Gottfried Leibniz

Life and Works

‘Perhaps never has a man read as much, studied as much, meditated more, and written more than Leibniz...’ (Denis Diderot, cited in Look 2008)

Gottfried Wilhelm Leibniz enters the world of process philosophy with a fanfare. ‘The principal standard bearer of process theory in modern philosophy was Leibniz’, declares Rescher (1996:12). The seventeenth century philosopher from Germany has known many eponyms, the word ‘genius’ figuring most prominently among them. In retrospect, he was the last to embody mastery of philosophy as well as every scientific discipline. Apart from his philosophical contributions, to which this chapter is devoted, he invented the infinitesimal calculus and binary numbers, mathematical and logical forms of notation still in use (Leibniz-Forschungsstelle 2012). All this was done, as we would say today, in his spare time while travelling in coaches through Europe in the service of various masters. His ‘work time’ was devoted to politics, and for most of his adult life he served as what Rescher (1979:4) calls a ‘minister-without-portfolio in charge of historico-legal, cultural, and scientific affairs’ combining the work of a Privy Councillor and diplomat with the more practical concerns of engineering a solution to rid the ducal silver mines of water, or designing the waterworks for the Palace in Hanover. In contrast to a modern reader, Leibniz seems never to have seen any contradiction in this (although he, understandably, felt the restrictions of a 24 hour day quite keenly and often complained about them). On the contrary, he permanently translated knowledge won in one area to the others, deeply convinced that the world of theory and the world of praxis, the world of nature and the world of morals, the divine and the human world, all formed one perfect system.

This last word introduces the big leitmotif in Leibniz’ thinking. Not only does he believe there is such a thing as a system of the world and that a universal science can be developed to analyse it, he also presents us in his work with one of the most elaborate and consistent systems in occidental philosophy. Rescher (1979) considers it to be without flaws (the only problem being that a modern audience cannot accept its premises); the great Leibniz exegete Loemker likens it to a Leviathan. Unfortunately, it also stands out in occidental philosophy as the system most unsystematically exposed. In his lifetime, Leibniz only wrote two books and nine essays. The rest of his oeuvre consists of 50,000 independent pieces, among them 15,000 letters he exchanged with 1100 addressees, archived in the ducal archives of Hanover and the Academy of the Sciences in Berlin. Of these – as of summer 2012 – less than 50% have been edited¹. In these letters, Leibniz, whose irenic temperament has often been commented upon, always adapts his argument to the level of knowledge of his correspondent, which leaves us with documents written in three different languages (German, French and Latin) and in many different styles featuring many different concepts. Moreover, he, quite naturally, modified and elaborated his thoughts over the years. In terms of exegesis, it is a nightmare. Bertrand Russell (1995:572), who seems to have
felt personally affronted by this careless manner of exposition and even suspects Leibniz of deliberately hiding his system, writes: ‘He did work on mathematical logic which would have been enormously important if he had published it; he would, in that case, have been the founder of mathematical logic, which would have become known a century and a half sooner than it did in fact.’ – despite the grumpy overtones, no mean verdict from a star contributor to the field.

In terms of writing a handbook chapter about Leibniz, this situation is not the stuff of dreams either. For this reason, I will rely more than usual on secondary authors who have studied the unpublished works: Broad (1975), Cassirer (1962), Loemker (1956; 1973), Rescher (1979; 1981; 1996) and Russell (1951; 1995). A useful quick guide to Leibniz’ philosophy is Look (2008).

Before we move on to his philosophy proper, let me briefly put Leibniz’ life and work into context. Gottfried Wilhelm Leibniz was born at Leipzig in 1646. When the child was two years old, the Thirty Years’ War came to a conclusion. It had ravaged the Continent, most severely the former Holy Roman Empire in its centre, and decimated its population by an estimated quarter. The experience of this war, fought over religious as well as proto-nationalist differences, left a deep impression on the philosophers of the time. It created the desire to find a means of settling disputes decisively, irrevocably and to the benefit of all parties. Leibniz’ dream, like that of many of his contemporaries, was to overcome religious and political divisions. Russell (1995:572f.) quotes him as writing: ‘If controversies were to arise, there would be no more need of disputations between two philosophers than between two accountants. For it would suffice to take their pencils in their hands, to sit down to their slates, and to say to each other (with a friend as witness, if they liked): Let us calculate.’

