



HAL
open science

Tarde's idea of quantification

Bruno Latour

► **To cite this version:**

Bruno Latour. Tarde's idea of quantification. Candea, Matei. The Social After Gabriel Tarde: Debates and Assessments, Routledge, pp.145-162, 2010, 9780203876312. hal-00973004

HAL Id: hal-00973004

<https://sciencespo.hal.science/hal-00973004>

Submitted on 3 Apr 2014

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Tarde's idea of quantification*

A chapter for Mattei Candea (editor)

The Social After Gabriel Tarde: Debates and Assessments

Bruno Latour, Sciences Po

“[Thanks to statistics] public broadsheets will be to the social world what the sensory organs are to the organic world”
(**Lois de l'imitation**).

Numbers, numbers, numbers. Sociology has been obsessed by the goal of becoming a quantitative science. Yet it has never been able to reach this goal because of what it has defined as being quantifiable within the social domain. The work of Gabriel Tarde has been resurrected for many reasons. One of them, to be sure, is an acknowledgement of the diminishing returns of “social explanations”. In my view, however, it would be wrong to limit Tarde’s contribution to the theme of the “end of the social”.ⁱ If he has become so interesting, if he is read with such great avidity today, it is also because he engaged sociology, and more generally the human sciences —history, geography, archaeology, social psychology and above all economics— with a different definition of what it is for a discipline to be *quantitative*. (He also had an alternative definition of what it is to be a *science*, but this is another subject).

In the last century, the schism between those who deal with numbers and those who deal with qualities has never been bridged. This is a fair statement given that so many scholars have resigned themselves to being partitioned into those who follow the model of the “natural” sciences, and those who prefer the model of the “interpretive” or “hermeneutic” disciplines. All too often, fields have been divided between number crunching, devoid (its enemies claim) of any subtlety; and rich, thick, local descriptions, devoid (its enemies say) of any way to generalize from these observations. Many domains have abandoned the hope of proving any point by transforming quantities into qualities, and qualities into quantities. Many in history or anthropology, as well as in sociology or psychology have tried, but at every occasion, the difficulties of reconciling the two types of proof have been so great that it is impossible to transition smoothly from one to the other. Many have despaired, as a consequence, of ever being able to develop a

scientific social science; while others have claimed that this goal is no longer desirable, that the best that can be hoped for is to obtain some political or literary effects on readers.

What is so refreshing in Tarde (more than a century later!) is that he never doubted for a minute that it was possible to have a scientific sociology—or rather, an “inter-psychology”, to use his term. And he espoused this position without ever believing that this should be done through a superficial imitation of the natural sciences.

1) Social sciences are more quantitative than natural ones

Tarde’s reasoning goes straight to the heart of the matter: the natural sciences grasp their object from far away, and, so to speak, in bulk. A physicist deals with trillions upon trillions of gas molecules, a biologist with billions of cells. It is therefore quite normal that they should rely on a rough outline of the “societies” of gas and cells to make their observations. (Remember that for Tarde “everything is a society”). Resemblance is what appeals to the natural scientist. Individual differences can be safely neglected. Although the very distinction between a law or structure and its individual components is acceptable in natural sciences, it cannot be used as a universal template to grasp all societies. The distinction is an artifact of distance, of where the observer is placed and of the number of entities they are considering at once. The gap between overall structure and underlying components is the symptom of a *lack of* information: the elements are too numerous, their exact whereabouts are unknown, there exist too many hiatus in their trajectories, and the ways in which they intermingle has not been grasped. It would therefore be very odd for what is originally a *deficit of information* to be turned into the universal *goal* of any scientific inquiry. In the face of such a striking gap, it would make much more sense to tackle this limitation and to try to get more detailed information, instead of glowing with the belief that one has reached the level of an exact science.

Physicists and biologists may be forgiven for having so little information since for the most part, they continue to access their objects of study from a great distance. But those who deal with type of societies composed of many fewer elements, societies that can be observed from the inside, do not have this excuse. Consider sociologists who study human societies. (After all, what are a handful of billions of fellow humans when compared to the number of animalcules teaming in a drop of water?) Given the immense privilege of having proximity to their objects of study, sociologists should not be (mis)led into imagining that there could be a strict distinction between structural features and individual or sub-individual components.ⁱⁱ If they are, they have been engaged in the rather silly task of becoming voluntarily estranged from the societies they are studying. It implies that they are attempting to grasp them in the same way that astronomers deal with stars or biologists with cells. And yet, if the latter must handle their subject matter from far away, it is not because it is especially “scientific” to do so. It is because they have no other way to reach their objects of investigation.

Paradoxically, those in sociology who try to ape the natural sciences have mistaken the latter's constitutive lack of information for their principal virtue! Yet what is really scientific is to have enough information so as to *not* have to fall back upon the makeshift approximation of a structural law, distinct from what its individual components do. What is perfectly acceptable for "sociologists" of stars, atoms, cells and organisms, is unacceptable for the sociologists of the few billions of humans, or for the economists of a few millions of transactions. For in the latter cases, we most certainly have, or we should at least strive to possess, the information needed to dissolve the illusion of the structure.

This first point about replacing the idea of what a science should be is crucial to grasp the deeper reasons for the opposition between Tarde and Durkheim. The tension is not simply due to a difference of attitude, as though one was more inclined to follow the individual agents while the other became obsessed by the relationship of the actor to the overall society. To be sure, this opposition is present, as the encounter between Tarde and Durkheim reproduced in this volume, has made quite clear.ⁱⁱⁱ Beyond this, however, the tension is a consequence of a completely different way of calibrating what should be expected from any science of any society. Durkheim deals only with human societies and borrows his ideal of science from natural scientists with whom he has little occasion to collaborate since, for him, human societies should remain radically different from biological and physical ones. Tarde's position is the reverse; for him there exist only societies. Human societies are but a particular subset of these societies because they exist in so few copies. But since human societies are accessible through their most intimate features, social scientists have no need to let natural scientists dictate what their epistemology should be.

