنّا سنحيدُ عن هذا التوجّه قليلا لننظر في الرّمز الصّوفي بما هو طلسم سحريّ ذو قدرة إنجازيّة عالية، قدرة حرص الصّوفيّة على تنقيتها من كلّ شائبة إيمانيّة . وسنتطرّق في هذا المبحث إلى جانبين :

الأوّل : الرّمز بما هو اكتناز قبليّ للعلوم والقدرات (حروف ، أرقام ، أوقاف.....) أي الرّمز بما هو كمُونُ مُسبق للقدرة ولا دخل للصّوفي فيها إلاّ من حيث العلم بها .

الثاني : الرّمز بما هو إنجازٌ، تصريف لهذه القدرة / إنفاذها في الموجودات باعتبار قوّة طلسمها.

وقبل ذلك نبيّن أنّ الطلاسم في التصوّف على ثلاثة أضرب الجامع بينها إقرارٌ قبليّ بانطوائها على خواصّ سحريّة :

-طلاسم عدديّة (توضع أعداد الحروف بدلا عن الحروف).

-طلاسم حرفيّة (توضع الحروف بأعداد وأوضاع واتّجاهات وأعداد محسوبة).

-طلاسم لغويّة (عبارات ملغزة ترتّب فيها الحروف على غير سياقاتها المألوفة والمفهومة).

7. الإكسير ، بين كيمياء المواد وكيمياء النّفوس

إنّا نحسب التصوّف أقرب العلوم إلى الكيمياء لاسيما إذا اعتبرناها منهجا متكاملا في النّظر إلى الأشياء وفهمها وتطويعها. وإذا اعتبرنا التصوّف منهجا تهذيبيّا في التديّن والأخلاق، بل والطبّ الرّوحيّ، وهذا الأمر متّسق مع فكرة الكيمياء الأساسيّة، ألا وهي محاولة تحويل جوهر ألأشياء، فكما يمكن تغيير جوهر الموادّ المحسوسة وطبيعتها، تُغيّر

الطّبائع والنفوس، وعليه تترقّى النّفسُ "الخسيسة" متخلّصة من كدوراتها ورعوناتها وشوائبها....لتتحوّل بفعل الرّياضات والمجاهدات نفسًا نقيّة، كأنّها الذّهب الصّقيل المسبوك انتقشت فيه حقائق الأمور الإلهية حينها تكمُلُ النفسُ باكتساب الفضائل والتجرد عن علائق الدنيا، والإكباب بجملة الهمّة على التفكر في الأمور الإلهية حتى يكشف الإلهام تجليها، والوصول إلى ذلك هو سرّ الإكسير/ السعادة.

ولقد شاع عن عموم الصّوفيّة وعموم حركاتهم ومذاهبهم حرصهم على تهذيب السّلوك البشريّ وتنقية النّفس من جميع ما يعكّرها ويحول دون صفائها ونقاوتها وذلك عبر الصّوم والسّياحة والتقتير عليها في المأكل والملبس وحملها على أشقّ المجاهدات، ومحو الهيئات الخبيثة، والعلائق الردية ..... فلا غرابة إذن أن ينعت التصوّف بأنّه "إكسير الرّوح" ويعتبر الشّيخ -وهو يهذّب مريده - مُمحّض المعدن الخسيس في الرّوح معدنًا نفيسًا.

الأمر إذن نوع من الترقّي التصاعديّ عبر معاريج مضبوطة نرى المقامات أفضل تعبير مرحليّ لها،إنّها معاريج:.

أ- روحيّة برزخيّة يجسّدها الخيال والنّفس المُنقّاة من كدوراتها.

ب- تعلّميّة، تعرج بالصّوفي من عالم الشّهود إلى علوم لدنيّة سامية.