Leibniz studied Philosophy and Law in what were, at the time, the philosophical backwaters of Europe. Paris was the Continental hub of the new thinking with Descartes having died only twenty years before. Leibniz’ education, nevertheless, provided him with two skills he would make heavy use of: one was a sound foundation in Ancient and Scholastic philosophy, the other the ability to teach himself at breathtaking speed. His first employment was with the Elector of Mainz, who sent him on a mission to Paris – perhaps the most decisive journey of his life. Leibniz stayed in Paris from 1672 to 1676, where he met, among many others, Malebranche and Huygens and studied unpublished manuscripts of Descartes and Pascal. Arriving as an autodidact in Mathematics, he presented the world four years later with the infinitesimal calculus. At the same time, he started sharpening the contours of his own philosophy vis-à-vis the Cartesians. From Paris, he made a trip to London in 1673, where was made a member of the Royal Society. On his way back to Mainz in 1676, he travelled via Amsterdam to meet Spinoza shortly before the latter’s death. He corresponded, among many others, with Hobbes, Locke, and Newton as well as Boyle, Mariotte, and Jakob and Johann Bernoulli.

When the Elector of Mainz died, Leibniz entered the services of the Dukes of Hanover. He served three dukes, among them George, the later King of Great Britain, whose accession he helped negotiate. Leibniz died in 1716 leaving a staggering legacy, the importance of which only became clear in the nineteenth and twentieth century. In physics, he proposed the law of the conservation of energy and developed a dynamics based on it. He saw, two hundred years before Einstein, that energy was the essence of matter and that time and space were relative to it. In mathematics, he developed the
differential and infinitesimal calculus as well as binary numbers and saw that the latter could form a basis for calculating machines. His input into logic, though for many years unpublished, led Frege to say: ‘Leibniz threw out such a profusion of seeds of ideas that in this respect he is virtually in a class of his own.’ (Frege, cited in Look 2008). His philosophy stands at the beginning of process metaphysics in the modern age.

**Metaphysics: A Systematic Sketch**

**Substances**
Here it is, the Evil Word for process theory. I must start the metaphysics part with the admission that the standard bearer of modern process philosophy doubles as one of the greatest substance philosophers of all times. Substances – his ‘monads’ that we will discuss in more depth later on – are the beginning, middle and end of Leibniz’ metaphysics. They are what he inherits from his Classic and Scholastic education, they are what his contemporaries, most notably Descartes, build their systems on. Leibniz, however, gives them a dynamic twist. He has studied the ancient philosophers well enough to see that it has been done before, and he is genius enough to fuse his mathematical and physical discoveries with the old notion. What he arrives at is a basic building block of reality – a substance – that is not a thing but a process or dynamic principle. In what follows, I will say more about substances; at this moment may it suffice to sketch them as uncorporeal spirits that develop autonomously in accordance with their own inborn programme or entelechy.

**Basic Principles**
Nothing gives more convincing testimony to the systematicity of Leibniz’ thought than the fact that different exegetes declare different principles in Leibniz’ works to be the basic ones, and still manage each time to reconstruct his system from these different starting points. In this sense, one may pick from the following (ordered according to their simplicity)²:

The **principle of non-contradiction** goes back to Aristotle, who states that a proposition cannot be true and false at the same time and in the same respect. Thus, either ‘A is b’ or ‘A is non-b’ must be true at a certain time.

The **principle of the best** holds that God always acts for the best. This follows from the fact that God is perfect and that anything sub-optimal lacks something (in comparison to the optimum) and is thus not perfect.

I should hasten to add at this point – because we will come back to God a couple of times – that Leibniz, like most occidental philosophers, is a thoroughly unreligious person. (The folk in Hanover, in fact, nicknamed him ‘believe-in-nothing’ and distrusted him for it.) God, to him, is not a Judeo-Christian anthropomorphization but a logical and metaphysical principle expressing utmost perfection,
omniscience and omnipotence. In most cases where this chapter will refer to Him, it does not hurt to picture Him as the ultimate supercomputer – Leibniz, who came up with binary numbers and spent a lot of his money building calculation machines, would have approved.

The principle of the identity of indiscernibles states that no two substances can have an identical set of attributes. They must at least have one attribute to distinguish them; otherwise they are not two substances but one.

While these first three agree with common sense and basic logic, the fourth principle is less intuitive.

The predicate in notion (praedicatum inest subiecto) principle assumes that everything that can be said (predicated) of a substance is already contained in the name of that substance (the subject). For example, the fact that Leibniz died in 1716 is contained in the notion of Leibniz, as is him meeting the Duchess of Hanover in the Palace Gardens at two o’clock on the 23rd of August 1680. Everything, in other words, that Leibniz ever did or was is contained in his notion. This implies that all propositions about him are analytical. The same applies to persons or things currently living or even to persons or things yet to be born: everything they will ever do or be is already implied in their notion. This would, one may object, only be true if we knew everything about that person, which is impossible, especially with regard to the future. True, concedes Leibniz, but there is one mind who knows it all: the perfect, omniscient mind, God. To Him every proposition is a priori true or false. To human beings, things are not as clear, and so many propositions about individuals have a synthetic character within our limited understanding.