The paradox is that it is Durkheim who imitates the natural sciences while at the same time distancing his discipline most radically from theirs. Meanwhile, Tarde, because he does not distinguish the ideal of science by separate domains, takes the greatest liberty in moving away from the customary ways of the natural sciences for presenting their objects. The shibboleth that distinguishes their attitudes is not that one is "for society" while the other is "for the individual actor". (This is what the Durkheimians have quite successfully claimed so as to bury Tarde into the individual psychology he always rejected.) The distinction is drawn by whether one accepts or does not accept that a structure can be qualitatively distinct from its components. In response to this test question, Durkheim answers "yes" for both kinds of societies. Tarde says "yes", for natural societies (for there is no way to do otherwise), but "no" for human societies. For human societies, and for only human societies, we can do *so much more*.

2) Bypassing the notion of structure

In the tired old debate pitting a naturalistic versus an interpretative social science, a strange idea appears: that if we stick to the individual, the local, the situated, you will detect only qualities, while if we move towards the structural and towards the distant, we will begin to gather quantities. For Tarde the situation is almost exactly the opposite: the more we get into the intimacy of the individual, the more discrete quantities we'll find; and if we move away from the individual

towards the aggregate we might begin to *lose* quantities, more and more, along the way because we *lack the instruments* to collect enough of their quantitative evaluations. And this is the second reason why a science of society is possible for Tarde: the very heart of social phenomena is quantifiable because individual monads are constantly evaluating one another in simultaneous attempts to expand and to stabilize their worlds. The notion of expansion is coded for him in the word “desire”, and stabilization in the word “belief” (more on this below).^{iv} Each monad strives to *possess* one another.

Most social scientists remain limited to the study of qualities when they handle only one entity, and quantification *begins*, so to speak, once they have collected large numbers of those entities. To the contrary, for Tarde, quantification began with the individual and was very *difficult to maintain* when shifting to aggregates. Consider this passage:

“But before we speak, think, or act as “they” speak, think, or act in our world, we begin by speaking, thinking, and acting as “he” or “she” does. And this “he” or “she” is always one of our own near acquaintances. Beneath the indefinite they, however carefully we search, we never find anything but a certain number of he’s and she’s which, as they have increased in number, have become mingled together and confused” p.25.

He then added:

“The impersonal, collective character is thus the product rather than the producer of the infinitely numerous individual characters; it is their composite photograph, and must not be taken for their mask.” (27-28).^v

The relationship of the element to the aggregate is not the same as that of an ingredient to a structure. A “composite photograph”^{vi} is not more than its individual components; it is not a law of behavior to which they should submit, *minus individual variations*. An “impersonal collective character” does not produce a behavior; it is itself produced by a multiplicity of individual innovations. There is nothing more in the accumulation of traits than there is in the multiplicity of individual components; but there definitely a lot less since elements become “mingled together and confused”. Or rather, there is perhaps more in the “they” than in the “he” and “she”, but this is because one monad has succeeded in expressing and possessing the whole.^{vii} So, if we jump too quickly to the idea that an altogether different type of entity has taken over the action, just what that supplement is will become obscured. It is readily apparent that *confusion increases* when moving from the “he” to the “they”, instead of decreasing as might be expected following an introductory class in the methodology of the social sciences: “Gather more examples; forget individual traits; see things from farther away; from above; in bulk not in detail; for goodness sake, put it into a frame”. According to Tarde, from those well meaning pieces of advice, only disorientation can ensue!

Does this mean that we should always stick to the individual? No, but we should find ways to gather the individual “he” and “she” without *losing out on* the specific ways in which they are able to mingle, in a standard, in a code, in a bundle of customs, in a scientific discipline, in a technology—but never in some overarching society. The challenge is to try to obtain their aggregation without

either shifting our attention at any point to a whole, or changing modes of inquiry. Composite photography is a very crude and primitive way that confuses all the criminals into a single type. Let's try to find a better, more sensible, and above all, more *traceable* way of doing social science. And it does exist: those who commit crimes *imitate* one another. They have to learn from one another, *modus operandi per modus operandi*, crime per crime, trick by trick.^{viii} And the same can be said of the Ministry of Justice or of the police. By assembling file after file, case after case, identification after identification, they end up producing “types of criminal” out of which the science of criminology will emerge.^{ix} Following the “imitative rays” will render the social traceable from beginning to end without limiting us to the individual, or forcing a leap up to the level of a structure.^x

Tarde is often presented as a man with one idea —imitation. It is true that he became famous following the publication of his book, *The Laws of Imitation*, in 1890.^{xi} Nevertheless, it is important to understand that imitation is not an obsession of his. Nor is his point a psychological argument about how humans imitate one another, as if Tarde had generalized from some observations to the rest of his social psychology.^{xii} The situation was rather the opposite. He was searching for a route by which to bypass the ill-conceived notion of structure when he stumbled upon a plausible vocabulary, borrowed in part from medicine, and later from psychology.^{xiii} Imitation, that is, literally, the “epidemiology of ideas”. With this notion, he could render the social sciences scientific enough by following individual traits, yet without them getting confused when they aggregated to form seemingly “impersonal” models and transcendent structures. The term “imitation” may be replaced by many others (for instance, monad, Actor-Network or entelechy), provided these have the equivalent role: of tracing the ways in which individual monads conspire with one another without ever producing a structure.^{xiv}

In opposition to the entire century of social theory that followed it, this often quoted passage summarizes what is at stake for sociology to be scientific:

“But, no matter how intimate, how harmonious a social group is, never do we see emerging ex abrupto, in the midst of its astonished associates, a collective self, which would be real and not only metaphoric, a sort of marvelous result, of which the associates would be the mere conditions. To be sure, there is always an associate that represents and personifies the group in its entirety, or else a small number of associates (the ministers in a State) who, each under a particular aspect, individualize in themselves the group in its entirety. But this leader, or those leaders, are always also members of that group, born from their own fathers and mothers and not born collectively from their subjects or their constituency.” p. 68. Monadologie et sociologie.