وغير خفيّ ما كتبه ابن عربي في أثره *الفتوحات المكيّة* عن كيمياء السّعادة، أي تدبير النفس وإعدادها لمعراجها نحو شهود الله مشبّها التحوّل الذي يُصيب النفس في هذا المعراج بالتحوّل الذي يجري على المعادن الخسيسة لتصير ذهبا. وهذا المفهوم شائع جدّا عند الصّوفيّة ، فهم يُشابهون بين التصرّف في الجسميات عن طريق الكيمياء والتصرّف في الرّوحانيات عن طريق التصوّف. كما طابقوا بين التدبير الكيميائيّ والتدبير الرّوحانيّ، وبين الإكسير الذي يُحوّل المعادن الخسيسة إلى ذهب والتطهير الذي يُحوّل النّفوس الكَدِرَة إلى نفوس واجدة قُدسيّة.

ولعلّنا لا نجانب الصّواب إذا استدللنا بالمعراج نموذجا معبّرا عن نقاوة النّفس من عالمها الترابيّ الخسيس وبلوغها عالم النّقاء، إذ ما المعراج إلاّ تلك الحركة المتنقّلة من تقويم الزّمان والذّاكرة إلى تقويم الكشف والحدس. وسُلّم الإشراق هذا في رؤيا النفس ما هو إلاّ

سلّم عرفان متدرّج صاعد أوضحه ابن عربي في فتوحاته[1] معتبرا صعود الصّوفي العارج إنّما هو نزول الخالق إليه وتدلّيه في مراتب التقويم الصّوفي وسُلّمه. ونزول الله هو صعوده إليه بحسب مجاهدات العشق وتجلّي البارئ وإشراقه.

وفي سياق مواز نجد أبا حامد لغزالي يُصنّف *كيمياء السّعادة* كتابا في التصوّف والزّهد والسّلوك، ما كان يماثل الكتب الكيمياويّة التقليديّة المتعلّقة بصنعة الكيمياء، ولكنّه كتاب في الرّوحانيات، ذو أسلوب مجازيّ استعار الكثير من مفاهيم الكيمياء ، وله في هذا السّياق قوله :" من رحمة الله بعباده أن أرسل إليهم آلاف الأنبياء والرّسل كي يُعلّموا نسخة الكيمياء وكيف يجعلون القلب في كور المجاهدة ليَطْهُرَ من الأخلاق المذمومة ويتوجّه إلى طرق الصّفاء"[2]. وهذا العمل لا ينفصل عن المواد المحسوسة التي يعالجها... ؛ فالكيمياء شكل من أشكال الكدح يلقي بقصده في الأجسام الطبيعية، وذلك لاستبطانه عندئذ وإذابة جسد القيامة الصوفي، الخالي من كل خَبَث، وقولبته في الآن نفسه في باطن المريد[3].

الخاتمة

لقد أثبتت كتب التّراجم أنّه ما من صوفي إلاّ ونظر في الكيمياء وأنّ الكثير منهم صَنّف فيها، من مثل القاضي عبد الجبّار(التذكرة في الكيمياء) والغزالي(كيمياء السّعادة) وذو النون المصري (الكتاب الأكبر وكتاب الثقة) والجُنيد (كتاب تدبير الحجر المكرّم) والحلاّج (رسالة في الإكسير ورسالة في الصنعة).... فاستفادوا من مصطلحاتها دلاليّا من مثل الذرّة والعنصر (بسيط-مركّب/ منقسم-غير منقسم) و الكور....

---

[1] ابن عربي: الفتوحات المكّية ، تحقيق: أحمد شمس الدين، طبعة دار الكتب العلمية، بيروت، 1996، ج:3،ص ص: 85-87. وننظر أيضًا،ج:4، ترميز ابن عربي لسدرة المنتهى، ص: 325.

[2] أحمد بن حامد: الكيمياء من منظور ديني، دراسة منشورة بموقع منظمة المجتمع العلمي العربي :
www.arsco.org/file/Get/73bf3fcb-292c-4690-b6c8-d6274bbf985f
ص:8.

[3] Henry Corbin: L'alchimie comme art hiératique. Front Cover. Editor, Pierre Lory; L'Herne, Paris, 1986; T:I;p:151.