Conclusions Drawn from the Principles: God and the World

The ultimate building blocks, as we have seen, are substances. Substances have attributes. Some of these attributes, like colour or age, refer to the substance alone, while others, like family status or profession, refer to other substances. Because of the latter, substances are related among each other. Now, if we take the principle of non-contradiction into account, we can see that, as God created the world, She could not create substances that stood in a contradictory relationship to each other (for even omnipotence cannot overcome contradiction). She could, for example, not make Adam the father of Cain and make Noah the father of the same Cain. This implies that a decision for one particular substance limits the options of the available other substances. In this sense, there are ‘sets’ of substances – Leibniz calls them ‘compossible substances’ – of which either set A or set B can be realised. Which set did God choose? God, being perfect, chose the best. This is Leibniz’ doctrine of the best of all possible worlds, which, as we see, does not claim that this world is perfect but only claims that it is the best among the available choices. This world is also in harmony, not because it contains violins or a particular aesthetic value, but because it does not contain contradictions. And since this harmony was created at the beginning of the world, it is called a pre-established harmony.

Still, Leibniz’ contemporaries (and many afterwards) found it difficult to believe that a world that contains so much suffering should be better than, say, a world that only contained a single rose. In other words, what was God’s criterion for determining the best? Leibniz argues that it is maximization of
existence. Among worlds that may be equally good, God will hence choose the one with the most creatures in it. This is the principle of plenitude. While the argument is not the strongest in logical terms, Leibniz clung to it because his and others’ discoveries in physics (for example, Fermat’s optics or the Brychystochrone curve; see Rescher (1979) for details) all seemed to indicate that nature followed minimization and maximization principles. In this spirit, Leibniz often uses the example of water forming spherical droplets that contain the biggest volume within the smallest surface area. He says: ‘The ways of God are those most simple and uniform … [being] the most productive in relation to the simplicity of ways and means.’ (Leibniz, cited in Rescher 1979:29).

The world of monads forms a continuum because monads only differ from each other in their point of view (see below) and these differences can be infinitesimal. Hence its derivatives, the physical and psychological world, form a continuum, too. This implies that they contain infinite actualisations. As human beings have finite minds, they cannot grasp this infinitude. So to them it becomes contingence. If we, for example, knew everything about Caesar (as God did in that particular moment), we would have been able to predict that he would cross the Rubicon. If we knew everything about a radioactive atom, we would be able to predict whether it will decay at a particular moment. Since we do not, these events appear contingent to us. The same goes for freedom of will. Very much like modern neurobiologists, Leibniz argues that every one of our actions is predetermined by the entelechy of our monad, but since we do not know what this entelechy entails, we are, for all practical purposes, free in our actions. As Rescher (1979) rightly maintains, Leibniz is probably nowhere in his metaphysics more indebted to mathematics than in the concept of infinity. It is what bridges the gap between divine omniscience and human contingence in both the physical and the moral world. Or, to quote Leibniz: ‘In truth there are two labyrinths in the human mind, one concerning the compositions of the continuum, the other concerning the nature of freedom. And both of these spring from exactly the same source – the infinite.’ (Leibniz, cited in Rescher 1979:43)

There is no difference in principle between the world of physics and the world of psychology. Both are construed in parallel, one following the laws of efficient causation, the other the laws of teleology. This is so because metaphysically speaking they go back to the same form of causation. In the predicate in notion principle, we have seen that the subject contains all its predicates. Metaphysically speaking, the subject, which is the substance or monad, is indeed the reason for its predicates because it takes on or sheds attributes in accordance with its own drive or force. It is, hence, not only true to say that Caesar crossed the Rubicon, but that Caesar was the reason why Caesar crossed the Rubicon meaning that something in Caesar (his dispositions, preferences or skills) drove him to cross that river. The same is true for physical events. The reason for the eruption of Mount Vesuvius in AD 79 is Mount Vesuvius.

A further epistemological consequence of the predicate in notion principle is the distinction between truths of reason and truths of fact. Truth, to Leibniz, is the absence of contradiction. This is a quite harmless proposition if read in purely logical terms. In Leibniz’ metaphysical terms, however, it forms a far more powerful statement. If we remember that God created the world without contradictions, then this implies that a true proposition refers to a fact of the world, or vice versa, that a false proposition refers to a non-existing setup of the world. For example, the proposition that London is the capital of France is wrong for two reasons. First, it contradicts the fact that Paris is the capital of France and that
each country can only have one capital. Second, it contradicts the principle that only a French town can be the capital of France. In this sense, Leibniz is one of the precursors of a coherence theory of truth.