For Tarde, if we were to believe that the first duty of social science is to “reconcile the actor and the system” or to “solve the quandary of the individual versus society”, we would have to abandon all hope of ever being scientific. This is tantamount to aping the natural sciences which are perfectly alright in getting by with discovering a structure and neglecting minor individual variations because they are much too far to observe whether or not a “collective self” emerges *ex abrupto* from “its astonished associates”. Fortunately, in the case of human sciences,

we know this emergence is different. We can verify every day, alas, that “leaders” are “born from fathers and mothers” and not “collectively”. This forces us to discover the real conduits through which any group is able to emerge. For instance, we might search for how associates might “individualize in themselves the group in its entirety” through legal or political vehicles. Once we have ferreted out what makes this phase transition possible we will be able to see with clarity, the difference between “individualizing a group” and “being an individual in a collective structure”.^{xv} Each case requires a completely different feel for the complex ecology of the situation.

If this requirement strikes you as less demanding, less empirically exacting, less “scientific” than the search for a structure, then it means that you will have abandoned, in effect, the search for quantification, for the real *quanta* that lie at the heart of each monad.

3) Tracing the social world anew

There is a third reason why Tarde believed in the scientific program of the social sciences: he thought that we could invent the instrumentation for capturing the inner quantification of individual entities. This implies that the great quandary of “the actor and the system” is but a consequence of a very patchy statistical apparatus; or, to put it more bluntly, that you have the social theory of your statistics.

Tarde, who is often derided for having been “literary” instead of “scientific” knew very well what he was talking about. The misunderstanding is always the same. We confuse quantitative social sciences with a historical way of doing statistics.^{xvi} But those techniques have changed immensely over the years. Rather than trying to eliminate individual variations so that they don’t perturb the overall result, many other ways of handling them have been discovered. The situation of the natural sciences, where individual variations remain inaccessible to any direct inquiry, and are far too numerous to record, is in no way the same as for the social sciences. For human societies, there is no reason to limit quantification to only some of the ways of doing statistics.^{xvii}

This assessment of statistics is so close to the heart of Tarde's work that he actually moved from his position as a judge in the provincial town of Sarlat (which he had occupied since 1875 before moving to Paris in 1894), after proposing alternative ways of assembling, interpreting and publishing, criminal, civil and commercial statistics to the Minister of Justice. (By then Tarde was already well known as a criminologist.)^{xviii} As he argued there is no reason to consider individual variations as deviations from a more stable law that statistics was charge with educing out of the morass of chaotic data. Individual variations are the only phenomenon worth looking at in societies for which there are comparatively few elements. We have (or should have) full access to the aggregated dynamic. What is called a “structural law” by some sociologists is simply the phenomenon of aggregation: the formatting and standardization of a great number of copies, stabilized by imitation and made available in a new form, such as a code, a dictionary, an institution, or a custom. According to Tarde, if it is wrong to consider individual variations as though they were deviations from a law, it is

equally wrong to consider individual variations as the only rich phenomenon to be studied by opposition with (or distance from) statistical results. It is in the nature of the individual agent to imitate others. What we observe either in individual variations or in aggregates are just two detectable *moments* along a trajectory drawn by the observer who is following the fate of any given “imitative ray”. To follow those rays (or “actor-networks” if you feel more comfortable with some updated vocabulary) is to encounter, depending on the moment, individual innovations and then aggregates, followed afterwards by more individual innovations. It is the trajectory of what circulates that counts, not any of its provisional steps.

The importance of trajectory is the most clear with intellectual arguments, a domain of great fascination to Tarde. It is in the study of scientific practice that one can see how useless it is to drown individual contributions into statistical means (scientists are so few and so far between that any “whole” is provisional). Nonetheless, it would be just as silly to deny that, from individually made arguments in specific journals and specific times, aggregates are not produced in the end, by consensus formation and paradigm entrenchments that deeply modify how an individual finds their way in an argument. This result is in no way due to a structural law suddenly overwhelming the diversity of negligible individual positions (the *ex abrupto* we saw above). In each of the scientists’ laboratories, for each of the issue at hand, each individual converts to the consensus each for his or her peculiar reason. Later, they may once again re-differentiate themselves from any established dogma.

Of course, the wonderful thing about science, contrary to criminology or fashion where the traces are much more elusive, is that there exists —thanks to footnotes, references and citations— an almost *uninterrupted set of traces*, that allows us to move from each individual innovation, up to the aggregate, and then back again to the individual resistance that can develop in response to a given paradigm.

"When, during some universal exhibition, we realize retrospectively how means of transportation have appeared in succession, since the time of the sedan-chair and the chariot until the time of the suspension carriage, the locomotive, the automobile and the bicycle, we behave much like the naturalist in a museum who compares the long series of vertebrates along the course of geological times from the lancelet to man. And yet, there is this difference that in the first case we are able to date exactly the appearance of most links in the chain and determine very precisely the invention and inventor from which each specimen comes from, while in the second case we are restricted to mere conjectures about the way a species transformed itself into another" (Psychologie économique, volume 1, p. 12.)

We can understand from this passage what was meant earlier in pointing to the distinction between structure and ingredient as being due to a deficiency of information. If the researcher is in possession of this information, this chain of invention, this “imitative ray”, then there is *no reason why* they can not follow the individual innovation *as well* as the aggregates, smoothly. If there is a map of a river catchment, there is no need to leap from the individual rivulets to the River, with a capital R. We will follow, one by one, each individual rivulet until they become a river —with a small r.

