

## Fixing the Climate: Charles Sabel in Conversation with Filippo Barbera

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### Abstract

In this interview with Filippo Barbera, Charles F. Sabel discusses his latest book, *Fixing the Climate* (Princeton University Press, 2022, with D.G. Victor), that dramatically reorients our thinking about the climate crisis. It provides a road map to institutional design oriented around concrete problem-solving that can finally lead to self-sustaining reductions in emissions that years of global diplomacy have failed to deliver. The discussion touches upon a number of key issues of general interest for social scientists: global governance; decisions under uncertainty and risk; pragmatic solutions to wicked problems; technological solutions and innovation.

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**Filippo Barbera:** Thanks for this interview. Let me start with a general point. Climate change is the most pressing and crucial challenge the humankind is currently dealing with. Dystopian narratives, “escapism,” technological “solutionism,” command-and-control measures and business-as-usual market-based scenarios are the mainstream proposals. You are arguing that none of them is working and that actually the best solution is different and hidden in plain sight. Is this correct? Would you please tell us more about the general message of the book?

**Charles F. Sabel:** The general claim of the book is that despite 30 years of trying, global solutions based on uniform rules, like a carbon tax or globally agreed targets for emissions reductions, have not worked. What is working on the other hand are efforts towards achieving a green transition, in particular sectors like electric vehicles, photovoltaics or the elimination of ozone-destroying substances, and relatedly efforts at greening a particular sector in a particular place, such as cleaning up agricultural runoff in Irish dairy. In other words, attempts to create an (apparently) simple global system of incentives to induce a green transition have failed, whereas concrete efforts to address key obstacles to the transition are succeeding; more specifically, approaching climate change as the result of a negative externality, to be eliminated by making polluters pay a Pigouvian tax reflecting the social harm they cause, led to a dead end; approaching climate change as a challenge to switch from dirty technologies to clean sector by sector, re-conceiving the products of our civilization and how we make and use them is proving feasible, even in domains like steel production, where dirty products were once so deeply embedded in everyday life that no alternative seemed possible.

We say that the promising solutions are hidden in plain sight because, while the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer—arguably the most widely admired and successful international environmental agreement of all time—is there for all to see, and does on inspection embody the principles of sectoral problem solving we advocate, its success was mistakenly attributed to the maturity of the science of the stratosphere and the apparent precision and rigidity of the regime’s legally binding pollution reduction targets, rather than the mechanisms by which it searched out and evaluated possible solutions. One task of the book therefore is to provide a compelling explanation of how in fact Montreal did succeed; how the principles of decentralized but coordinated, or experimentalist, problem solving adopted there also emerged in other iconic cases of environmental success, such as the California regulations supporting the development of much cleaner (eventually electric) vehicles; and, more speculatively, how this kind of problem solving can become the basis of a new kind of globalization that does not impose the uniformity demanded by the current one.

Though this framing remains valid, it is important to note a dramatic, if still inconclusive shift in mainstream thinking, with the passage of the (misnamed) Inflation Reduction Act and related legislation in the US and matching measures by the EU. This legislation commits vast funds to the support of accelerated green transitions in sectors such as e-vehicles and the associated supply chains for batteries and critical minerals, as well as wind and solar power generation, carbon capture and storage technologies, and green steel and hydrogen. Publicly the shift is often explained as a concession to the quirks of politics: the public prefers carrots—rewards as incentives—to penalties or sticks, especially taxes on or prohibitions of products or practices. A complementary explanation is that tax experts and economists now acknowledge that constructing efficient and fair markets in carbon tax credits or emissions permissions is much more difficult in practice than theory made it seem, with the result that defense of the mainstream position became more reluctant as criticism of it became bolder. But whatever the reasons behind

the redirection of policy the massive tax incentives contained in the new legislation are catalyzing a wave of substantial investment in the target sectors, demonstrating (perhaps as much to the surprise of the programs' boosters as to bystanders) the existence of a potent green lobby, willing to bet it will do well in the transition, and likely to be an important force in the coming rounds of climate politics. Of course business support for the new legislation is no proof it's all a good thing. Firms can be using the subsidies to commercialize inferior or dated technologies, or for other forms of rent seeking. But compared to the world that you are accurately describing in your question, there's been a big change and it's a big change in the spirit of the book. In fact, it is a very hopeful book—because our argument is that this “theory of change” is sitting in plain sight, is being used in many settings, and it will change the technology and politics in ways that make deep cuts in emissions possible.