Now, one may object, how does somebody from the proverbial Texas know whether London is a French town or Paris already claims to be the capital of France? This is where truths of reason differ from truths of fact. For truths of reason (analytical, mathematical, logical truths), a finite analysis of subject and predicate will show whether or not they contain a contradiction. For truths of fact, i.e. claims about the physical or psychological world, we again face infinity and would have to conduct an infinite analysis of the infinite predicates of an individual substance to come to a conclusion. This is something beyond human capability. Hence, Leibniz argues, we have to contain ourselves with the (empirical) analysis of phenomena and devise concepts and notations to approximate the infinite, as we do in mathematics. This, however, is not as humble as it sounds. Leibniz was convinced that physical as well as psychological events were connected by laws. These laws were created by God in accordance with Her initial decision to create the best of all possible worlds. Since human beings can optimize too, they can discover these laws. More particularly, as physics and psychology strive for maximization or minimization (see above), mathematical curve sketching can give us the ideal states they are striving for. These physical and psychological laws also allow human beings, who are unable to list the infinite number of real occurrences, to nevertheless come up with the law that encompasses them. This works in the same way as the finite expression ‘f(x)’ refers to an infinite number of values. It applies even on a metaphysical plane, for if a monad is a substance developing in accordance with an internal programme or law, then there should be a function to capture the temporal sequence of states the monad develops into. We can, thus, see that Leibniz scientific programme is indeed quite ambitious. He would, nevertheless, hold that science can only reach reality through abstractions, whereas the true building blocks of reality are individualizations. Like with irrational numbers (Leibniz’ example), we may come up with a finite notation and some form of approximation, but we can never grasp the fully individualized realization.

This shortcoming, one may note, is of an ontological, not an epistemological nature. In contrast to Kant, Leibniz was not worried about our ability to perceive empirical phenomena. He held that we are able to gain knowledge of the properties of things, for example the melting point of gold or its hardness, and discover lawful relations between them.

The Monads

It is now time to talk about the most famous (or infamous) elements of Leibniz’ metaphysics. The word ‘monad’ derives from Greek ‘monas’, which means unity. The term had been used in Classic and Medieval philosophy (among others, by Plato to denote ideas), but nowadays is almost exclusively reserved for Leibniz’ conception (Lötzsch 1984). His monads are, in many respects, Platonic ideas. This means they are uncorporeal, spiritual and eternal. As a consequence of this, they are indivisible (because only extended bodies can be divided). Since they do not consist of parts, they cannot change because change involves a shedding of old parts and an acquisition of new ones. For the same reason, they cannot become or perish but remain eternally. Eternity, however, should not be equated with rest. Ideas also strive for perfection, which includes striving to exist⁴. They are hence active. It might be
helpful, for clarification purposes, to add some negative characteristics to this list. Ideas are not thoughts or mental content (rather, they make thoughts possible). Nor are they signs (because signs are arbitrary while ideas are real).

Monads have two functions: appetition (drive, which Leibniz calls ‘conatus’) and perception. Appetition is a movement from one state to the next – this is all a monad can ‘do’. The states differ from each other by the different perceptions the monad has of other monads. Each monad is a unifying principle as it synthesizes the perceptions of all other monads (the ‘many’) into its own unique point of view (the ‘one’). The principle of the identity of indiscernibles ensures that there are never two identical points of view. True to an idealist position, Leibniz thus makes the ‘I’ of each substance the basic unifying principle. This has two important consequences. One is the characterisation of being as unity, or as Leibniz (cited in Look 2008) states: ‘... that what is not truly one being is not truly one being either.’ The second is that Leibniz goes beyond Descartes’ ‘cogito ergo sum’ to say that I am not only certain of my thinking but also, at the same time, of my thoughts, which are hence as foundational as the thinking process (Cassirer 1994:357). The unity of the self is constituted at the same time as the unity of the object. The act of co-constitution leads Leibniz to a subject-object relation that differs very much from the Cartesian one.

Both appetition and perception characterise monads as forces rather than things. The driving force behind the monad is of a teleological nature (Aristotle would call it an entelechy) as it strives for self-realization. Everything, including efficient causation, is ultimately derived from this teleological force. Since it is a primordial force, it cannot be affected (i.e. overcome) by other, lesser forces. This is the reason why Leibniz cannot allow efficient causality to have an impact on monads: It would mean that efficient causality is stronger than a monad’s appetition while at the same time being derived from it, which is contradictory. In Leibniz’ time, Ham and van Leeuwenhoek discovered spermatozoa under the – recently invented – microscope (Loemker 1956:62). This served as a confirmation of his view that an innate programme existed that controlled the whole future development of a monad.