What is so striking in the sociology of science is even more evident with regard to the law. This might explain in part why such an original social theory finds its origins in the writings of a man who was a judge. For a practicing judge the difference between the slow process of Common Law is not that different from Code based law. In both case, and this is a peculiarity of legal reasoning, the rule does not give you an easy access to the individual case.^{xix} A “juge d’instruction” (a strange mixture between a prosecutor, a judge and a lawyer, typical to the French “inquisitorial” tradition) is well placed to see that any “general opinion” grows case by case to form a “whole” that is nevertheless never superior to the case-law and that a reversal of precedent can easily reverse (well not easily, that’s the whole point). For a judge, the Code (or the case law) is never seen as more than a reference, a summary, a memory, a “composite photograph”, a guide; it is not a structure from which one could deduce any individual motif or to which individual behavior should obey. The law sits side by side with a multiplicity of cases and precedents.

Son of a judge and a judge himself for most of his active life, Tarde could feel the gap between rules and individual behavior every day. It is tempting to find within that longstanding judiciary practice the root of his deep seated diffidence to any structural account.^{xx} When Tarde heard the words “laws of society” in Spencer or even Durkheim, or “laws of nature” when reading natural scientists, he knew, first hand, that this was, at best a loose legal metaphor, and that it could never truly be the way that elements and aggregates would conspire together.^{xxi}

Although deeply fascinated by Darwin, Tarde avoided the temptation of social Darwinism (quite a feat at the end of the 19th century) and for the same reason. Just as there is no “collective self” in human society, it can not be expected to appear in any in animal or plant society. He could not believe for one minute that sociology could be “reduced” to biology since in both cases societies are made of the same stuff. Hence Tarde’s powerful appropriation of Darwin’s discovery that no clarification on the genealogy of, for instance, individual horses, could ever come from an appeal to any Idea of a Horse. Among “astonished associates”, evolutionary biologist will never see the emergence *ex abrupto* of this “marvelous result”: a “collective Horse” born “collectively” from no mare and no stallion! Tarde might be considered the only French Darwinian, the only one who saw that the problem of composing organisms was the same in human and biological assemblages. No overall scheme in one, no overall scheme in the other. And especially, no “law of the jungle”.

A judge, an avid reader of Leibniz (witness his most daring article *Monadologie et sociologie*) and of Darwin, could not but be struck by the case by case, organism by organism nature of any genealogy. For him, in whichever domain — science, law, biology— any belief in a structure is nothing but the pre-scientific, pre-Darwinian infancy of the social sciences. Structure is what is imagined to fill the gaps when there is a deficit of information as to the ways any entity inherits from its predecessors and successors.

Tarde would not have been greatly surprised to learn that when we apply the same ideal of science to societies of apes, ants or cells, here too, we begin to shift from a gross, statistically produced structure, to a trajectory of individual

innovations. When primatologists learned how to recognize individual baboons, vervets or chimpanzees, they too had to abandon rough and ready notions of a “collective self”. They began to follow how each organism managed to engender a highly unstable aggregate that had to be constantly surveyed and reassembled through interactions (grooming, following, fighting, copulating, etc).^{xxii} Tarde would have been even more thrilled when the discovery was made that the study of bacteria, marked so as to individualize them, produces different results from those obtained by studying them in bulk. What was lost in the idea of a law plus minor individual variation was the rather amazing differentiation between individual bacterial contributions to reproductive success.^{xxiii} The scientist who was clever enough to succeed in inventing an instrument able to capture the contributions of each bacteria (the same has been done with ants), has produced a much more accurate picture of their aggregates.

Here again the opposition is not between a holistic view of the societies (bacteria, ants, monkeys or humans) and an individualist ones. It is between a first approximation through crude statistical records that loses most of the inner quantification of the organism, and a more refined one that has learned how to follow how *each* of those organisms inherits and transmits its own individual innovations. Change the instruments, and you will change the entire social theory that goes with them. The only thing to lose is the notion of a structure, distinct from its incarnations, this artifact that compensates for a deficit of information.

4) A monad, not an atom

The more we focus on the individual monad the more quantitative evaluation we will get. As long as we have not grasped this point, which seems at first so counterintuitive, the main difficulty of Tarde’s idea of quantification will remain, despite radically improved instruments. This is especially true in economics, a science to which Tarde dedicated his last years^{xxiv} in an attempt to render it more quantitative *and* more psychological: “The tendency to mathematize economic science and the tendency to psychologize it, far from being irreconcilable, should rather, in our view, lend each other mutual support.”^{xxv} He would add:

“No man, no people has ever failed to seek, as a prize for relentless efforts, a certain growth either of wealth, or glory, or truth, or power, or artistic perfection; nor has he failed to fight against the danger of a decrease of all of these assets. We all speak and write as though there existed a scale of these different orders of magnitude, on which we can place different peoples and different individuals higher or lower and make them rise or fall continuously. Everyone is thus implicitly and intimately convinced that all these things, and not only the first, are, in fact, real quantities. Not to recognize this truly quantitative – if not measurable de jure and de facto — aspect of power, of glory, of truth, of beauty, is thus to go against the constant of mankind and to set as the goal of universal effort a chimera.” (Psychologie économique Tome 1. p. 67).

Here resides the fourth and final reason why Tarde’s sociology seems so original and so fresh for us today. A judgment of taste, an inflexion in the way we speak, a slight mutation in our habits, a preference between two goods, a decision

taken on the spur of the moment, an idea flashing in the brain, the conclusion of a long series of inconclusive syllogisms, etc —what appears most qualitative is actually where the greatest numbers of calculations are being made among “desires” and “beliefs”. So, in principle, for Tarde, this is also the locus where we should be best able to quantify. Providing, that is, that we have the instruments to capture what he calls “logical duels”.^{xxvi}

The quantitative nature of all associations will seem bizarre if we mistakenly impute an idea of the individual element seen as an *atom* to Tarde. But the very idea of an individual as an atom is a consequence of the social theory he is fighting against. It is an outcome, as we just saw, of the statistical instruments that were available back then. In this traditional view, quantification starts when we have assembled enough individual atoms so that the outline of a structure begins to appear, first as a shadowy aggregate, then as a whole, and finally as a law dictating how to behave to the elements. The division between a qualitative and a quantitative social science is in essence *the same* as the division between individuals and society, tokens and type, actors and system. This is why no one has ever succeeded in “overcoming” the dichotomy between holistic and individualistic social theories.

