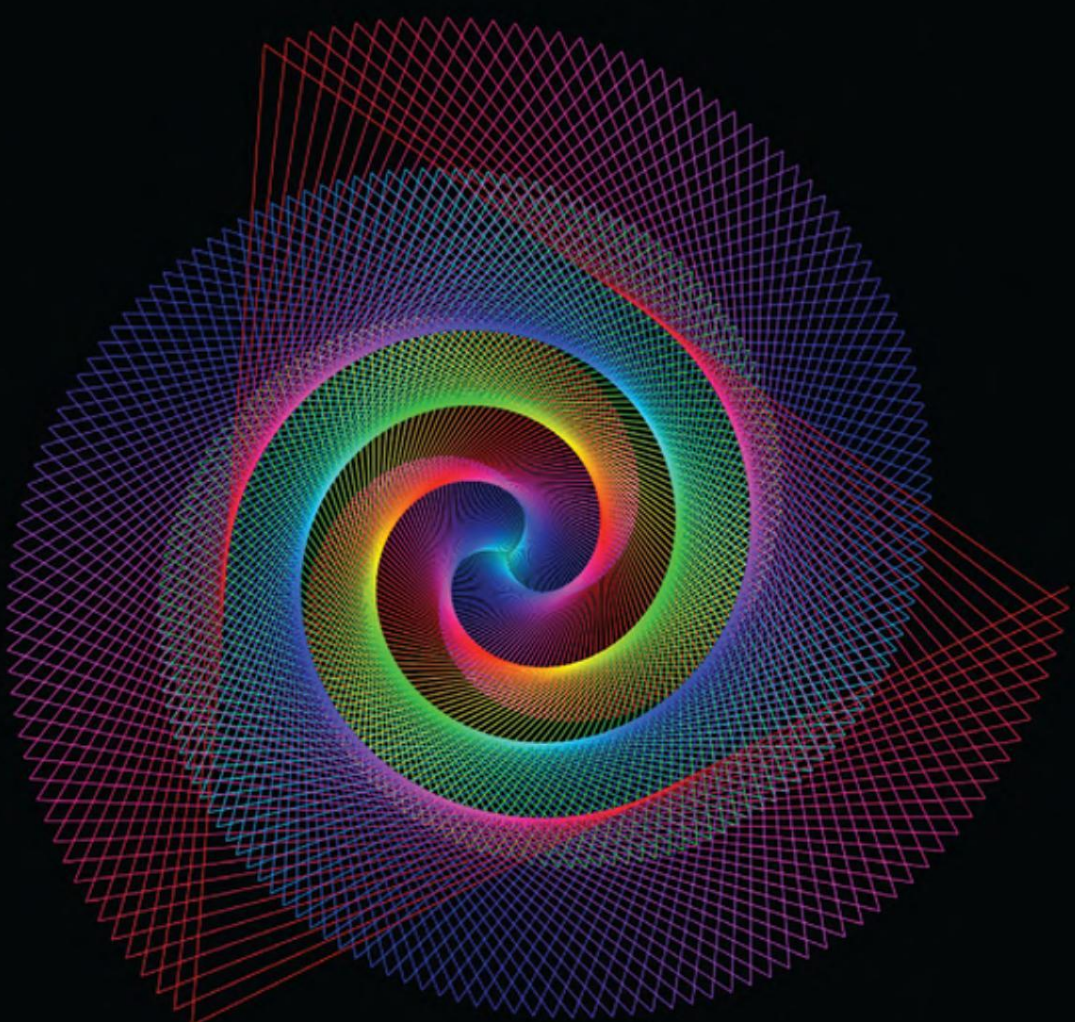
IN PRAISE OF MATHEMATICS

ALAIN BADIOU
WITH GILLES HAÉRI



TRANSLATED BY SUSAN SPITZER

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Many years ago – a little before and a little after my first philosophical "opus," *Being and Event* (1988) – I introduced the concept of the *conditions* of philosophy, which you'll encounter later in this book. The aim was to identify precisely the real types of creative activity of which humanity is capable and on whose existence philosophy depends. Indeed, it is clear that philosophy was born in Greece because in that country, beginning, at any rate, in the fifth century BCE, there were some totally new ideas about mathematics (deductive geometry and arithmetic), artistic activity (humanized sculpture, painting, dance, music, tragedy, and comedy), politics (the invention of democracy), and the status of the emotions

(transference-love, lyric poetry, and so on). So I suggested that philosophy really only develops when new advances emerge in a set of "truths" (that's the name I give them for philosophical reasons) of four different types: science, art, politics, and love. That's why I responded positively to Nicolas Truong's invitation to have a dialogue with him in praise of love, and then in praise of theater, in Avignon. Likewise, I accepted Gilles Haéri's proposal of a dialogue in praise of mathematics in the setting of the Villa Gillet in Lyon. The first two conversations resulted in books published in Flammarion's "Café Voltaire" series. [English translations: *In Praise of Love*, New Press, 2012, and *In Praise of Theatre*, Polity, 2015.] The same is true of the third, which is the subject of this book. All that remains to be done is to write a book in praise of politics, and I'm considering it.

I

Mathematics Must Be Saved

Alain Badiou, you are what I would call, to use a mathematical term, a singularity in the French intellectual landscape.

