Bruce Greenwald

My friendship and collaboration with Bruce began some forty years ago, when my former student Andy Weiss persuaded me to do some work with Bell Labs. The Labs, which had already established itself as one of the premier research institutions in the world—one time claiming to have more Nobel Prize winners than any country other than the US—had recently branched out into economics, and one of their prize hires was Bruce. Bruce had written his dissertation on asymmetric information in labor markets, and his early work exhibited the brilliant creativity and a truly breathtaking span of interests—from breakthroughs in theory to testing the theory on novel data sets (in this case, slave markets).

Many, if not most of my collaborations have been with co-authors where each of us brought different skills to the table. Often, they brought the ability and perseverance to convert an economic insight into a general theorem. With Bruce, I met my match in every respect. He had the ability to see things in a new and fresh way—to break out of the mold, and to formulate simple models with enormous generality and reach. He had the capacity to procrastinate—for both of us, it was far more fun to think of new ideas than to undertake the hard work of writing things down. And if I had thought that I had broken conventions—sleeping in my office, not wearing shoes, to the point where my first job contract with MIT required that I have an apartment besides my office—Bruce outdid me. It was clear from the beginning that this was a collaboration that was made in heaven.

It would perhaps be immodest for me to speak of the fruits of that collaboration, but it would be wrong for me not to mention a few highlights. No idea in economics has been more influential than that of Adam Smith's invisible hand—that the pursuit of self-interest leads, as if by an invisible hand, to the well-being of society. It is the basis of the presumptive reliance on markets. It provides the benchmark from which all interventions are judged. In some of our first work together, we explained why Adam Smith was wrong, why the invisible hand often seemed invisible: it was not there. We showed that whenever information was imperfect and asymmetric and risk markets incomplete—that is always—markets are not (constrained Pareto) efficient. And though we did it within a rigorous mathematical framework, we were able to explain this pervasive market failure using language that was familiar to economists—showing that in these instances, there were pecuniary externalities that mattered. This insight had far greater generality than the specific (though very general) model to which we had applied it. One of the pleasures of being in economics as long as we have is that we have been able to watch the evolution of the economics profession's reaction to this revolutionary idea. First there were attempts to refute it, to show that there were some hidden assumptions that we had ignored. Then, there was a long period during which it was ignored. Subsequently, there was a period in which, in far more specific models, economists rediscovered this insight. Finally, it became the basis of some major strands of research, for instance, exploring the macro-economic implications of the externalities that we had noted some forty years earlier.

A similar story could be told about our discovery of the information-bases of financial frictions and our exploration, beginning in the early 80s, of their macro-economic implications.

Bruce and I shared many of the same teachers at MIT, in particular Bob Solow, and that was surely one of the reason that our collaboration worked so well. We were motivated by real world problems, conundrums, which the conventional theories that we had been taught simply couldn't explain. We were unsatisfied by ad hoc assumptions, we were unsatisfied by models resting on special parameterizations, and by models untethered to the real world. We tested our theories not so much by refined econometric techniques—though Bruce had the skills to do that—but by common sense, based on our own engagement with the world, and a close look at the data. We shared a skepticism about results that seemed only there if it could be squeezed out of the data with hard work.

The world was constantly throwing up new puzzles to explain, and over the four decades of our collaboration we repeatedly broke into new territory. After the global financial crisis, many of the insights of our the macro-economic models we had developed in the 80s and early 90s and in our book *Towards a New Paradigm of Monetary Economics* moved into the mainstream—admittedly with some reluctance from those whose models had failed so badly in the crisis. In our book, we had also explained how financial interlinkages could lead to bankruptcy cascades—precisely of the kind that had threatened the economy in 2008, but which the economics profession had given no attention.

One never knows how, when, and where one's ideas will be picked up, and these and other ideas of ours seemed to find resonance among a large group of Italian economists, with whom we have been engaged in fruitful collaborations for now more than a quarter century. Among the areas into which we expanded with them was network analysis—how the architecture of an economic system affects financial sector resilience—a theme that a few central banks and economists are at last taking up.

I should mention three of our most recent projects: a new exploration of the great depression, providing new understandings of the Great Recession; creating a learning society, creating what the book jacket modestly describes as "*A New Approach to Growth, Development, and Social Progress,"*; and a new global reserve system, which would help resolve problems of deficiencies in global aggregate demand and the instabilities associated with global (current account) imbalances. That idea—in many ways, an elaboration of an idea developed many decades ago by Keynes—has received enormous resonance around the world, with at this point, only one major political impediment (admittedly a large one) to its adoption.

Our collaboration in research has been reflected in our joint teaching—for fifteen years, we have taught together an EMBA course in Globalization and Markets. The students have loved the course, partly because they see in it the warmth of our relationship, in the midst of both consistency of an intellectual framework and a challenging of ideas.

Many people looking at our collaboration have been surprised—given the differences in some of our political perspectives, and the deep political implications of many of our ideas. But it is precisely this ability to collaborate and to contest that is so important for our students to understand. Many conservatives believe that we live in the best of all possible worlds. Bruce and I agree that the world is rife with market failures. As Bruce puts it, I am an inveterate optimist. Perhaps it's because I come from the Midwest, with its deeply ingrained optimism. I believe that well-designed collective action can improve matters. Bruce agrees, when it comes to broad based policies, like macro-economic stimulation. But he sees a record of failure when it comes to more finely-tuned policies. I see the glass as half-full—there have been instances where these other interventions have worked. Bruce sees the glass as half-empty.

But what really has mattered for our collaboration is something else—a glass that is more than full—our respect and warmth for each other.

One never knows what the next day will bring. For me, one of the luckiest decisions I ever made was to join Bell Labs—beginning a life-time friendship that has known no bounds.