غير أنّ الكيمياء حين ارتبطت بالتّجارب البسيطة التي قام بها الحرفيون شابها الاحتيال والغشّ والمكر، وحينما تناولها الفلاسفة اتّسمت ببعد منطقيّ راقٍ، وحينما مارسها بعض الصّوفيّة أمام النّاس كما لو أنّها مِنَنٌ وكرامات ألحقت بهم تُهم الزندقة والسّحر....إنّ قيمة الكيمياء-علميّا ووظيفيّا- مرتبطة بالغاية والقصد. ولعلّ هذا التعدّد المربك هو الذي ساهم في توسيع دائرة المعارف الإنسانيّة لاحقا.

إنّ عجز الكيميائيين الأوائل في تحويل المعادن الخسيسة المستعدّة للتحويل إلى ذهب نفيس عن طريق التصعيد والتقتير وإلقاء الإكسير ....وَازَاهُ تطفّلُ بعض الصّوفية بُغية تحقيق ما عجز عنه الكيميائيون، غير أنّهم وظّفوا ما أسموه بالقوّة النفسيّة فتمحّضت من العلم إلى الشعوذة.

LE REEL NU

Jean-Christophe **CAVALLO**
(Auteur indépendant)

Résumé. De la logique aristotélicienne dite de « tiers exclu » (soit « A », soit « non-A »), on oublie souvent que le « tiers » est un élément qui fait partie intégrante de la théorie. Se plaçant en perspective, on peut observer le « A » et le « non-A » ensemble avant l'éviction du fameux « tiers ». Tous les éléments sont alors en interdépendance, en une superposition logico-sémantique qui est telle une absence de hiérarchie dont l'analyse permet de décrire le mécanisme d'une exclusion mutuelle.

Mots-clés : logique aristotélicienne, tiers exclus, interdépendance, superposition logico-sémantique.

ملخّص. في منطق "الثالث المرفوع" الآرسطي ("أ" أو"ليس أ") غالبا ما يتم نسيان "طرف ثالث" يمثّل أحد العناصر المكوّنة للنظرية. يمكن للمرء مراقبة" أ "و "ليس أ "معا قبل الاطاحة بالطرف الثالث الشهير. فكلّ العناصر مترابطة جدا، وتكون في تراكب منطقي ودلالي يماثل عدم وجود التسلسل الهرمي الذي يستخدم لوصف آلية الاستبعاد المتبادل.

كلمات مفتاحية : منطق أرسطي ، الثالث المرفوع ، ترابط ، تراكب منطقي-دلالي.

Abstract. In the Aristotelian logic called the logic of "excluded middle" ("A" or "no-A"), it is often forgotten that the "third part" is an element that is part of the theory. Placing in perspective, one can observe the "A" and "no-A" together before the ouster of the famous "third part". All the elements are so interdependent in a logical-semantic overlay that is such a lack of hierarchy whose analysis is used to describe the mechanism of mutual exclusion.

Keywords : Aristotelian logic, excluded middle, interdependent elements, logical-semantic overlay.

« Si l'apparence est relation, le réel est exclusion mutuelle »

Par le « tiers exclu » Aristote a tenté de cerner l'individuel en une logique binaire. Posant d'emblée « A » et « non-A » en un soit l'un soit l'autre, il ne présuppose pas, mais impose la différenciation en un dictat du résultat. Or, si nous revenons à l'idée, à un point de départ conceptuel dénué de ségrégation et dans un sens plus général de l'identité que l'idée d'être en-soi (haeccéité), se pose alors la question du comment de l'existence du réel et/ou de sa virtualité. Avant toute réponse nous devons remonter à la source du dynamisme analytique, au doute cartésien, car l'incertitude est au présent, dans un instant intuitif signifiant un moment où « A » et « non-A » se présentent ensemble en une absence de hiérarchie, une superposition du « ou » et du « et » qui est une étape antérieure au choix résultant.

Ce à quoi nous avons à faire est donc un « *dual* » en contrariété. Un dual ou se superpose l'idée de multiple individuel et d'universel. Aller dans le sens de la différenciation et prôner des « ou » qui formeraient un « Et » majuscule par relation est la pensée triviale du tout et de la partie, une pensée comptable qui faisait dire à Descartes de se méfier d'une géométrie « *qui a du commerce avec les sens* ».

