

## Chapter 1

# THE BALANCE OF REASON\*

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*If we had a balance of reasons, where the arguments presented in favor and against the case were weighed precisely and the verdict could be pronounced in favor of the most inclined scale ... [we would have] a more valuable art than that miraculous science of producing gold.*

—Gottfried W. Leibniz

### I.

Western conceptions of rationality have been dominated by one image: that of the balance. According to this image, human rationality rests essentially on our capacity of **weighing**. Animals react instinctively and emotively to their environment and to their impulses. Humans, on the contrary, are able to escape from the influence of immediate stimuli (external or internal) thanks to their capacity to control their actions on the basis of a comparative evaluation of their different beliefs, motives, desires, values, and goals. Such an evaluation consists in **weighing** them on the scales of the Balance of Reason<sup>1</sup>. A rational belief is reached by carefully weighing data, evidence, and justifications; a rational preference is based on a choice of goals that have value or weight; a rational

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decision is the one that opts for the best means to achieve a goal, after weighing the alternatives; a rational action consists in applying a rational decision without falling prey to the weight of non-rational factors (when this happens, it is customary to attribute the failure to the weakness of the will - *akrasia* - rather than to the weakness of Reason). Ideally, in a rational human being the Balance of Reason is the engine that activates and controls all beliefs, preferences, decisions, and actions.

This image of rationality is as dominant in the 17th century, when Leibniz hails it as the most valuable and desirable achievement of man (see the motto above), as it is in the 20th century, when Rescher, 1988(82), expressing a view shared by most contemporary theories of rationality, claims that:

The aim of the cognitive project is to secure the *best achievable overall balance* between information and misinformation. ... [T]he best epistemic policy is clearly one that optimizes the overall balance of information, minimizing the sum total of errors ...

It is through this image that domains as diverse as justice, theology, economy, politics, ethics, and even art are conceptualized and thereby connected to their underlying rational engine.<sup>2</sup>

In the wake of the work of Mary Hesse in the philosophy of science, of Martin Heidegger in metaphysics, of George Lakoff and his associates in linguistics and cognitive science, and of many others, we now know that one should not underestimate the cognitive importance of metaphors and images. They can no longer be conceived of as mere rhetorical ornaments, easily disposable, but rather as means through which we organize our conceptual and linguistic schemata and perform creative intellectual work.<sup>3</sup> Some of these metaphors deserve to be called “root metaphors”, due to their dominant philosophical role. The scales/balance metaphor is certainly one of these root metaphors, and it deserves careful analysis.<sup>4</sup> In this paper, I undertake to bring to the fore some of the effects of this metaphor upon the conceptualization of rationality in Western philosophical thought.

I will first try to show how the main problems of epistemology correspond to the technical problems involved in creating and operating a perfectly reliable balance - an ideal challenged by Skepticism. The balance metaphor, it will be further argued, is compatible with two different conceptions of rationality, both present in Western thought. One of them, here dubbed ‘hard rationality’, expects the balance to provide unquestionable, conclusive decisions in every matter submitted to Reason. The other, here dubbed ‘soft rationality’, acknowledges the limitations of the former, and considers the balance of reason to be valuable even when it is only able to provide less than conclusive - and therefore questionable - decisions. Whereas the former conception equates rationality

with certainty, and is vulnerable to skeptical doubt, the latter is appropriate for handling uncertainty and, by mitigating the claims of Reason, more apt to face the skeptical challenge. Leibniz, who contributed substantially to the development of both views of rationality, will, as usual, occupy a prominent place in my reflections.

## II.

It should come as no surprise that Leibniz, the most deeply rationalist of the rationalist philosophers, is the one who paid close attention to the importance of the image of the balance for the conception of rationality. In a virtually unknown text,<sup>5</sup> to which the quote used as motto also belongs, he elaborates:

Just as in weighing it is necessary to pay attention that all the weights are put into place, to check that they are not in excess, to check that they are not adulterated by other metals nor heavier or lighter than they should, to verify the balance's correct position, with the arms equidistant, the scales with equal weights, etc.; so too in this rational Balance attention must be paid to the propositions as to the weights, to the balance as to their connection, and no unexamined weight or proposition is to be admitted. Just as one is to estimate the gravity of the weights, so too [one should measure] the truth of a proposition; just as the gravity of the weights measures the gravity of the things to be weighed, so too the truth of the propositions adduced in the proof measures the truth of the principal proposition of the question under discussion; just as one must take care that no weight be omitted or added, so too one is to take care that nothing unfavorable or favorable to the topic examined be omitted or that the same thing, expressed in different words, be repeated. The mechanism of the Balance is similar to the connection of the propositions; just as one scale should not be lighter than the other, so too if one of two premises is weaker than the other, the conclusion must follow from the weaker one; just as the arms must be linked to each other by the beam, so too from pure particulars nothing follows, for they are sand without lime; just as the arms must be at equal distances from the yoke, so too the place of the proposition must be such that the middle term be equidistant from the major and the minor, which is achieved by observing an exact and eternal Sorites.<sup>6</sup>

In this text, Leibniz — with his usual acumen — singles out the main tasks rationality, conceived within the framework of the balance metaphor, has to face:

- 1 How to *calibrate* the balance?
- 2 How to ensure the *reliability* of the weights?
- 3 How to establish a suitable weighing *procedure*?