But for Tarde, the whole scene is entirely different. The reason why there is no need for an overarching society is because there is no individual to begin with, or at least no individual atoms.^{xxvii} The individual element is a monad, that is, a representation, a reflection, or an interiorisation of a whole set of other elements borrowed from the world around it. If there is nothing especially structural in the “whole”, it is because of a vast crowd of elements *already present* in every single entity. This is where the word “network” —and even actor-network— captures what Tarde had to say much better than the word “individual”. Contrary to what is often said, there is not even a hint of “methodological individualism” in this argument. There is no psychologism, nor of course any temptation toward “rational choice”.

Hesitation is the great focus of Tarde’s work. When any actor is found to be hesitating it is not because they are an atom taken in different fields of forces pressing on them from the outside. An actor hesitates as a monad which has already gathered within itself vast numbers of other elements to which it offers the stage for an indefinite number of logical duels to take place. In other words, if we are able to quantify an individual “one”, it is because this instance is already “many”. Behind every “he” and “she”, one could say, there are a vast numbers of other “hes” and “shes” to which they have been interrelated.^{xxviii} When Tarde insists that we detect specific embranchments and bifurcations behind every innovation, he is not saying that we should celebrate individual genius. It is rather that geniuses are made of a vast crowd of neurons!

“In a society no individual may act socially without the collaboration of a vast number of other individuals, most often ignored. The obscure workmen who, through the accumulation of small facts, have prepared the apparition of a grand scientific theory formulated by a Newton, a Cuvier, a Darwin, compose, if one may say so, the organism of which this genius is the soul; their obscure works are the cerebral vibrations of which this theory is the conscience. Conscience means cerebral glory,

so to speak, of the most influential and most powerful element of the brain. Left to itself, a monad is powerless. This is the most important fact, and it leads immediately to explain another one: the tendency of monads to aggregate. (...) If ego is nothing but a directing monad among myriads of monads commensally aggregated under the same skull, what reason do we have to think that they are inferior? Is a monarch necessarily more intelligent than his ministers and subjects?" (Monadologie et sociologie, p. 28)

A monarch is to his people, what conscience is to the brain, what ego is to the neurons, what Darwin is to the thousands of naturalists through the obscure work on which he depends for his “glory”! Once again, the “one” piggy backs on top of the “many” but without composing a “they”. This is where Tarde’s originality resides: everything is individual and yet there is no individual in the etymological sense of that which can not be further divided. This loss is a paradox, but only for those who would begin by opposing the structure and the elements.

Tarde derives his position from Leibniz’ solution: there are monads all the way down, and God is in charge of regulating the connections between all of them without any of them acting directly on any other. For Tarde, of course, there is no God; therefore no pre-established harmony, no transcendence of any sort. (Tarde is probably the most systematic atheist there has ever been since he rejects even the transcendence of a “collective self” emerging *ex abrupto* from its associates.)^{xxxix} If there are monads but no God, the only solution is to let monads *penetrate* one another freely. Tarde’s monads are a cross between Leibniz and Darwin: each monad has to get by in order to interpret or “reflect” (Leibniz’s term) all of the others, to spread as far and as quickly as possible.

Tarde devises his notions of “desire”, “belief” and “possession” very early on to code those relationships of interpenetration and competition from which all quantification resides in the end. The question “how many” is as essential to a monarch representing his people without any already existing political structure to hold them, as it is to Darwin’s theory of evolution emerging out of the myriads of factoids assembled by his numerous collaborators toiling to collect samples in obscurity. How many entities can one entelechy reach? —That is *desire*. How many can they stabilize, order, fix or keep in place? —That is *belief*. No providence whatsoever can produce any harmony over and above the interplay of desire and belief in each monad, let loose on the world.^{xxx}

This is precisely the reason why quantification is so important: not only does it capture internal logical duels, but it is the only way for monads to *coordinate* their actions externally with others in the absence of any providence. In a very strict sense *in Tarde’s atheist monadology the practice of quantification plays the role of Leibniz’ God*. With extreme avidity (a term Tarde prefers to that of ‘identity’), all monads will seize every possible occasion to grasp one another in a quantitative manner. This accelerates and also simplifies their aggregation and cohesion; it modifies them and gives them another turn and another handle. It is in this sense that Tarde can be considered as the inventor of the notion that producing instruments and formalisms plays an active role in making the social visible to itself; and that such production offers many new handles so that the social can be performed anew.^{xxxi} Examine what he says about how the advent of the press facilitates all judgments:

“[...] The development of the press had the effect of giving moral values a quantitative character that was more and more marked and better and better suited to justify their comparison with the exchange value. The latter, which must also have been quite confused in the centuries before the common use of currency, became better defined as currency spread and became more unified. It was then able to give rise, for the first time, to political economy. Similarly, before the advent of the daily press, the notions of the scientific or literary value of writing, of people’s fame and reputation, were still vague, as the awareness of their gradual waxings and wanings could barely be felt; but with the development of the press, these ideas became clearer, were accentuated, became worthy of being the objects of philosophical speculations of a new sort.” (**Psychologie économique**-1, p. 76).