Cette attente de réponse qui serait « une » (minuscule ou majuscule) telle la vérité unique du résultat n'est-elle pas un leurre ? Un simple désir d'unité égotique ? Car boutant l'autre, je crée ma propre frontière et l'intimité d'un « je suis » qui ne supporte aucune gradation. Nous devons revenir au dual de départ et remettre en question cette quête de l'« Un » qui ne nous apporte qu'une connaissance partielle quand une fois l'individuel quantitatif admis, le réel qualitatif reste tel le mystère d'un « *en-soi inconnaissable* » (Kant).

Revenir au dual c'est penser « A » et « non-A » en un dynamisme dialectique, mais aussi prendre conscience que « A » ou « non-A » ne sont déjà plus qu'un résultat statique quand la différenciation sous-entendue entre le « et » et le « ou » - la notion de distance - est une tentation mathématique de quantification que l'on aimerait vraie et projetée en le savoir d'un réel physique « géomaîtrisé », en une finalité qui n'est pas différente d'une *neutralisation*.

La distance a-t-elle un sens ? Ce n'est pas par l'expérience de la séparation que Galilée prouva la loi de la chute des corps, mais en tissant un lien entre des masses différentes en une démonstration analytique dont la logique fut plus puissante que l'évidence de l'expérience. De la même manière, c'est entre le

repos et le mouvement que Platon définit la notion d'un *instant* relatif au véritable changement ; de là à dire que l'intuition n'est ni acte ni non-acte, il n'y a qu'un pas, mais qui a la teneur d'un infini actuel entre une sorte d'inconnue et la noèse qui ensuite (ou peut-être simultanément) se reflète tel un infini potentiel entre la noèse et le noème. Plus qu'un idéal, le concept est en un premier temps un idéel en action. Nous ne sommes pas seulement des observateurs, mais aussi des acteurs, et en simultané, des « spectacteurs ». Mais cette « régression » à la racine d'un « *monde vu à partir du soi* » est encore insuffisante et il doit être entrevu la possibilité d'un « *soi vu à partir du monde* » (Kitaro Nishida). Ici déjà doit être envisagé que tout est jugement et que celui-ci n'énonce des vérités qui n'ont valeur que de « comme ». Et si le doute ne doit pas être en vue du doute, il doit cependant y avoir une évaluation permanente quant à la pertinence de la question.

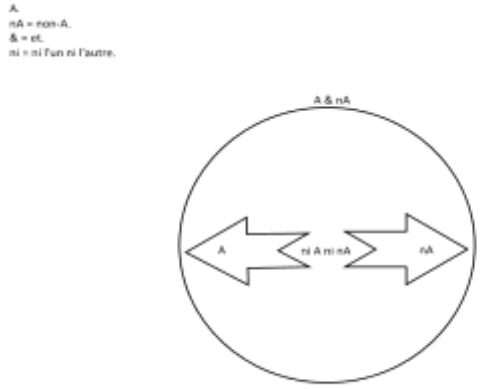
À chaque pas qui a la teneur d'un résultat est affirmé une théorie ou un modèle qui se doit d'être « réfutable » (au sens de Popper). Et depuis l'affirmation d'un possible de « A », de « non-A », du « et » et du « ou », doit être prise en considération la possibilité d'un « *ni* l'un, *ni* l'autre » sans quoi tout cela ne serait qu'un positivisme noématique postulé. Car quelle théorie vient réfuter celle de la quantification ? Ou à l'inverse, quelle théorie l'affirme et donne la preuve ontologique que « A *est* A » ou que « 1 = 1 » ?

De ce qui vient d'être dit découle un intermédiaire qui met en avant un dynamisme répulsif qui est non pas une opposition, mais une radicale contrariété quand « A » et « non-A » sont positivement en une inévitable exclusion mutuelle. Cette mutualité a l'intéressante particularité de prendre en considération le « tiers » aristotélicien avant son éviction comme un élément négatif faisant partie intégrante de la théorie.

De ce « dual » *imaginaire* et de ce qui le compose, « *ses* » éléments (censés lui appartenir dans certaines théories), sont des contraires vrais qui se repoussent et ce qui se tient au centre comme contrariété entre les éléments (le « ni l'un ni l'autre ») trouve son contraire en une mutualité *expressive* qui est telle une circonférence virtuelle réunissant « l'un et l'autre ». La totalité conceptuelle devenant alors l'intégralité de ce que l'on connaît comme la « logique tetralemme ».