Monads, as we have seen, are ‘living mirrors’ in that they perceive every other monad. These perceptions, however, cannot impact upon the appetition of the monad, for example by diverting it from its initial intentions. In this sense, monads are ‘windowless’, i.e. immune to external influences. They will single-mindedly follow their innate ‘programme’. This has important implications for efficient causality, namely that there is no such thing on a metaphysical plane. Monads do not interact with one another in any causal sense (see above). What we perceive to be efficient causality is a phenomenon, which means it is real but not independent because it can be reduced to something more basic and more real – the teleology of the monads.

What, then, happens when a billiard ball bumps into another? Leibniz’ answer is: nothing. The monads behind the balls – we’ll talk about monads and bodies in a moment – go their own, separate ways devised at the dawn of time. God, in His perfection, has managed to actualize a monad A (corresponding to the first ball) that is in point p at time t and another monad B (corresponding to the second ball) that rolls off p at t. So, what we perceive to be interaction is in reality just coincidence – but a perfectly
planned coincidence. This perfectly planned coincidence is part of the pre-established harmony, and gives us a glimpse of how super a supercomputer Leibniz thought God to be.

Efficient causality is hence ‘only’ a phenomenon. Leibniz, however, calls it a well-founded phenomenon (phenomenon bene fundatum). This distinguishes it from mere phenomena or illusions. A well-founded phenomenon derives in a regular fashion from the monads that it consists of, whereas a mere phenomenon exists only in the eyes of the observer. A well-founded phenomenon exists but does not have the same degree of reality as a monad.

In the same way that efficient causality is a well-founded phenomenon, time and space as well as relations are well-founded phenomena. In modern language, we would say that Leibniz conceptualises time and space as relative. Against Newton, he argues that they are not empty receptacles to be filled with objects, but that we derive these notions from the way the monads are ordered. This follows from the principle of the identity of indiscernibles: If two otherwise identical substances only differ in their spatial (or temporal) location, they must be different substances. This implies that their spatial (or temporal) location is an (internal) attribute of theirs, not an independent ‘thing’. The manner in which contemporary monads are ordered relative to each other gives us the notion of space, while their successive order gives us the notion of time. Time and space are thus derivatives and indeed particular to our own world.

Most physical bodies that we observe are well-founded phenomena. They are unified or even structured aggregates of monads. They are not, however, ‘things’ in the sense of ‘individuals’. This is because their unity is not firm enough for individuation. They appear to be units – hence we call them ‘phenomena’. Every physical body is made up of an infinite number of monads. All these monads have, as we have seen, perceptions; this is Leibniz’ panpsychism. Perceptions can vary on a continuum between clear and confused. Monads perceiving things more clearly can come to dominate other monads and form an organism. Thus, liver cell monads are more confused than liver monads, who are in turn more confused than human body monads. Stone monads are, quite literally, dead confused.

The interaction between the monads and their respective bodies has been a persistent problem, the ‘Leib-Seele-Problem’ – unsolved as up to date – ever since Descartes separated the two realms. Although Leibniz does not follow him in this separation and takes bodies to be derivatives of spirit, the problem remains because once created bodies are different ‘things’ to monads. He solves the problem in a similar way as he solves the problem of causal interaction, viz. through pre-established harmony. God, again, arranges intentions and body movements in such a perfect way that my arm will rise shortly after I have taken the decision to raise it. Defending his argument against the Cartesian as well as the Occasionalist view, Leibniz uses his famous metaphor of the clockmaker. This runs as follows: Imagine two clock pendula swinging in harmony. If this harmonic movement is supposed to continue forever, the clockmaker has three options. He either watches the two clocks and interferes if their movements become asynchronic. This represents the Occasionalist solution to the Leib-Seele-Problem in which God intervenes every time to make causation happen. The clockmaker could also connect the two pendula through some mechanistic device, for example a bolt. This is the Cartesian solution of the pineal gland translating intentions into corporeal impulses. A truly perfect clockmaker, however, would have no need
to resort to such unprofessional behaviour and would construe the clocks from the beginning well enough to perform the task. They would then also be the best of all possible clocks. This is, of course, Leibniz’ solution of pre-established harmony.

Leibniz: Q & A

What were the philosophical problems of the time that Leibniz directed his philosophy at?
The second half of the seventeenth century and the turn to the eighteenth was so extremely productive that it is difficult to focus on just a few ideas. Descartes, however, was probably the man of the hour, even for Leibniz, who was born around the time Descartes died. The other big names, both from Leibniz’ and from our own perspective, were Spinoza, Hobbes and Newton. Since this entry is mainly concerned with Leibniz’ metaphysics, I will focus on his responses to Descartes and Spinoza.