The calibration problem has to do, on the one hand, with the *mechanism* of the balance: that the scales are equidistant from the yoke, that they do not differ in weight, etc. Without a perfect mechanism, the balance wouldn't be able to fulfill its mission, for it would not be *neutral* vis-à-vis that which it is supposed to weigh. The Balance of Reason itself should not lean *a priori* towards one or another reason. But in order to ensure its neutrality one should also avoid the undesirable influence of other *causes* on its functioning. Just as a balance may be imperceptibly affected by a magnetic or gravitational field acting differentially on one of its scales, so too socio-historical or psychological pressures (e.g., current prejudices, traditions, political interests, passions, limitations of attention or memory, unconscious desires) may surreptitiously take the place of reasons. No doubt factors such as these are those that often end up determining our beliefs, preferences, decisions, and actions. But when that happens, the result cannot be called *rational*. For a rational human being is supposed to protect his Balance from such causal influences which are alien to rationality. Apriorism, anti-historicism, anti-sociologism, anti-psychologism – in short, anti-*contextualism* – are examples of the efforts to build up the protection in question. Whether they have successfully *insulated* the Scales of Reason is a controversial matter (cf. Dascal 1990).

The problem of *reliability* of the weights is, in the particular case examined by Leibniz, that of the *truthfulness* of the propositions taken as reasons (or premises of an argument). An adulterated weight corresponds to a piece of “information” or “data” which have not passed the tests required for them to be considered part of our “knowledge”. There is no use for a perfect Balance if what we weigh with it is of doubtful value. A rational human needs, therefore, a criterion of knowledge that ensures the reliability of the information upon which she bases her rational deliberations. The centuries-old search for a satisfactory concept of “evidence” and related concepts looms large in the effort to elaborate such a criterion. That such a search continues today (see, for example, Gil 1993) is proof enough that the issue is far from settled.

The problem of the weighing *procedure* consists in determining the rules of *method* that ensure the valid *extension* of our knowledge. A satisfactory theory of *reasoning* is the cornerstone of such a procedure. In the above quote, Leibniz envisages such a theory as consisting mainly of deductive *logic*, which he instantiates by the classical theory of syllogisms. However, in the light of the well-known limitations of deduction as a means of expanding knowledge, other forms of logic have been considered – by himself as well as by others. For instance, inductive logic, probabilistic logic, juridical logic and, more generally, the entire set of

procedures Leibniz subsumed under the label *ars inveniendi*, which includes, among other things, the *Topica* and *Dialectica*, as well as a gamut of semiotic “helps” for the proper conduct of reasoning (cf. Dascal 1978) and his hitherto overlooked art of conducting and resolving controversies by means other than strictly formal ones. It is this ensemble of reasoning procedures that Leibniz sought to incorporate in a broadened conception of logic, which he viewed as corresponding to a “softer reason” (*blandior ratio*; C, 34 - see Dascal 2001), insofar as it did not limit itself to strict formal deduction. Needless to say, in spite of the progress made in some of these fields, the task is still far from completion. The difficulties range from the psychological fact that our “natural reasoning” often deviates from the norms of correct reasoning (so that we fall short of being Ideal Reasoners), through the problems in establishing such norms when they go beyond those of formal logic, up to the reluctance in acknowledging the need to do so in order to account for a wide range of ways of extending our knowledge that cannot be handled by formal logic alone.

### III.

A substantial portion of the well-known skeptical critique of rationality – ancient, modern, or contemporary – consists in raising doubts about the possibility of accomplishing satisfactorily the three tasks singled out by Leibniz. The skeptics attempt to show the impossibility of certifying that the mechanism of the rational balance functions perfectly, the impossibility of determining the value of the weights, and the inevitable errors involved in every procedure of rational decision. Many of Sextus Empiricus’s tropes, as well as many of the arguments of Montaigne, of Bayle and of the post-moderns, belong to one or another of these kinds of criticism.

Besides the specific difficulties pertaining to each of the three tasks, the skeptics have also raised problems shared by them. One example is the well-known “problem of the criterion” (cf. Popkin 1979: 15, 51, 71, 141, etc.), which hinges on the need for an additional criterion or rule – i.e., of *another* Balance – for determining the calibration, the reliability, and the correctness of the procedures of the Balance of Reason – in short, on the fact that the Balance is incapable of grounding itself. The following passage, taken from Hobbes’s *Dialogue between a Philosopher and a Student of the Common Law of England*, illustrates well this kind of problem:

- Lawyer: The manner of punishment in all crimes whatsoever, is to be determined by the common-law. That is to say, if then the judgment must be according to the statute; if it be not specified by the statute, then the custom in such cases is to be followed: but if the case be new I know not why the judge may not determine it according to reason.
- Philosopher: But according to whose reason? If you mean natural reason of this or that judge authorized by the King to have cognizance of the cause, there being as many several reasons as there are several men, the punishment of all crimes will be uncertain, and none of them ever grow up to make a custom. Therefore a punishment certain can never be assigned, if it have its beginning from the natural reasons of deputed judges... (Hobbes [1740]: 121-122).<sup>7</sup>

If accepted, this criticism can lead to the admission that the choice of rationality as a “form of life” is not, ultimately, open to rational justification (Popper).