D'une manière identificatoire, mais qualitative (et surtout pas quantitative), alors l'opération « 1+1 » sera valeur d'une circonférence qui n'est pas entendue comme une somme, mais représentative de la mutualité exprimée d'éléments

interdépendants, et « 1-1 » celle du centre, non pas comme une soustraction, mais comme expression d'une contrariété qualitative quand par le « *ni*…, *ni*… », la théorie est interdépendante de sa propre « *incomplétude* ». Ainsi, tant *l'un* que *l'autre*, l'un *et* l'autre ou le *ni* l'un *ni* l'autre sont-ils toujours pensés comme exprimés « *via* ». En image et pour les besoins du langage, « 2 » sera valeur de la circonférence et « 0 » (zéro) du centre. Le système formé de cette manière n'est pas un ensemble au sens mathématique, car il ne contient pas les éléments (ceux-ci ne lui appartiennent pas).



Pour le mathématicien, une circonférence a une valeur de « 1 ». Dimensionnel, ce « 1 » est le symbolique étalon de mesure de la notion de distance entre le centre et la circonférence. Mais cette conception géo-métrique néglige une chose importante. Car si le point adimensionnel peut être pensé seul comme concept abstrait de valeur nulle (comme repère cartésien par exemple), ce ne peut pas être le cas si on le pense comme centre d'une circonférence, car si l'idée de point n'entraîne qu'elle-même, celle de circonférence implique nécessairement (par conception) un centre. Penser la circonférence comme égale à « 1 », c'est penser une relation entre le centre et celle-ci comme un échange entre deux objets distincts. Or, il n'y a pas ici de distinction objective, mais une *dépendance* du centre envers la circonférence et réciproquement. Poser la circonférence implique que le centre « *co-naisse* » avec elle, c'est une co-production.

Le système ici proposé est alors un « et » dépendant de ses « ou » quand les « ou » eux-mêmes dépendent de la condition *sine qua non* qu'est la mutualité, ou pour mieux dire, il n'y a pas de « et » sans « ou ». On pourrait alors penser soit à

un système en équilibre par jeu de symétrie, soit de manière dynamique voir l'exclusion mutuelle telle une « force » expansive.

Inévitablement répulsive puisque proposant une dynamique d'éléments contraires, la théorie s'affirme ici en se niant quand posant « A » et « non-A » comme des individuels, elle ne peut les affirmer que par leur interdépendance. Ici, l'idée d'être *en-soi* s'envole… et dans un tel schéma, si la valeur abstraite des individuels est de « 1 » (« 1 » pour « A » et « 1 » pour « non-A »), alors la circonférence naissant de la mutualité formant l'opération « 1+1 » est une superposition de ce qui « est/n'est pas », c'est-à-dire une apparence ou une virtualité. À l'inverse, le centre entendu comme acmé de répulsion par l'opération « 1-1 » est comme négation, un ce qui « *ni* n'est/*ni* n'est pas » ou autrement dit « *rien* ». Il faut ici faire attention au trouble insinué par le langage qui oblige à faire de ce qui « ni n'est ni n'est pas », « *LE* » rien ou « *1* » rien, ce qui est parfaitement incompatible avec sa définition. Il est intéressant de noter qu'ici le langage littéral et le langage mathématique sont au même niveau, car « rien » ne saurait être « *un* » ceci ou un « *ceci* ». Et nous avons ici une définition qualitative du « rien » qui est d'une logique entière et consistante puisqu'il n'est pas un simple néant comptable ou non-être littéral qui s'oppose à l'être (« rien » n'est pas le contraire de « quelque chose »), mais qu'il dépasse ces « points de vue » en les niant tous les deux comme le fait le concept de « vacuité » dans les philosophies orientales.