With regard to Cartesianism, Leibniz addressed primarily the following problems:

- D1. The assumption that matter is a substance and equiprimordial to spirit. Leibniz thought this wrong because matter is extended and can thus be divided. Something that can be divided further cannot form an ultimate part in a system because it is made up of smaller parts itself. Moreover, the assumption of identical ultimate parts violates the principle of the identity of indiscernibles.
- D2. Extension, the prime attribute of matter, cannot provide the idea of force. If force is not introduced at the beginning, it cannot be introduced later because it cannot be conceived of as derivative of matter.
- D3. A separation of mind and matter creates the Leib-Seele-Problem as the two seem to interact. The pineal gland is no proper solution to this because it is itself corporeal.
- D4. A separation of mind and matter also creates two independent realms of morals and nature. This is problematic because it ‘frees’ morals from natural laws and withdraws the possibility of a science of morals (read ‘science’ in the positive connotations of the seventeenth century).

Spinoza, who also devoted much of his philosophy to these problems, is in many of his solutions quite close to Leibniz. ‘Spinoza would be right if it were not for the monads’, Leibniz remarks at one point (Broad 1975:3). He, however, disputed the following parts of Spinoza’s system:

- S1. Spinoza holds that spirit and matter are not substances itself, but attributes of the one divine substance. Leibniz rejects this notion, first, on definitorial grounds claiming that Spinoza defines the term ‘attribute’ as constituting the essence of the substance (Spinoza 1982: Def.4). This, however, is what other authors, including Leibniz, would call a ‘substance’. What Spinoza hence calls ‘attributes’ are in fact substances, and the apparent difference vanishes. Second, Leibniz argues against the idea that there is only one substance. This would imply, he holds, that an
individual human mind is only a state or experience in God’s mind – an assumption that seems weird to him.

S2. Everything that happens in the world is determined because nothing happens without a lawful cause. This implies there is no contingent or human freedom. As we have seen, Leibniz comes very close to drawing the same conclusion from the same premises. He, however, then brings in infinity to argue that perfect determination only exists for the omniscient mind, while limited human minds experience contingency.

How did Leibniz solve them?
The purely spiritual nature of the monads solves D1. Leibniz saw quite clearly that it is comparatively easy to derive matter from spirit (through perception) but that the opposite does not work as well. The fact that monads are active and thus are prime forces solves D2. Leibniz hence inverts Descartes’ ideas and derives matter from force instead of vice versa. Again, it is easier to conceptualise rest as a special case of motion or resistance as a special form of force than to create motion out of rest, or force out of resistance. Since matter is a derivative of the monads, the two are not perfectly separate (D3 and D4). Although Leibniz often talks about physics in purely mechanistic or dynamic terms and without referring to monads, at the end of the day (i.e. metaphysically speaking), monadic teleology overrides physical causality since the latter is derived of the former. When he talks non-metaphysically about the world of well-founded phenomena (D4), Leibniz stresses the parallel construction of mind and matter, morals and nature. They both follow, mutatis mutandis, the same laws. This is because God used the same principle (of the best) to create them. The interaction between mind and body (D3) is ultimately reducible to an interaction between monads, i.e. an interaction of spirits, and as such follows a pre-established harmony. The interaction between monads already implies that monads are finite substances. They have been created by God at a certain point in time but continue independently on their trajectory from then on. This independence negates the possibility that they are states of another substance (S1). It also shows that Leibniz takes the act of creation seriously and takes a middle stance between the uncreated attributes Spinoza proposes (S1) and the permanent re-creation Descartes assumes. With regard to this creation, Leibniz also takes pains to show that God had a choice in creating (or not) particular monads (S2), and that She made this choice not in an arbitrary way, as Descartes would assume, but with a view of creating the best of all possible options. According to Leibniz, She acted out of love and indeed deserves praise for Her decisions.

What is processual about this?
Everything. If the ultimate building blocks of the world are forces, than everything is process. It is as simple as it is revolutionary. Leibniz’ big achievement, however, is not to have sparked a revolution and broken with tradition, as Descartes did, but to have modified a core term of occidental philosophy in a way that still allows him to stand on the shoulders of giants but turn his gaze in a very different direction.
**Why did he call the monads substances?**