Another example of skeptical critique addressed to all three tasks is the observation that a multiplicity and variety (historical, cultural, individual) of methods or criteria lay claim to be *the* correct ones. The lack of agreement among scientists or philosophers regarding such claims and how to adjudicate them suggests a relativism that seems to destroy the alleged universality of the Balance of Reason.<sup>8</sup>

Finally, another source of skepticism vis-à-vis the Balance of Reason is the problem of interpretation: even when one applies universally accepted methods, the data used as well as the results of the “weighing” always require interpretation. But the latter involves a non-eliminable amount of indeterminacy, because it depends upon the context (historical, social, or psychological) of the interpreter, upon the theoretical framework embedded in the balance used itself, and upon the interpretive practices employed. If – as philosophers such as Quine (1969) have argued – there is no “fact of the matter” capable of eliminating such an indeterminacy, then, regardless of how accurate is the Balance, its use will be always infected by relativity.

The strategies employed by the defenders of Reason against its skeptical detractors are also well-known. The *tu quoque* argument, already employed by Aristotle, attempts to show that the skeptic himself in fact employs the Balance of Reason in order to criticize it, a fact that demonstrates its universality and reliability (since even its declared enemies rely upon it).

Another familiar strategy – which I have called ‘insulation’ (Dascal 1990) – consists in admitting the validity of the skeptical critique, while denying that it affects *all* the uses of Reason: there is at least some

“pure” domain of rationality where the Balance of Reason is entirely protected from skepticism; it is in this privileged domain that the three tasks of grounding the Balance would be satisfactorily performed. In his reply to Hobbes’s criticism, Leibniz alludes to this possibility:

Thomas Hobbes thus mocks those who appeal to right reason, [arguing that] by the name of right reason they understand their own [reason], so that in fact they appeal to themselves. But those who object in this way have not, so far, understood what I have in mind. In the first place, it is not clear that it is impossible to choose right reason as a judge, at least in some questions, examples of which follow.<sup>9</sup>

Gassendi’s “mitigated skepticism” and Kant’s “transcendental idealism” instantiate different implementations of the insulating strategy. Descartes’s strategy, even though he too “insulates” *one* proposition which he considers immune to skeptical doubt and employs it both as a criterion of calibration and as a paradigmatic example of truthfulness and of a procedure of evaluation of reasonings, does not properly belong to this family of strategies, since he believes that it is possible to extend the Balance (or what he labels “natural light”), once calibrated by the *Cogito*, to virtually *all* domains.

#### IV.

Leibniz, I believe, is the first Western philosopher who develops a new type of strategy to combat skepticism and to ground the Balance of Reason. Like Gassendi and Mersenne, he does not believe in the objectivity of Descartes’s natural light, which can always be contaminated by subjectivism. But, whereas Gassendi’s solution consists in assigning to the controlled use of “experience” a role in cognition and Mersenne’s, in enhancing the role of mathematics, Leibniz – without overlooking these two elements – emphasizes rather the need for a rigorous formalization of reasoning (see Dascal 1978: 212-214). In order to be reliable, the Balance of Reason must be based on a rigorous *filum Ariadnes*, accessible to all, where errors are easily detectable as in arithmetic; and such a thread is nothing but the logical structure of reasoning, expressed in a precise and transparent notation.

Leibniz’s critique of what Yvon Belaval (1960) described as Descartes’s “intuitionism”, leads him to develop a research programme which, beginning with the *De Arte Combinatoria* and evolving through many formulations of a logical calculus, reaches its apex in the idea of a *Characteristica Universalis*. The aim is to formalize the methods of reasoning and of representation of knowledge, so as to cover areas other than mathematics and logic, such as jurisprudence, physics, engineering, metaphysics, ethics, politics, and theology. If we had an adequate

notation for representing all types of knowledge and a rigorous calculus for the manipulation of these representations, all questions would be solved by calculation and all mistakes would be easily detectable and correctable as mere errors of calculation. Thus equipped, the Balance of Reason would permit us to resolve all disputes and would function universally and perfectly.

This is Leibniz’s “maximalist” project – as Gil (1985) proposes to call it. Leibniz’s enthusiasm in describing it is contagious, and has inspired, among other works, Frege’s *Begriffsschrift*.<sup>10</sup> This project is connected with a considerable portion of Leibniz’s semiotics, which contributes not only to the task of devising the perfect notation, but also to the first of the tasks incumbent on whoever wants to improve the Balance of Reason: to overcome psychological limitations and other forms of interference. This is what I have called the “psychotechnical function” of symbol systems: abbreviations, synoptic tables, “naturally expressive” notations, mnemonic methods, etc. are designed to overcome the deficiencies of our attention and memory, thereby allowing for a considerable expansion of the Balance’s scope of application. The various types of “indices” Leibniz proposes to compile, at the end of the *Brief Commentaries* (# 70), are an example of this semiotic improvement of the Balance. In other paragraphs of the same text (notably # 58) Leibniz refers explicitly to the maximalist project of the *Characteristica Universalis*, which would permit the entirely formal resolution of some controversies, especially juridical ones.

## V.

But can this maximalist project really overcome all the difficulties and ensure the universal efficacy of the Balance of Reason? What should we do as long as we do not have the means to formalize *all* the areas of knowledge and action? And what should we do if there are areas which do not permit – by their very nature – formalization? Before tackling these difficulties, there is another problem, even more fundamental, to be addressed.