Ce système dans son intégralité est alors un composite dont les éléments sont interdépendants, et bien que je puisse donner des valeurs abstraites d'identification différentes aux éléments, ceux-ci sont concrètement en une absence totale de hiérarchie. Les valeurs ne sont donc pas les données ontologiques d'une haeccéité, mais celles d'un « mode d'expression ». En ce système qualitatif, le centre ou « rien » est reflet du dynamisme de la contrariété, et bien qu'abstraitement comme de l'opération « 1-1 », il n'est pas neutre, mais l'active négation (le ni…, ni…) de toute quantification, même nulle. Encore une fois, ce n'est pas la logique qui est en cause, mais l'incapacité du langage à rendre compte d'un « rien » qui n'est ni absence, ni présence, mais au mieux : « l'absence d'absence qui n'est pas une présence ». Faire de ce « rien » un « être », « non-être » ou neutre, serait une contradiction.

À l'opposé, si l'on était tenté de penser « A » (ou « non-A ») comme « une » individualité quantifiée (« 1 ») objective dans ce système dynamique, alors on ne pourrait le faire qu'en le désolidarisant de la circonférence (« 2 ») par une

division ; auquel cas l'individuel aurait la valeur d'un demi (1/2), mais jamais d'un entier.

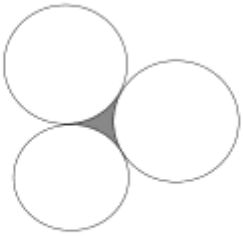
Et si le « 1 » concret tant de l'individuel que de l'universel ne se trouve nulle part, alors toutes notions de fini ou d'infini, de tout et de partie deviennent caduques. Par le fait, le système « dual » interdépendant ici proposé ne trouve aucune raison logique à être une sorte d'unique qui serait tel un point de départ, une origine, cela serait contraire à la définition même de sa conception quand chaque « un » abstrait est une construction qui se définit comme un *virtuel* qui est « un du multiple ». Et si l'on venait à le penser comme « multiple de l'un », alors cet « un » ne serait pas autre chose que ce « ni l'un ni l'autre » qu'est le « rien » ou vacuité, ce qui est un non-sens tant pratique que théorique, « rien » ne pouvant être un nombre, même nul, sa définition serait alors plus proche de celle d'un « ouvert », d'un « possible », ou encore pour le mathématicien, de cet insondable « infini actuel ».

À l'inverse de la logique aristotélicienne, le tetralemme autorise une dynamique superposition des états, mais de plus, ce fameux « tiers » (le « rien ») qu'Aristote néglige ouvertement puisqu'inaccessible à sa logique des choses vues, joue un rôle majeur. Ni inclus, ni exclus (car comment pourrait-il puisqu'il n'est ni être ni non-être ?) il est tel un insaisissable, simultanément la répulsion et l'auto-répulsion et trouve une correcte définition par le terme d'*impermanence* ou encore, de parfaitement ou d'*absolument instable*, ce qui pourrait paraître paradoxal. Or, ce n'est pas le cas, puisque les valeurs attribuées ne le sont qu'à titre de différenciation descriptive au besoin explicatif du concept. Ce qui est la cause d'un trouble, c'est que nous nous trouvons ici à ce qui peut être vu comme la limite racine ou finale du langage lui-même (« Notre origine est devant nous » Heidegger). Définissant le « rien » comme ce qui « ni n'est ni n'est pas », nous ne pouvons faire de lui une image positive ou négative, une fixation, une stase quantifiable. C'est alors logiquement que « rien » est identifié comme absolument dynamique.

« L'abstraction ne trouve-t-elle pas son paroxysme en un moment qui consiste à *s*'abstraire *d*'abstraire ? »

« Rien » est la négation de tout idéal comptable ; néanmoins, il se trouve parfaitement circonscrit et demeure fidèle à sa définition d'absolument instable ou de « fuite en avant ». Ce faisant, il est la parfaite analogie physique d'une expansion, d'un même comme direction, il s'affiche comme le concept d'une unique « force » répulsive qui permet d'appréhender l'idée de gravitation non

pas comme quelque chose qui s'opposerait à l'expansion, mais comme les interactions entre « duals », ces composites « un du multiple » interdépendants dont la superposition de leur multitude apparaît comme une inévitable règle.