Given what we know about the man behind the philosophy – his boyhood and education, his irenic temperament – Leibniz was no revolutionary. He firmly believed in progress but in a progress that built on the existing foundations rather than demolishing them. In this sense, it seems quite natural that he starts with what is there, modifying and developing it, instead of coming up with entirely new concepts. Moreover, the concept of substance in Leibniz’ time, as opposed to our own, was still alive, varied, modified and debated. A processual substance was a valid option, and Leibniz took it. Using the old term also saved him a lot of time in explaining things. To the philosophers of his time, the term immediately signalled a number of properties, such as activity, self-sufficiency, primordiality. One important term in this regard was matter. In Classical and Scholastic substance philosophy, drawing on Aristotle (1993a; 1993b), matter is a terminus technicus that is defined very differently from what we today understand matter to be. For Aristotle, matter (*hylê*) is not something material but a principle. This principle guarantees continuity in the process of becoming (Weik 2011), i.e. ensures that we can still speak of the same object (or use the same grammatical subject) although the object changes. For example, we need matter to meaningfully express that a bucket of water has turned into ice (instead of saying that the water has gone and been replaced by the ice). In this sense, matter relates the different stages of a process and guarantees continuity between them. Matter, however, is not an active principle in the sense of causing things to change. Leibniz retains this concept. This means monads have matter in the sense of possessing a passive aspect. Moreover, it is this passive aspect – in the guise of resistance and solidity – that we derive the phenomenon of matter in the modern sense from. (Note that Leibniz saw clearly, against Descartes, that resistance is a force.) This allows him to keep his metaphysical system simple – a force with active and passive aspects – and focused on force and process rather than on an extended, material atom. (Atoms would also have violated the principle of the identity of indiscernibles for they would form an infinite number of identical substances.)

**What toads have modern readers got to swallow?**

As Rescher (1979:1) remarks, Leibniz’ system is admirably consistent given its complexity, but its premises no longer appeal to the modern reader. Probably the two biggest toads one has to swallow in order to digest the system are the fact that monads are windowless, i.e. will not be influenced by any force external to them, as well as his idea of contingence and freedom, which do not exist metaphysically (because to an omniscient mind everything is determined) but only for practical purposes (because human minds are too limited to grasp the determination). Panpsychism also tends to be rather unpopular although modern authors have yet to come up with a better answer to the Leib-Seele-Problem.
Which philosophers did he influence?

Leibniz himself, given his non-academic career, had no pupils. His philosophy was, however, taken up by Christian Wolff, who modified it – i.e. took the interesting bits out – and turned it into the standard philosophy taught at German universities in the eighteenth century. Wolff’s school more or less died with him towards the end of the eighteenth century. In some respects, Leibniz paved the way for Kant. Kant (1977:814) himself has seen this quite clearly when he commends Leibniz for holding that concepts have to be brought forth by an activity of the imagination (Vorstellungskraft), not from the outside. Leibniz also linked time and space to the study of phenomena rather than the study of monads. This foreshadows Kant’s (1989) use of time and space as properties of the phenomena, not the Ding an sich.

With regard to process philosophy, Whitehead seems to be the philosopher most strongly influenced by Leibniz, although Whitehead, in ‘Process and Reality’ (Whitehead 1985), seems more interested in stating the differences between his Actual Occasions and Leibniz’ monads than acknowledge his indebtedness to the German philosopher. Still, unity through perception, panpsychism, the relativity of the point of view, the derivativeness of time from non-temporal building blocks, the concept of harmony and, last but not least, the ‘windowlessness’ of Actual Occasions during concrescence show this indebtedness, to me, quite clearly. Peirce has taken Leibniz’ notions of existence, possibility, and harmony and reinterpreted them as chance, logic, and love (Loemker 1956:101).

Which Organization Studies authors use Leibniz today?

While interest in Leibniz continues in philosophy, mathematics and logic, organization studies have focused more on Descartes (mostly in a critical way) and Kant. Often, Leibniz merely figures as a person of historical interest or precursor, for example as a proponent of rationalism (Becker and Niehaves 2007), apperceptions (Packard and Chen 2005), petits perceptions (Helfenstein and Saariluoma 2006), or most popularly (Dubnick and Justice 2006; Kayes 2006; Morgan and Wilkinson 2001) the question of why Evil can exist in a world created by a benevolent God (theodicy). More substantial arguments are taken into account by Harré (2004) who, not surprisingly, invokes him as crown witness for the idea of two grammars or languages of description. Other elaborated arguments draw on the ability of Leibniz’ system to bridge the individual-collective divide by construing individuals as bundles of relations (Pedersen 2008) or, in a similar vein, to redefine “essence” in relational terms (Barnham 2009). Further discussions concern the relationship between ontological status of mathematical and computer models (Churchman 1970) or the idealist critique of reality claims made by the natural sciences (Clark 2000).