When Tarde says there is no “whole” transcendent to its instantiations, and when he says that any quantification deployed by various statistical or metrological instruments will have huge influence on the way all monads cohere and conspire, he is repeating the same argument twice. This is why his theory of science is so original: science is *in* and *of* the world it studies. It does not hang over the world from the outside. It has no privilege. This is precisely what makes science so immensely important: it performs the social together with all of the other actors, all of whom try to turn new instruments to their own benefits.

The continuity between the inner and the outer quantification is so complete that Tarde goes even further. He assimilates the quantitative apparatus of so many social sciences to the biological senses. He imagines a progressive fusion between the technologies of statistical instruments and the very physiology of perception. A day will come, he argues, when the standardization and development of statistics will be so complete that we will begin to follow the trajectory of some data about the social world in the same way as we follow the flight of a swallow with out eyes.^{xxxii} Does this strike you as poetry? History is not yet finished, so we must wait and see. A century from now we may well read those predictions in a very different light: data gathering instrumentations will have changed again, and so will the social theories associated with them.

5) Digital traceability... Tarde’s vindication?

The amazing chapter devoted to statistics in *The Laws of Imitation* is inescapably connected to the digital world to which we now have access.

“If Statistics continues to progress as it has done for several years, if the information which it gives us continues to gain in accuracy, in dispatch, in bulk, and in regularity, a time may come when upon the accomplishment of every social event a figure will at once issue forth automatically, so to speak, to take its place on the statistical registers that will be continuously communicated to the public and spread abroad pictorially by the daily press. Then, at every step, at every glance cast upon poster or newspaper, we shall be assailed, as it were, with statistical facts, with precise and condensed knowledge of all the peculiarities of actual social conditions, of commercial gains or losses, of the rise or falling off of certain political parties, of the progress or decay of a certain doctrine, etc., in exactly the same way as we are assailed when we open our eyes by the vibrations of the ether which tell us of the approach or withdrawal of such

and such a so-called body and of many other things of a similar nature” (The Laws of Imitation, p. 167-168).

Is this the prose of someone who despises quantitative science? If it true, as Tarde never tired of objecting to his younger colleague, Durkheim, that the theory of “society” was an artifact of rudimentary statistics, then the consequence for the present are obvious: what would happen to the respective programs of Tarde and Durkheim if social scientists began to have access, a century later, for reasons totally unexpected to both, to types of data that would allow them to follow, without any interruption, with the same tools, and in the same optically coherent space, those “imitative rays” that encompass individual innovations as well their aggregates? It is on this point that we discover why Tarde appears so fresh. The interest he triggers is not about a curious failure of social theory to become scientific, a quaint and queer qualitative view of the social. The most interesting part of Tarde is his lucid expectation of the type of information that should be gathered for a science of the social.

It is indeed striking that at this very moment, the fast expanding fields of “data visualization”, “computational social science” or “biological networks”^{xxxiii} are tracing, before our eyes, just the sort of data Tarde would have acclaimed. If the sociology of science, because of the traceability inherent in the scientific references, would have been the model for disentangling the “hes” and “shes” from the “they” for Tarde, then what we are witnessing, thanks to the digital medium, is a fabulous extension of this principle of traceability. It has been put in motion for not only to scientific statements, but also for opinions, rumors, political disputes, individual acts of buying and bidding, social affiliations, movements in space, telephone calls, and so on. What has previously been possible for only scientific activity—that we could have our cake (the aggregates) and eat it too (the individual contributors)—is now possible for most events leaving digital traces, archived in digital databanks, thanks, let’s say, to Google and associates.

It is quite amusing to imagine Tarde directing his statistical bureau, nurturing so many doubts about the quality of the data he was handing out to the Ministry of Justice (and also to Marcel Mauss who was helping his uncle to write his book, *Suicide*, in which Tarde was trashed every two footnotes...), while dreaming, at the same time, of the many interesting quantitative instruments he had no way of obtaining: the “glorimeter” for following reputation (so easily accessible now with page rankings); conversation for understanding economic transactions (now the object of so many tools following buzz and viral marketing);^{xxxiv} “phonometers” like those invented by Abbé Rousselot^{xxxv} in order to follow the smallest inflexions of the native speakers (now accessible through the automated study of vast corpus of documents).

When Tarde claimed that statistics would one day be as easy to read as newspapers, he could not have anticipated that the newspapers themselves would be so transformed by digitalization that they would merge into the new domain of data visualization. This is a clear case of a social scientist being one century ahead of his time because he had anticipated a quality of connection and traceability necessary for good statistics which was totally unavailable in 1900. A century later, networks and traces are triggering the excitement of social and natural scientists

everywhere.^{xxxvi} Here again, we note that the same scholars no longer make any distinction between the natural and the social domains to which they apply the same notion of networks: “Everything is a society”, including ants, bacteria, cells, scientific paradigms or markets.

What Tarde could not have anticipated, however, are the added bonuses of the digital world that now provides an embodiment for his theory, at last: the notion of *navigation* where we are able to physically (well, virtually) navigate on our screens from the individual data points to the aggregates *and back*. In other words, the aggregate has lost the privilege it maintained for one century. Through the ease with which we can navigate a datascape, we manage to interrupt the transubstantiation of the aggregate into a law, a structure, a model and complicate the way through which one monad may come to summarize the “whole”. But he “whole” is now nothing more than a provisional visualization which can be modified and reversed at will, by moving back to the individual components, and then looking for yet other tools to regroup the same elements into alternative assemblages.^{xxxvii}

To be sure, the many tools we now have on our screens are still primitive (and many network based images are often no more readable than tea leaves at the bottom of a cup). But that’s not the essential point. The point is that the whole has lost its privileged status: we can produce out of the same data points, as many aggregates as we see fit, while reverting back at any time, to the individual components.^{xxxviii} This is precisely the sort of movement that was anticipated by Tarde’s social theory although he had no tool to explicate his vision, other than his prose. While he was attempting to direct attention towards the “imitative ray” *in and of itself*, in order to displace the individual element *as well* as the structural whole, it has been altogether too easy for sociologists, starting with Durkheim, to corner him into dead end discussions about the micro versus the macro, the psychological versus the sociological, or the individualistic versus the holistic. In an unfair twist, it has been those who had only rudimentary tools, who have appeared more scientific than the one who was envisioning a much more refined and accurate type of data. Digital navigation through point-to-point datascape might, a century later, vindicate Tarde’s insights.