De telle sorte qu'il n'est pas anodin de penser qu'à chaque instant sont créées et annihilées de façon spontanée des tas de circonférences virtuelles qui au gré des exclusions s'auto-organisent en structures et ce qu'alors nous appelons relations ou « relativité » sont en fait les interférences de ces circonférences entre elles (en gris). Et suivant les interactions de cette multitude, alors nous serions bien incapables de prédire où se trouvent (localisation) le ou les centres de telle ou telle structure du fait de leur interdépendance ; hormis par la construction d'un cadre descriptif restreint au *voisinage* ou à la *proximité*, ou encore, comme le font les physiciens, par le choix d'un *volume limité* relatif à un espace des phases. À noter que puisque par définition les circonférences sont virtuelles, alors leurs interactions forment une zone (en gris) qui peut être qualifiée de « *virtuel du virtuel* » ou « d'apparence d'apparences » qui dans le présent formalisme, pourrait être appréciée comme une « forme » ou une notion d'*espace* véhiculant le concept de gravitation. Auquel cas, cela qualifierai chaque « dual » comme l'unité non triviale d'un *temps* granulaire ou discret dont l'étalon de mesure ne pourrait être qu'un « imaginaire pur » (au sens littéral) quand le « rien » qui se fait centre est aussi le « pivot » de cette dynamique, c'est-à-dire le *cardinal* au sens étymologique. Un pivot qui pourrait être n'importe où, « sautant » d'un lieu à un autre, comme centre formant un dual, comme centre d'une multitude ou d'un univers, ou pour mieux dire, comme formant spontanément des systèmes d'apparences qui pour les observateurs que nous sommes ne seraient pas différents de phénomènes spontanés parfois nantis d'actions à distance bouleversant les structures en déplaçant instantanément les centres d'une manière qui ferait fi de toute notion d'intervalle spatial (alocalité) ou de durée (atemporalité) dans le bouillonnement d'un vide plein.

Dans cette conception hypothétique, le « dual » est un système logique entier et consistant comprenant ce qui *est*, ce qui *n'est pas*, ce qui *est/n'est pas*, ce qui *ni n'est/ni n'est pas* ; et parce que dynamique, il est toujours en devenir, toujours en

mouvement. Dépassant les limites des formes et du langage, il en révèle l'« incomplétude » (Gödel) tant littérale que mathématique, mais ce faisant, il est entier grâce à elle. Par l'interdépendance, le « 1 » cardinal n'apparaît jamais comme réel, mais toujours comme une abstraction qui n'a d'utilité que pour le discours, simple vérité mondaine, de telle sorte que le penser comme égal à lui-même en une commutative égalité à soi mathématique comme 1 = 1 (un égal un) serait une aberration.

Par sa logique, Aristote fait le choix de l'immobilisme par la sclérose d'un « A » qu'il affirme en « dur » pensant ainsi le maîtriser. Quid alors de la *liberté* de « A » *à lui-même* et de ses échanges ? Cette manière d'aborder l'identité n'a rien d'objectif et fait montre d'un sujet émotionnellement soumis à la peur d'un « n'être pas » concret. Et finalement, cette logique qui voulait démontrer l'ontologie d'un sujet vrai se mouvant dans le réel ne propose qu'une identité dépourvue tout *animus*.