Let us suppose that there is no field of knowledge or action whose nature forbids formalization. Let us assume also that we have at our disposal the perfect Universal Characteristic. Now, the tasks, difficulties, and solutions so far mentioned – including the innovative one proposed by Leibniz – refer either to the functioning of the Balance or to the need to establish its proper foundations. They do not question the efficacy of the Balance as an instrument of decision, once such problems are satisfactorily solved. That is to say, the Ideal Balance would *always* lead

us to the solution of any question. Furthermore, it is usually assumed that the Ideal Balance provides *the* rational solution which is endowed with the status of a *necessary* conclusion of the weighing procedure.

Nevertheless, Pyrrhonism, beyond its critique of the functioning and grounding of the Balance, has developed a more radical critique: even if the Balance were to function perfectly, it would not allow us to decide *anything*, because it would remain in *equilibrium*. This is the well-known skeptical doctrine of *isostheneia*. Such an equilibrium is reached by employing the very same Ideal Balance in order to oppose reasons of equal weight to the reasons that support any given conclusion. In this kind of critique, the skeptic makes full and conscious use of the *tu quoque*, with the aim of showing not that the Balance cannot exist, but that – were it to exist – it would be useless for the purpose of providing rational decisions. But, if it is the case that the most perfect Ideal Balance of Reason could not permit one to decide, either we are condemned to paralysis (like Buridan’s Ass) or else our decisions are, from the point of view of Reason, arbitrary, i.e., irrational.

In a sense, it is this radical critique that characterizes the post-modern version of skepticism. For it emphasizes the intrinsic insufficiency or under-determination of Reason, whence it follows its uselessness, the arbitrariness of its decisions, and the purely political (Foucault) or honorific (Rorty) character of the appeal to terms such as “Reason”, “Science”, “Method”, and “Truth”.

When Samuel Clarke repeatedly appeals to the notion of “freedom out of indifference”, which requires a mysterious capacity of the agent to act even when there are no *reasons* for choosing a course of action, he is in fact admitting the limitation of Reason and the arbitrariness of action:

A Balance is no Agent, but is merely passive and acted upon by the Weights; so that when the Weights are equal, there is nothing to move it. But Intelligent beings are Agents; not passive, in being moved by Motives, as a Balance is by Weights; but they have Active Powers and do move Themselves, sometimes upon the View of strong Motives, sometimes upon weak ones, and sometimes where things are absolutely indifferent.<sup>11</sup>

What Clarke does not realize perhaps is the consequence of this admission for the status of the Newtonian science he defends, whose results he considers absolute.

The same problem arises in the moral sphere with those who – like Ruth Barcan-Marcus – affirm that the existence of genuine moral dilemmas does not entail the inconsistency of moral principles. It only shows their insufficiency for the determination of the choice of a particular course of action. According to her, it is not the principles that are to

blame (nor, we might add, the Balance of Reason). It is the world that sometimes defeats us.<sup>12</sup>

## VI.

An extreme rationalist like Leibniz cannot accept such a defeat. For it would mean accepting the irrationality of the world, i.e., the incompetence of its creator. Ultimately, this would amount to acknowledging the triumph not only of the skeptics, but also of the gnostics. Furthermore, it would mean admitting – as the modern tradition on the whole has done (cf. Unger 1975) – the schizophrenic character of the human being, split into a Reason and a Will that more often than not are not in harmonious relation, and dominated more by the latter than by the former – a situation that would provide further proof of divine imperfection.<sup>13</sup>

It is well-known that Leibniz, in his metaphysics, rejects altogether the idea of a complete equivalence of alternatives: just as there are no two individual substances which share all their properties, being different only numerically (*solo numero*), so too there are no two possible worlds equivalent in their degrees of perfection. God, who is able to weigh the totality of reasons, has always a sufficient reason for his choice of the most perfect world to be created. But what we are concerned with here is the Human Balance, not the Divine one. Hence, Leibniz’s metaphysics is of no avail to us.

The crucial question for a rationalist is whether the Balance of *Human Reason* has the means to avoid non-arbitrarily the catastrophic consequences of the equilibrium of indifference. Is there a Balance of Human Reason which, in this respect, mirrors – even though modestly and imperfectly – the absolutely rational Divine one? Obviously, Leibniz’s answer must be an emphatic “Yes!”. Nevertheless, paradoxically, this “Yes!” entails a significant modification in his anti-skeptic strategy. The maximalist algorithmic model, which was the core of this strategy, can no longer be considered the only and exclusive paradigm of rationality.

If not metaphysics, ethics – in so far as it is concerned with human action – might perhaps provide the clue. In his reply to Clarke’s argument quoted above, Leibniz says:

... motives do not act on the mind as the weights act on a balance; it is the mind that acts by virtue of the motives, which are its dispositions to act. [...] the motives include *all* the dispositions the mind may have in order to act voluntarily, since they include not only the reasons, but also the *inclinations* which come from the passions or from other previous impressions. So that if the mind would prefer the weak inclination over

the strong one, it would act against itself, and otherwise than it is disposed to act (GP 7, 392).

Rather than a strict dichotomy passive/active or a complete split between the Will and the Intellect, as Clarke seems to assume, Leibniz, in conformity with his overarching principle of continuity, includes – rather than excludes – the passions among the motives for action. In this way, he places them along a single scale, where the relative weights of the passions can be compared with those of reasons in the determination of human choices.<sup>14</sup> I have italicized two key words in the passage quoted, which indicate, on the one hand, the fact that – for Leibniz – the ‘calculus of motives’ that leads us to action must always be *global* and, on the other, that this calculus takes into account that which *inclines* us to act (without *forcing* us to do so). The result of this calculus, then, is itself an inclination.