The overarching advantage of this type of quantification is worth underscoring: because “everything is a society” there is no clear divide between the biological and the social. For the first time in the history of science, the same data may look just as familiar to those who come from the “natural” sciences as to those who come from the “interpretative” ones. At the very least, reading Tarde might help social scientists to seize upon the opportunity provided by new digital media much faster than they might otherwise have done. The insights in his work can assist us in abandoning the impossible task of reconciling an old social theory, born out of discontinuous data, with the research terrain we now have readily available, at a click of a mouse.

* This paper has been written with the support of the European Program MACOSPOL (www.macospol.com). I thank Dominique Boullier, Emmanuel Didier, Louise Salmon & especially Isabelle Stengers for their useful remarks. I benefited once again from Martha Poon’s editorial skills.

-
- ⁱ Latour, Bruno (2002) "Gabriel Tarde and the End of the Social", In **The Social in Question. New Bearings in the History and the Social Sciences**, (Eds, Joyce, P.) London, Routledge, pp. 117-132 ; Toews, David (2003) "The New Tarde: Sociology after the End of the Social", *Theory, Culture and Society*, **20**, 81-98.
- ⁱⁱ It is the very definition of the individual being that is in question for Tarde, see below.
- ⁱⁱⁱ Chapter one: "The Debate Tarde/Durkheim", pp.xx
- ^{iv} See the excellent point made in Montebello, Pierre (2003) **L'autre métaphysique. Essai sur Ravaisson, Tarde, Nietzsche et Bergson**, Paris, Desclée de Brouwer, on those two difficult and central notions of Tarde, especially pp. 122-127.
- ^v **Monadologie et Sociologie** translation Terry N. Clarke (1969) **Gabriel Tarde. On Communication and Social Influence. Selected Papers. Edited by Terry N. Clark**, Chicago, University of Chicago Press.
- ^{vi} This was a great attraction at the turn of the century, especially when it was used to visualize the "criminal type" by superimposing images of criminals in the police archives! Gamboni, Dario (2005) « Composing the Body Politic. Composite Images and Political Representations 1651-2004 », In **Making Things Public. The Atmospheres of Democracy**, (Eds, Latour, B. and P. Weibel) Cambridge, Mass, MIT Press.
- ^{vii} On the key concept of possession, see Debaise, Didier (2008) "Une métaphysique des possessions. Puissances et sociétés chez Gabriel Tarde", *Revue de Métaphysique et de Morale*, 60, 8, 447-460.
- ^{viii} : "Il en résulte que la contagion imitative de cette corporation antisociale [les brigands] ne reste pas tout entière renfermée dans son propre sein, où elle se traduit par le mutuel endurcissement, mais qu'elle rayonne en partie au dehors parmi les déclassés qu'elle classe, parmi les oisifs qu'elle occupe, parmi les décavés de tout genre qu'elle enfièvre des perspectives d'un nouveau jeu, le plus riche en émotions. Voilà la vraie source du mal." (**Criminalité comparée**, p. 52) cité in Didier Emmanuel "Tarde et le mouvement statistique" (document de travail, CESDIP, juin 2007).
- ^{ix} For Tarde, the production of data by the administrations and the institutions is always foregrounded which makes him, once again, an important precursor of science studies. For him, the sciences –natural, social or cameral— are added to the world they study. This is especially true in the case of criminology, Tarde, Gabriel (2004) **La Criminalité comparée**, Paris, Les Empêcheurs. In the case of criminal records, he had a first hand knowledge of the ways they work (see below).
- ^x In **Laws of imitation** Tarde claims that the best way to detect those imitative rays is in archeology since only there -when the living beings have disappeared and you are left with long series of artifacts- do you see in the purest and most abstract light what has been imitated by the long disappeared humans.
- ^{xi} Tarde, Gabriel (1962) **The laws of imitation**. Translated from the 2d French ed. by Elsie Clews Parsons. With an introd. by Franklin H. Giddings., Gloucester, Mass, P. Smith.

-
- xii This is the critique made by Sperber, Dan (1996) **La contagion des idées**, Paris, Editions Odile Jacob. No doubt that Tarde would have been fascinated nonetheless by the discovery of mirror neurons, Rizzolatti, Giacomo, Sinigaglia Corrado and Raiola Marilène (2008) **Les neurones miroirs**, Paris, Odile Jacob..
- xiii Tarde does for social theory what Pasteur had done in epidemiology: in the same way as bacteriology allows one to move from a regional theory of miasmas to a point to point and person to person theory of contagion through a specific vector (cholera bacillus, Koch' bacillus, etc), Tarde moves from an aggregated cloud of collective qualities to a highly specific point to point, person to person "contagion" of ideas each of them having its own peculiar effectivity.
- xiv This is what allowed me to consider Tarde as the real inventor of ANT Latour, Bruno (2005) **Reassembling the Social. An Introduction to Actor-Network Theory**, Oxford, Oxford University Press.
- xv What makes a society in Tarde has been the special concern of Debaise, op. cit.
- xvi I am following here Didier, Emmanuel “Tarde et le mouvement statistique” (document de travail, CESDIP, juin 2007) and (2009) **En quoi consiste l'Amérique? Les statistiques, le New Deal et la démocratie**, Paris, La Découverte.
- xvii For a broad view of the many different ways social sciences have developed to grasp the collective, see Desrosières, Alain (2002) **The Politics of Large Numbers: A History of Statistical Reasoning (translated by Camille Naish)**, Cambridge, Mass, Cambridge University Press.
- xviii A “Mémoire sur l’organisation de la statistique criminelle en France”, 1893. Most of his work is now available in Tarde, Gabriel (2004) **La Criminalité comparée**, Paris, Les Empêcheurs.
- xix Latour, Bruno (2009) **Law in the Making. An Ethnography of the Conseil d'Etat** (translated by Marina Brilman and Alain Pottage), London, Polity Press..
- xx See the same argument in Milet, Jean, “Introduction”, in Tarde Gabriel, *Les Transformations du droit*, Paris, Berg International, 1994, pp. 7-9. I thank Louise Salmon for this reference. Her thesis on the history of Tarde’s milieu will contain many important material on this link between the practice of law and Tarde’s social theory.
- xxi He even extended this diffidence to the laws of nature : “materialists have to invoke, as complement of their erratic and blinds atoms, universal laws or the unique formula to which all those laws could be reduced, a sort of mystical commandment to whom all beings would obey and which would emanate from no being whatsoever, sort of ineffable and unintelligible verb which, without having ever been uttered by anyone, would nonetheless be listened to always and everywhere.” p. 56 **Monadologie et sociologie**.
- xxii Strum, Shirley and Fedigan Linda (Eds.), (2000) **Primate Encounters**, Chicago, University of Chicago Press ; Cheney, Dorothy L. and Seyfarth Robert M. (1990) **How Monkeys See the World. Inside the Mind of Another Species**, Chicago, University of Chicago Press.