The only major theorist to draw on Leibniz’ metaphysics is, to my knowledge, Bourdieu. He borrows three central themes of his social theory from the German philosopher. The first is Leibniz’ theory of non-causation, the second the notion of the monad as an active and productive ultimate building block, and the third the ontological priority of relationality. The theory of non-causation plays an important role in the way Bourdieu construes the interplay of agency and structure (Weik 2010). While many sociologists assume that structure and agency can causally influence each other (much like Descartes assumed that matter and mind could influence each other), Bourdieu introduces a mediated relationship between the two. His concept of habitus holds that the social structure in t₁ cannot
influence the (adult) agent as the agent’s dispositions have been formed at an earlier time, viz. during socialisation. In a comparatively stable society, the fit between the agent and the structure is not caused by mutual adaptations in the present, but by their match created in the past (or, from the point of view of the present, pre-established). As the operative force creating this pre-established harmony, Bourdieu uses History, which might be regarded as a secularised version of Leibniz’ God. Bourdieu’s construction is, of course, less strict than Leibniz’ – he would deny the possibility of optimization and allow the modification of structures and agents – but the general theoretical construction is the same. The concept of the habitus, second, also owes much to Leibniz’ monads because Bourdieu (1984; 1990; 1992) construes it as a generative mechanism, i.e. an active force. In rejection of the critics who consider the habitus to be an inflexible blue print for the agent’s behaviour (for example, Jenkins 1992; King 2000), Bourdieu likens it to a programme that produces behaviour in accordance with certain rules but also in dependence of the input from the environment. In this sense, the habitus is truly creative, just like the monad is. And just like Leibniz does with force, Bourdieu introduces activity and creativity at this first stage because he realises that it cannot be derived from anything at a later stage. If we, for example, assume that agents are products of structures, then there is no way to explain how agents can be creative in their behaviour. The priority of relationality, finally, is a very prominent topic in Bourdieu’s work (Bourdieu and Wacquant 1996). Again, he goes further than Leibniz in maintaining that agents can take events and structures into account and change their course accordingly, but the basic theoretical construction remains the same: Whether we look at an individual habitus or the field, one point of view always mirrors the rest of the world in its own, unique way.

What may Organization Studies take from him?
Loemker (1956:1) takes the explosion of the 4th atomic bomb at Bikini on the 1st of July 1946 – the 300th birthday of Leibniz – as doubly significant for the legacy of the German philosopher: He was the first to hold that energy was the essence of matter, and he was also the last to oppose ‘the divorce between truth and action, and between power and its moral controls’. To Leibniz, the world is a system of interrelated entities without gaps or principal divides. We may use two distinct ‘grammars’ (in Harré’s sense) to talk about it, but we should never think we are talking about distinct things.

Talking about mind and body within this unified system, Leibniz refers to a principle that later scholars will call ‘supersession’. i.e. the process of higher entities taking control over the functioning of lower entities. Susanne Langer (1967) and Roger Sperry (1980) have, among others, used this notion to talk about the Leib-Seele-Problem in recent decades. Supersession, as well as the related problem of emergence, also plays a significant role in complexity theory (Hodgson 2000; Holland 1998; Lichtenstein 2000). In the same vein, variety and order – the one and the many – is a persistent theme in Leibniz. Very much like complexity theorists (Goodwin 1997; McKelvey 2004) today, he assumes that God (Nature) follows limitational considerations with regard to variety and order, i.e. creates that form of order that will allow the greatest variety of phenomena.

To organizational process theorists, finally, he has bequeathed the notion of substance. Loemker (1973:53) sees quite clearly that although the category has been banished from modern process
philosophy, its functions must still somehow be served (see also Weik 2011). What preserves the
continuum of a process? How can self-determination embrace external (causal) influences? What is the
relation between self-determination and freedom? How do universals emerge from the process?
Leibniz’ answer, as we have seen, was to make use of 2000 years of (substance) philosophy taking what
he could use. If modern authors, in contrast, prefer not to stand on the shoulders of giants, they have to
come up with pretty long ladders.
References


Endnotes

1 The edition of the Leibniz papers started in 1901, but effectively came to a standstill during the wars and the ensuing German separation (the German Academy being located in East Berlin). It was restarted in 1985 (Leibniz-Akademie 2012).
2 There are two more, the principle of continuity and of sufficient reason, but they are not necessary for the aspects of Leibniz’ metaphysics that I am reconstructing in this chapter.
3 Broad (1975) would add that human definitions of a thing or person also differ from God’s notions in that they only contain a comparatively small number of predicates. For example, we may define Elizabeth I as the English queen who reigned from 1533-1603. In consequence, the proposition that Elizabeth I was the daughter of Henry VIII is synthetic because the predicate is not contained in the original definition.
4 Note that being does not imply existence. Existence presupposes actualization. There may be monads that ‘are’ but have not been actualized, i.e. do not exist.
5 For an in-depth discussion of relations, see Rescher (1981).