There's your political commitment, of course, which the general public has been aware of since 2006, with the success of De quoi Sarkozy est-il le nom? [*translated as* The Meaning of Sarkozy, *Verso, 2010*]. *You represent one of the last great figures of the politically-engaged intellectual today, one of the fiercest critics of our liberal democracies, and the tireless defender of the communist Idea, which you refuse to throw out with the bathwater of History.*

But from a more specifically philosophical point of view, the body of work you have produced is

also very singular. At a time when philosophy has retreated into specialization, and, in so doing, has renounced its original ambitions, you have consistently attempted to restore meaning to metaphysics by building a system that can be described as a great synthesis on the world and on being. Now, this philosophy, set out mainly in Being and Event*, and later in* Logics of Worlds*, is based to a very large extent on mathematics. You are in this regard one of the rare contemporary philosophers to take mathematics really seriously, and you do not just speak about it as a philosopher but practice it almost on a daily basis.*

Could you begin by telling us where this very strong relationship with mathematics comes from?

It's something that goes back to before I was even born! Simply because my father was a math teacher. So there was the mark of the name of the father, as Lacan would say. Actually, it had a profound effect on me, because I heard mathematics spoken about in my family – by my father and my older brother, by my father and colleagues of his, etc. – in a sort of early imprinting, without my understanding at first what it was all about but sensing that it was at once keenly and obscurely

interesting. So much for the first, prenatal stage, so to speak.

Later, as a high-school student, I was fascinated by mathematics as soon as we started doing a few really complex proofs. I must say that what really captivated me was the feeling that, when you do math, it's a bit like following an incredibly twisted, convoluted path through a forest of ideas and concepts, and yet, at a given moment, the path leads to a sort of beautiful clearing. I was struck early on by this quasi-esthetic feeling about mathematics. I think I could mention a few theorems of plane geometry here, in particular theorems of the inexhaustible geometry of the triangle, which we were taught in grades 9 and 10. I'm thinking of Euler's line. First we were shown that the three altitudes of a triangle are concurrent in a point H, which was already great. And then that the three perpendicular bisectors were also concurrent, in a point O – it kept getting better and better! And finally that the three medians were concurrent, too, in a point G! Wonderful. But then the teacher mysteriously told us that it could be proved, as the mathematical genius Euler had done, that these points H, O, and G were moreover all on the same line, which is obviously

called "the Euler line"! This alignment of three fundamental points, as the behavior of the characteristics of a triangle, was so unexpected, so elegant! We weren't given the proof, because it was considered too difficult for 10th grade, but our interest in it was piqued. I was thrilled that such a thing could be proved. There's this idea of a real discovery, of an unexpected solution, even if it means you have to make your way along a path that's sometimes a little hard to follow but where you're ultimately rewarded. Later, I often compared mathematics to a walk in the mountains: the approach is long and hard, with lots of twists and turns and steep climbs. You think you're finally there, but there's still one more turn . . . You sweat and strain, but when you reach the summit of the pass, the reward is truly beyond compare: that amazement, that ultimate beauty of mathematics, that hard-won, utterly unique beauty. That's why I continue to promote mathematics from this esthetic perspective, too, noting that it's a very ancient perspective, since Aristotle in fact regarded mathematics as a discipline, not so much of truth as of beauty. He claimed that the greatness of mathematics was esthetic, far more than ontological or metaphysical.

Next, I studied contemporary mathematics in greater depth by taking the first two years of university math. This was from 1956 to 1958, my first two years at the École normale supérieure. I combined significant philosophical discoveries I made there (Hyppolite, Althusser, and Canguilhem were my professors at the time) with the math courses at the Sorbonne and substantive discussions with the math students at the École. It was then, probably also because of the atmosphere of structuralism and the 1960s, when there was a lot of buzz about formal disciplines, that I became really convinced that mathematics was in a very close dialectical relationship with philosophy – at least my conception of it, because mathematics was at the heart of my concerns. Structures are first and foremost the business of mathematicians. At the very end of his seminal book, *The Elementary Structures of Kinship*, the great anthropologist Lévi-Strauss, whom I was reading with passionate interest at the time, referred to the mathematician Weil to show that the exchange of women could be understood by using the algebraic theory of groups. Now, at that time, my philosophical approach required mastering enormous conceptual constructions. What's more, because of its

esthetic force and the creativity it calls for, mathematics requires you to become a Subject whose freedom, far from being opposed to discipline, demands it. Indeed, when you work on a mathematical problem, the discovery of the solution – and therefore the creative freedom of the mind – is not some sort of blind wandering but rather the determination of a path that's always lined, as it were, by the obligations of overall consistency and demonstrative rules. You fulfill your desire to find the solution not in spite of the law of reason but thanks to both its prohibitions and its assistance. Now, this is what I had begun to think, first in conjunction with Lacan: desire and the law are not opposites but dialectically identical. And finally, mathematics combines intuition and proof in a unique way, which the philosophical text must also do, as far as possible.

I'll conclude by saying that this back-and-forth movement between philosophy and mathematics produced a sort of split in me . . . and all my work may be nothing but the attempt to overcome this split. This is because my master in philosophy, the one who revealed philosophy to me, was Sartre. I was a convinced Sartrian. But frankly, mathematics and Sartre, as you know, weren't

has become increasingly unclear and uncertain. This is because mathematics, particularly in France, really *is* used as a method of selection of the elites via the entrance exams for the scientific *grandes écoles*. As the math students used to put it, "We really crammed our asses off for the math exam." But in the end, the organic purpose of all this is still essentially a selective one. This situation has hurt mathematics in terms of its overall relationship to public opinion. The vast majority of people, once they've taken a number of relatively easy exams in school, no longer have any real connection with mathematics. In France, it must be said, it isn't part of ordinary culture. And that, as far as I'm concerned, is scandalous.

Mathematics should absolutely be considered not just as a scholarly discipline tasked with selecting the people who will be engineers or government ministers but as something that's extremely interesting in and of itself. Like fine arts, like cinema, it should be, for reasons I'll come back to, an integral part of our general culture. But, clearly, this is not the case – and it's even less so for cinema, which is perhaps even more scandalous. Because of this, public opinion about mathematics is split between a sort of