- xxiii Stewart, Eric J., Madden Richard, Paul Gregory and Taddei François (2004) "Aging and Death in an Organism That Reproduces by Morphologically Symmetric Division", *PLoS Biol*, **3**, doi:10.1371/journal.pbio.0030045.
- xxiv But on which he had already contributed in one of its earliest articles "La psychologie ou économie politique", *Revue Philosophique*, tome xii, 1881, pp. 232-250; 401-418.
- xxv **Psychologie économique** is published in 1904 ; see Latour, Bruno and Lépinay Vincent (2008) **L'économie science des intérêts passionnés - introduction à l'anthropologie économique de Gabriel Tarde**, Paris, La Découverte, (English translation: (2009) **The Science of Passionate Interests. An Introduction to Gabriel Tarde's Economic Anthropology**, Prickly Paradigm Press, Chicago (2009), most of the important passages are accessible on the following site : <http://www.bruno-latour.fr/>). See also the special issue on Tarde's economics: **Economy and Society**, Volume36, Number4, November2007.
- xxvi See Tarde, Gabriel (1999) **La logique sociale**, Paris, Les Empêcheurs de penser en rond which is entirely devoted to an alternative quantitative and yet non formalist socio-logic.
- xxvii The same argument is made by the pragmatists, see Dewey, John (1927 1954) **The Public and Its Problems**, Athens, Ohio University Press, especially the second chapter which deduces the very notion of an "individual" from a faulty definition of the State. It is interesting to note that the domination of the notion of structure on social thought is so strong that Tarde, as well as the pragmatists, have been constantly misunderstood.
- xxviii Hence Tarde's interest in the phenomenon that economists of innovation and historians of technology call "lock in", "standardization" or "entrenchment".
- xxix Witness the radical critique of providentialism Tarde pursues throughout the whole of **Psychologie économique**. This critique allows him to criticize the notion of a social animal as well as that of the laissez-faire free marketers... Latour and Lépinay op. cit. p.xx.
- xxx Tarde's first paper on the question from 1880 has a very revealing title: "La croyance et le désir, la possibilité de leur mesure", *Revue philosophique*, tome X, pp. 150-180, 264-283, republished in **Essais et mélanges sociologiques**, Maloine 1895. "No intellectual effort will make it possible to conceive of an animal, or a monocellular organism, which, being sensitive, would not also be endowed with belief and desire, that is, will not associate and dissociate, collect and reject its impressions, its sensations whatever they are, with more or less intensity. M. Delboeuf explains very well that even an infusoria is able to utter this mute judgment: I am hot". **Essais et Mélanges**, p. 185 candad
- xxxi Even though the word "performative" is hotly debated (see Emmanuel Didier "Do Statistics "perform" the Economy?" in MacKenzie, Donald, Muniesa Fabian and Siu Lucia (Ed.), (2007) **Do Economists Make Markets? On the Performativity of Economics**, Princeton, Princeton University Press) it is still the best concept to define science studies' interpretation of the reflexive nature of formalisms.
- xxxii Pages 75-132 in Tarde, Gabriel (1903) **The Laws of Imitation** (translated by Else Clews Parsons with an introduction by Franlin H. Giddings), New York, Henry Holt and Company.

- xxxiii Lazer, David and alii (2009) "Computational Social Science", *Science*, **323**, 721-723; Wimsatt, William C. (2007) **Re-Engineering Philosophy for Limited Beings: Piecewise Approximations to Reality**, Cambridge, Mass, Harvard University Press.
- xxxiv Emanuel Rosen (2009) **The Anatomy of Buzz Revisited: Real-life lessons in Word-of-Mouth Marketing**, Broadway Business.
- xxxv See Andy Barry's chapter in this volume.
- xxxvi Barabasi, Albert-Laszlo (2003) **Linked: How Everything Is Connected to Everything Else and What It Means**, Plume, New York ; Benkler, Yochai (2006) **The Wealth of Networks. How Social Production Transforms Market and Freedom**, New Haven, Yale University Press.
- xxxvii For striking examples of such a navigation, see <http://www.demoscience.org/> assembled by the European project MACOSPOL.
- xxxviii Mogoutov, Andrei, Cambrosio Alberto and Mustar Philippe (2008) "Biomedical innovation at the laboratory, clinical and commercial interface: A new method for mapping research projects, publications and patents in the field of microarrays," *Journal of Informetrics*, **2**, 341-353.