A contrario, le « dual » tel que mentionné par la superposition du « est/n'est pas » en une circonférence comme apparence n'est pas une simple image. Par l'interactivité de ce qui est apparence de l'apparence ou « *virtuel du virtuel* », sont produits des *structures* d'images vraies. Et par cette mutualité se met en place un réel physique apparent qui est tel une « relation d'adverbialisation ». Créatures apparentes et libres, nous sommes tels des *ad*verbes, simultanément « absolu*ment* relatifs » et « relative*ment* absolus ». Car qu'est-ce qu'être libre ? Cela ne peut pas être le simple affranchissement ou l'abolition de toutes contraintes, de toutes oppositions. Être libre c'est faire de ce qui est contrainte une force que l'on peut utiliser, c'est un retournement total de situation. Ainsi, être « soi-même » et libre ne peut se faire que par le biais ou « *via* » ce qui n'est absolument pas soi-même, par l'intermédiaire de ce qui est absolument autre. Ce n'est donc pas le « simple » choix qui nous rend libres, mais le choix « complexe » (entendu ici comme « *complexus* » ou état de ce qui est emmêlé, à la manière d'Edgar Morin). Être libre signifie que « *nous n'avons pas le choix que d'avoir le choix* ». Et s'il est un paradoxe ou une contradiction, elle est dans le choix interprétatif quand pour le mathématicien aristotélicien, l'égalité à soi d'une identité *commutative* « A = A » signifie un même de part et d'autre du symbole de l'égalité. A contrario, on oublie le sens littéral de « commutativité » dont le latin classique *commutare* signifie « changer complètement ». Et s'il est évident que nous avons besoin d'une identité égale à elle-même pour les besoins du discours, il est tout aussi évident que « raconter » (de *computare* signifiant « compter ») n'est qu'un quantitatif de l'expérience qui n'en n'a nullement la qualité.

Entre le « A » et le « A » de la proposition « A = A » ou « A *est* A » se tient la divergence expressive d'une « *qualification quantifiée* » d'avec une « *quantification qualifiée* » qui résulte d'un *choix* à partir d'une hypothèse.

Ainsi l'analyse logico-sémantique met en avant une mécanique des contraires. Quand par l'excès de différenciation et de catégorisation la logique aristotélicienne sépare et isole par statisme, elle abolit toute gradation interne en une égalité bidirectionnelle (A = A) qui a le caractère d'une autoréflexivité, c'est-à-dire d'un dynamisme à l'intérieur d'un même. Pourtant, pour Aristote, l'identité est égale à elle-même quand « *ce qui reflète* » et « *ce qui est reflété* » forment un identique en une indissociable simultanéité.

Il est ici une contradiction quand le concept de réflexivité demande simultanément d'être absolument dynamique, telle la mécanique animée d'une essence ou d'une volonté, ou à tout le moins, de quelque chose qui emporte avec lui la notion de *changement*, la possibilité de « *non-même* », mais demandant aussi d'être absolument immobile quand, pour que cette « égalité à soi » que l'on donne à l'identité soit vraie, alors doit se tenir entre ce qui reflète et ce qui est reflété un intermédiaire qui a la teneur d'un « rien » qui « *ni* n'est, *ni* n'est pas », faute de quoi, il n'y aurait pas d'*idem*. L'égalité à soi de l'identité entendue comme « A *est* A » aristotélicien n'est alors pas différente d'une « auto-identité absolument contradictoire » (Kitaro Nishida).

Le tetralemme qui est interdépendance en une absence de hiérarchie, produit un symbole de l'égalité « = » qui est une négation superposée, une rupture qui est *discontinuité* dans la quantification tel un « saut » qualitatif qui est la démonstration que toute identité est obtenue « *via* », par l'intermédiaire de, en interdépendance d'avec ce qui pensé comme *être* ou *non-être* est un absolument *autre* qui le caractère d'un « *rien* ».

Cela semblera surprenant voire contradictoire pour certains, pourtant tout ceci ne fait que mettre en avant l'évidence d'une *égalité* symbolique (=) qui n'est pas un simple signe posé entre deux termes, mais une opération dont le symbole « = » est un opérateur négatif qualitatif.

« Rien » est l'irrationnel concret qui est la réfutation d'un réel des choses vues numériquement. « Rien », dont la puissance est telle qu'on ne peut en faire d'image reste tel un fantôme, un imaginaire « préhensile » (*qui sert à prendre, mais sans être uniquement destiné à ce but*) à l'entendement, le « va vers » d'une direction

unique dont certains ont extrapolé un *créateur* quand d'autres précisaient le caractère mondain de toute affirmation en disant : « *à ceux qui ferait de la vacuité un être, nous les avons déclarés incurables* » (Nāgārjuna). Toute affirmation, qu'elle soit positive, négative ou neutre, ne peut se faire qu'en interdépendance avec la négation d'un « rien » défini comme « ni l'un, ni l'autre ». Nous sommes, en tant qu'affirmation, en nous opposant à ce qui nous nie absolument.