Leibniz agrees with Locke that a person should be able to control his passions so as to avoid their forcing one to act (*Nouveaux Essais* II.21.53; GP V, 186), and also accepts that the decisive consideration for this purpose is to take into account not only the present moment or the present life, but also eternal happiness. “Were everything limited to the present moment – he says – there would be no reasons to refuse the pleasure that presents itself to us” (*Nouveaux Essais* II.21.58; GP V, 187). Nevertheless, whereas for Locke, if there were nothing to hope for beyond the grave, one would be entitled to conclude: “*let us eat and drink, let us enjoy what we delight in, for tomorrow we shall die*” (*Essay* II.21.55), Leibniz – in conformity with his principle of uniformity – argues that, even within this life it is possible to establish an order of preference of the different (terrestrial) goods that would establish the superiority of some of them over others, “even though the obligation [to choose the former] would not be then so strong nor so decisive” (*Nouveaux Essais* II.21.54; GP V, 186). As rational human beings we cannot overlook the fact that a present perfection (and pleasures are perfections, for him) may lead to greater imperfections, for our lives unfold in time, rather than in eternity.

Accordingly, similarly to God, we have a criterion for our choices, namely, to maximize the total amount of perfection we can achieve in life. Unlike God’s, however, *our* calculus of perfections cannot be “decisive” or “demonstrative” since, unlike Him, we cannot but rely on “confused perceptions” along with those (relatively few, alas!) bits of clear and distinct knowledge we manage to achieve.<sup>15</sup> Unlike Him, we need a Balance of Reason, with the help of which we can, albeit only approximately and non conclusively, guide rationally our lives.<sup>16</sup>

## VII.

The ethical need for such a Balance, which is due to our epistemic limitations, only emphasizes its epistemic need for the achievement of knowledge in most fields. Both needs must, of course, be translated into the development of adequate epistemic means to operate rationally within the framework of human limitations.

Already in the *Brief Commentaries*, when he mentions a method that would permit one to reach “moral certainty or practical infallibility” (# 37), Leibniz is suggesting an alternative model, presumably complementary to the algorithmic one, for improving and implementing the Balance of Reason. But the *Brief Commentaries* is still impregnated with elements belonging to the algorithmic model. It mentions a “true Logic or form of proceeding which is perfectly exact and rigorous” (# 61). The errors of judges are compared with errors of calculation (# 58). The *metric* function of the Balance is stressed: the truth of the premises *measures* that of the conclusion, just as the gravity of the weights *measures* that of the thing weighed (# 64); the arguments in favor and against are said to be “rigorously quantified” (# 62), and those men who are patient and diligent are said to “be in all questions practically as infallible as a *calculator* or a *measurer* are” (# 65). It would seem that Leibniz here anticipates the modern digital balances we now have.

But the excessive fixation on this paradigm of a Universal and Rigorous Metric is easy prey for the earlier mentioned skeptical arguments. The digital balance does not exhibit with perceptible evidence the weighing mechanism that yields its “conclusions”. It depends on the theories – themselves in need of “weighing” – which govern its mechanism.<sup>17</sup> The multiplication of logics and the fragmentation of mathematics would force us to devise a “super-logic” or a “super-mathematics”, were we to wish to evaluate the respective merits of each form of logic or of mathematics in order to choose the one most appropriate for governing the mechanism of the Balance – the problem of the criterion would strike again with full force. The practical (if not principled) impossibility of reducing all concepts to their atomic components introduces an element of tentativeness and arbitrariness in any notation we may invent. And the extrapolation of the algorithmic model to all fields of knowledge and to all kinds of issues risks rendering it a purely abstract schema, leaving unsolved the thorny problem of granting it an interpretation in each particular field of application.<sup>18</sup> In view of these facts, wouldn’t those who argue that – as Leibniz himself puts it – this Balance, “abstractly taken, is a useless idea, empty, inefficient, and remote from real life” (*Brief Commentaries*, # 54) be right? Shouldn’t the very demand of

algorithmic perfection be blamed for leaving us without an instrument of decision-making in most of the real problems we face?

A balance, however, need not be digital, i.e., it need not have exclusively a metric function and a metric mode of operation. A more complete balance has also what I would call a “dialectical” function. It permits us to confront and compare the “values” of what is placed on its scales directly, i.e., without reducing them to universal measuring units: “Let the right to explain to the other his own reasons be given to everyone”; let “each of the parties listen to the reasoning of the other, along with the judges” (*Brief Commentaries*, # 63). No doubt the “judge of controversies” must follow “the thread of true Logic” and he should not deviate from the “eternal Law of reasoning” (*Brief Commentaries*, # 63). But this is not enough for satisfactorily fulfilling his duty. For he also must be capable of distinguishing what is relevant from what is irrelevant, of separating what is merely verbal from what is essential, of eliminating redundancies, of filling the gaps, of ordering and evaluating the reasons offered by both parties (de Olaso 1990: 117). All of these tasks, which precede the possibility of applying logical form in the process of decision-making, require capabilities of evaluation and interpretation which are irreducible to formalization.<sup>19</sup> Furthermore, the strict application to controversies (and to many other practical matters) of the requirement of full formalization would soon lead to absurdities, as Leibniz himself points out:

For if we wanted to carry through a formal disputation, several days would be spent on a syllogism, and where would the audience and the other opponents be by then? The large number of prosyllogisms, moreover, would compose a real labyrinth from which we could not escape without a protocol, to say nothing of the great understanding and unusual acuteness needed to carry a demonstration back to its primary sources and fundamental truths on the spur of the moment. It is thus a human perversity to use logical form only where it can be of little help and must soon be stopped...<sup>20</sup>

What is required of a Balance of Reason capable of being applied efficiently beyond those few domains where the algorithmic model is viable, is the sensitivity to all that which is – according to this model – *imponderable*. A balance endowed with this kind of sensitivity will certainly not be able to produce in all cases absolute, i.e. demonstrable or calculable certainties.<sup>21</sup> Hence, it will be a balance that *inclines without necessitating*. It will be a balance capable of operating not only within the realm of the necessary, but also within that of the contingent.<sup>22</sup>

Without abandoning his efforts to develop the algorithmic model, Leibniz – aware of its insufficiency for establishing the universality of rationality<sup>23</sup> – has undertaken to develop also another, non-algorithmic

model of rationality. Admittedly, it will be needed only where strict demonstration, which is applicable to “necessary matters where eternal truths occur”, is not possible; that is to say, the alternative model will be appealed to “in contingent matters where the most probable must be chosen”. According to Leibniz, the application of such a model raises two problems:

The first concerns presumption, that is, when and how one has the right to shift the demonstration from oneself to someone else; the second concerns the degrees of probability, how to weigh and evaluate considerations which do not constitute a perfect demonstration but run counter to each other (*indicantia* and *contraindicantia*, the medics call them), and to reach a decision. For the common saying is true enough - *rationes non esse numerandas sed ponderandas* [reasons are not to be counted but to be weighed]. But no one has yet devised the scales, though no one has come closer to doing so than the jurists.<sup>24</sup>

Certainly there are many more problems to be solved. In fact, ever since Aristotle pointed out the need for a Dialectics which should be called into action when Logic reaches its limits, little has been done to work out the details of this complementary side of Reason. Leibniz gives here and elsewhere valuable hints, some of which he developed in considerable detail. He mentions the jurists as those who have contributed more than anyone else to this enterprise, suggesting that much can be learned from them in this respect.<sup>25</sup> Part of what one can learn from the jurists is no doubt the role of such notions as *burden of proof* and *presumption*, which Leibniz singles out as especially important.<sup>26</sup> He refers to the need to develop a calculus of probabilities as a part of what has to be done.<sup>27</sup> He suggests that hermeneutics – i.e., a theory of interpretation – is also an essential component of this other side of rationality.<sup>28</sup> Finally, he not only engages in a “dialectical” construction of knowledge through his vast correspondence and multiple polemics, but also undertakes to provide a theory of controversies which should account for the rationality of such an activity. And, of course, this is not an exhaustive list.<sup>29</sup>

What is shared by all these methods is their modest character. The conclusions they permit us to reach, which are not obtained in a strictly deductive form, are provisional and likely to be revised without leading to contradiction. Nevertheless, they are sufficient to incline the Balance of Reason, i.e. to provide rational justification even in the absence of necessitating proof.

It is remarkable that, next to the well-known ‘hard’ rationalist, there is ‘another’ Leibniz, a ‘soft’ rationalist, so far hardly noticed. In this other side of Leibniz’s thought one can find, I think, the basis for a strategy of defense of rationality which is in a better position to cope

with rationality's tougher critics, past and present. For, whereas the pretentiousness and arrogance of the traditional conception of a decisive and apodictically ruling Reason can hardly be sustained in the light of the skeptics' attacks, a more modest rationality, which cannot be blamed for not providing certainty but nevertheless provides justified inclination of one of the scales, stands a good chance of not having to surrender to the skeptics.

As every image or metaphor, the 'Balance of Reason' allows for several interpretations. We have seen how one of these interpretations – the one I have called 'metric' or 'algorithmic' – leads to a 'hard' (another metaphor, of course) conception of Reason, while the other – the one I dubbed 'dialectical' – leads to a 'soft' conception of rationality. The fact that the second interpretation has been found, along with the first one, in the work of an uncompromising rationalist such as Leibniz, suggests that the two views of rationality are indeed complementary rather than competing with each other. Once revised as suggested here, the image of the balance regains vitality and may be further used by those who are persuaded that, unless it is somehow softened along the lines discussed here, rationality will hardly be able to secure its position.

## Notes

1. In contemporary English, it would be more natural to use "Scales of Reason" instead of "Balance of Reason", which strongly suggests equilibrium. I will however preserve the latter phrase, which was currently used (with the meaning I assign to it) in the 17th and 18th centuries (see, for instance, Samuel Clarke's quotation in section V).

2. Here are some illuminating quotes to this effect: "There is no action without will, but there is will without action. If all will were to break out into open action man would perish, since there would be no rational balance or moderating reason" (Swedenborg). "Poetic Justice, with her lifted scale, / Where, in nice balance, truth with gold / she weighs, / And solid pudding against empty praise" (Pope). After posting an earlier version of this article in my web-site, I received a message from an Australian colleague, where he says: "I was wandering around the www and found your very interesting paper on the metaphor of balance in our thinking about reasoning and rationality. Now that you've highlighted the issue, I couldn't help but be struck by the extent to which the metaphor of balance infuses our thinking about rational deliberation in the *Reason!* Project" (Tim van Gelder). For information on this project, see <http://www.philosophy.unimelb.edu.au/reason/>.

3. The literature on metaphor has increased dramatically in the last quarter of the twentieth century. For good surveys and discussions of this literature, see Kitay (1987), Gibbs (1994) and Barcelona (2000), as well as the collection of essays edited by Ortony (1979). Recent work on the essential role of metaphor includes, among others, (Hesse (1966), Lakoff (1987), Lakoff and Johnson (1980, 1999), Lakoff and Turner (1989). For the import of Heidegger's contribution to the topic, see Rorty (1989).

4. The expression ‘root metaphor’ was coined by Stephen Pepper (1935), whose early recognition of the philosophical import of metaphor grants him also a position in the pantheon of metaphor champions of the twentieth century (see Pepper 1928, 1935, 1961). Among other root metaphors, one could mention the conceptualizations of thought in terms of vision and of ideas and meanings as mental content - both predominant in Western thought for many centuries. For a criticism of the former and of its epistemological implications, see Rorty (1979); for an analysis of the communicative effect of the latter, see Reddy (1979). I have analyzed two other root metaphors in Dascal (1991 and 1996).

5. *Brief Commentaries on the Judge of Controversies or the Balance of Reason and Norm of the Text* (A, 6, 1, 548-559). This text was written in Latin, presumably between 1669 and 1671. A translation and commentary of this text is included in AC.

6. *Brief Commentaries*, # 65.

7. The same kind of skepticism appears already in the 4th Century B.C. in China, in this beautiful passage of Chuang Tzu: “Suppose you and I have had an argument. If you have beaten me instead of my beating you, then are you necessarily right and am I necessarily wrong? If I have beaten you instead of your beating me, then am I necessarily right and are you necessarily wrong? Is one of us right and the other wrong? Are both of us right or are both of us wrong? If you and I don’t know the answer, then other people are bound to be even more in the dark. Whom shall we get to decide what is right? Shall we get someone who agrees with you to decide? But if he already agrees with you, how can he decide fairly? Shall we get someone who agrees with me? But if he already agrees with me, how can he decide? Shall we get someone who disagrees with both of us? But if he already disagrees with both of us, how can he decide? Shall we get someone who agrees with both of us? But if he already agrees with both of us, how can he decide? Obviously, then, neither you nor I nor anyone else can know the answer. Shall we wait for still another person?” (BW, pp. 43-44). I am indebted to Yoav Ariel for bringing this text to my attention.

8. Hobbes, incidentally, doesn’t consider the diversity of “natural reasons” argued for in the above quote as leading necessarily to relativism. To the Lawyer’s distressful question, “If the natural reason neither of the King, nor of any[one] else, be able to prescribe a punishment, how can there be any lawful punishment at all?”, the philosopher replies: “Why not? For I think that in this very difference between the rational faculties of particular men, lieth the true and perfect reason that maketh every punishment certain” (Hobbes [1740]: 122).

9. *Brief Commentaries*, ## 55-56.

10. Here is one example of Leibniz’s enthusiasm. In a letter to Princess Elizabeth (1678), after listing Descartes’s mistakes, Leibniz says: “All of this could give some people a bad opinion of the certainty of our knowledge in general. For, one can say, with so many able men unable to avoid a trap, what can I hope for, I, who am nothing compared to them? Nevertheless, we must not lose our courage. There is a way of avoiding error... In brief, it is to construct arguments only in proper form [*in forma*]... Any rigorous demonstration that does not omit anything necessary for the force of reasoning is of this kind... In order to determine the formalism that would do no less in metaphysics, physics, and morals, than calculation does in mathematics, that would even give us degrees of probability when we can only reason probabilistically, I would have to relate here the thoughts I have on a new characteristic, something that would take too long... I dare not say what would follow from this for the perfection of the sciences – it would appear incredible. The only thing I will say here is that... all reasoning in demonstrative or probable matters will demand no more skill than a calculation in algebra does” (A, 2, 1, 437-438; translation in A&G, 239-240).

11. Samuel Clarke, Fourth letter to Leibniz (GP 7, 381). Leibniz’s reply will be discussed below.

12. These claims were put forth by Ruth Barcan-Marcus in her lecture “More about consistency of principles and moral dilemmas”, delivered at a Cerisy-la-Salle colloquium (June 1994) on rationality, organized by Jacques Poulain and Daniel Vanderveken.

13. Cf. Swedenborg’s quote, in note 2.

14. Leibniz studied carefully the controversy between Hobbes and Bramhall, whose central topic was the issue of freedom and necessity. He appended to the *Théodicée* an account of this controversy, under the title “Reflexions sur l’ouvrage que M. Hobbes a publié en Anglois, de la Liberté, la Necessité et du Hazard” (GP VI, 389-399). Leibniz sided with Hobbes in claiming that the notion of ‘free will’ cannot mean that we are able to presently determine our will. Our present will, he says, is a function of our reasons and dispositions. Nevertheless, he points out, we can have some influence – albeit “obliquely” – upon our future will, by looking for and shaping new reasons and dispositions. For an analysis of Leibniz’s reaction to the controversy in question, see Marras (2001). For a collection of essays on the controversy, see Dascal and Fritz, eds. (2001). A selection of the texts of the controversy has been recently published by V. Chappell (1999).

15. *Nouveaux Essais* II.21.54; GP V, 186. Leibniz is here referring to his well-known classification of types of knowledge, which he introduces elsewhere in the *Nouveaux Essais* (II.30; GP V, 236-244).

16. In fact, our reasoning activity – be it approximative or strictly deductive – does not correspond to any similar “activity” of God. For “God does not reason, strictly speaking, by using time as we do in order to move from one truth to another: however, since he understands at once all the truths and all their connections, he knows all the consequences, and he contains eminently in himself all the reasonings we can make – and this is why his wisdom is perfect” (GP VI, 399).

17. When one weighs what is “evident”, on the contrary, one does not get involved in such a circularity: “... in the problems which are immediately evident to the senses, there is no need for a judge of controversies other than the senses themselves” (*Brief Commentaries*, # 57).

18. In other words, unlike Leibniz’s Universal Characteristic, which is conceived as a *semantic* representation, using *interpreted* symbols, we would land upon the notion of a purely *syntactic* calculus, the burden of endowing it with a semantic interpretation being left to someone other than formal logicians. This is an example of what Yehoshua Bar-Hillel (1970) appropriately called “the logicians’ treason”.

19. It is not by coincidence that in the texts that deal with the “judge of controversies” – like the *Brief Commentaries* – Leibniz also discusses at length hermeneutics. For other remarks on hermeneutics, see Leibniz’s *Nova methodus discendae docendaeque jurisprudentiae* of 1667 (A, 6, 1, 337-338); see also “On the interpretation, foundations, application, and system of laws” (in AC).

20. Letter to Gabriel Wagner, 1696 (L, 466; translated in AC). Leibniz himself attempted at least once to provide a (partial) syllogistic reduction of his controversy with Denis Papin on the problem of the *perpetuum mobile*. He boasted to have at least reached thereby an agreement with Papin about what was at issue: “We carried the matter beyond the twelfth prosyllogism, and from the time we began this, complaints ceased, and we understood each other, to the advantage of both sides” (L, 467). Needless to say, Papin himself did not accept Leibniz’s reduction, nor – for that matter – did he agree to his “understanding” of the issue. For an analysis of the Leibniz-Papin controversy, see Freudenthal (2000).

21. Even Rescher, whose account of rationality seeks to devise an epistemic policy based on the optimization (i.e., calculability) of cost effectiveness, admits that such a policy “will have to tolerate errors and inconsistencies, being such that an inconsistent family of contentions will occasionally (though no doubt rarely) manage to slip through the net” (Rescher 1988: 82). I take this to mean that, at least in such cases, the maximalist Balance will have to be complemented by some other way of “weighing”, if it is not to accept arbitrariness or, in Ruth Barcan-Marcus’s terms, defeat.

22. The phrase *incliner sans necessiter*, in Leibniz's mature metaphysics, refers to the realm of contingency as well as to that of ethics. As far as I know, it appears for the first time in the *Discours de Métaphysique* of 1685 (cf. # 30, for instance), written at the time he was in the Harz mining region, designing pumps based on very slight deviations from the equilibrium point. The notion of inclination without necessitation becomes the fundamental piece of Leibniz's defence against the charges of determinism or "spinozism" that had been often levelled against him. It appears also in his fifth letter to Clarke, where it is explicitly linked to the image of the balance: "It is true that Reasons perform in the mind of the sage, and Motives in any mind whatsoever, that which corresponds to the effect of the weights on a balance. It is objected that this notion leads to necessity and fatality. But this is said without proof... A motive inclines without necessitating, i.e., without imposing an absolute necessity" (GP 7, 389-390).

23. "There is never *indifference of equilibrium*, i.e. [a situation] where everything is perfectly equal on one side and the other, without there being more inclination towards one side... It would have been a big defect, or rather a manifest absurdity, if it were otherwise, even in men down here, if they were able to act without an inclining reason" (*Essais de Théodicée* # 46, GP 6, 128).

24. Letter to Gabriel Wagner of 1696 (L, 467).

25. In a paper called "For a Balance of Jurisprudence Regarding the Degrees of Proofs and Probabilities", written around 1676 (C 210-214; translated in AC), Leibniz says: "[J]ust as the Mathematicians have excelled in the practice of logic, i.e. the art of reason in necessary propositions, so too the jurists have practiced it better than anybody else in contingent matters". Leibniz's studies of juridical logic deserve careful attention.

26. The latter, it should be recalled, is the heart of what is nowadays called "non-monotonic logic" or "default reasoning". It lies also at the heart of the "logic of conversation" due to Grice, which became one of the cornerstones of current pragmatic theory (cf. Dascal 1983).

27. And he did indeed contribute extensively to developing the calculus of probabilities. The extent of this contribution has been highlighted by recent research. See, for example, the texts published by Parmentier [P] and by Mora Charles (1992). It is not clear whether the calculus of probabilities really belongs to the non-algorithmic model of rationality I am talking about here. For, in so far as it is a "calculus", it belongs to the algorithmic model. See the end of the passage quoted in note 10, where Leibniz clearly includes probabilistic reasoning within his dream of the Universal Characteristic. It must be said, then, that at least the use of probabilities is not typical – *pace* Fernando Gil – of the minimalist program offered as an alternative to the maximalist, algorithmic one. On the other hand, in so far as probabilities "incline without necessitating", they belong to the minimalist program, just as the logic of presumption does.

28. See note 19.

29. For all the points mentioned in this paragraph, see the texts collected in AC, as well as the Introduction to this volume. For the special epistemological and historical importance I attach to controversies in general and to scientific controversies in particular, see Dascal (1998, 2000).

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