**FB:** That's very interesting. Let me add a minor point to your answer. You mentioned the role of the private sector. Do you think that in this “Green Transition renewal” a new place for the role of the State is at stake? I mean the so-called “mission-oriented state”? Just to understand what I have in mind. Do you think that this “mission-oriented state” also plays the role along with the private sector?

**CFS:** There's no doubt that the role of the State is more explicitly up for redefinition than it has been in many decades. At a minimum the State will be deploying familiar or new tools of industrial policy to shape market outcomes to a degree that only recently would have been unimaginable. But beyond such generalities the picture is murky. When you look in detail at how the money is being spent—what kinds of projects are eligible; how progress will be reviewed—there is a great deal of indecision about what exactly the role of the State should be. Should the emphasis be on speeding commercialization of market-ready (green) products by offering rebates to consumers and subsidies to investors? (That's what most of the money in the IRA is doing—channeled through the IRS.) What about focusing on the place-based coordination of investments in new green products and jobs with the development of the work force this will require, and the creation of specialized research and standard setting facilities that will help keep the emerging cluster or hub abreast of new developments? What about programs encouraging research at the frontiers of technology, for instance in the development of low carbon concrete or aluminum, or in place-based innovations addressing the problems of agricultural communities or communities victimized by environmental injustice? Some of all of these will be needed of course. But in the United States, and in the EU (to judge by early reports on the implementation of the National Recovery and Resilience Plans) the choice of program seems to be determined as much or more by the vagaries of the legislative process and by worries, widely shared among lawmakers and administrators of quite different political persuasions, that the State as currently configured lacks the capacity to mount and manage programs that go much beyond certifying eligibility for tax credits or similar carrots and conformity to the agreed conditions—that is, writing checks to beneficiaries that effect a transfer of resources without requiring the State actually to deliver services.

So, no question that taboos have fallen, a bit. The role of the State is in play, and some government entities are acting, or preparing to act with the purposefulness and continuous engagement characteristic of mission-oriented projects. But we are still very far from a world in which States can be presumed to be mission-oriented, and have the capacities to deliver on their commitments—especially where those commitments involve disruption of the industrial status quo. We have been freed of some of the contrasts of orthodoxy, but still strain to find a way forward. We are condemned to make the best of the open-ended situation we face, learning

rapidly, we hope, from the successes and failures of the green transition how a re-empowered state can make effective and accountable use of the expanded authority it is being accorded.

**FB:** Thank you, great, thanks a lot. I think that we can move to the second question. When comparing Montreal and Kyoto, do you maintain that, despite the differences, the two cases are, by and large, comparable? Would you please explain why?

**CFS:** Let's start with the reasons often put forward to distinguish them. The first is that to do with the supposed difference in the maturity of the relevant climate science at the time of the political controversies. The argument is that understanding of the vulnerabilities of the ozone layer was well consolidated in the run-up to Montreal, leaving no doubt that human activity was endangering the ozone layer and no reason to delay remedial action. The science of climate change was in contrast still immature, allowing skeptics to turn professional disagreements into doubts about the validity of the whole research endeavor, thus reducing the pressure for action. A second argument concerns the availability of alternatives to current products and processes. Safe substitutes for ozone-depleting substances were said to be well known or within easy range of major producers, held to have been reluctant to pursue these opportunities for fear of disrupting current business. Once the incumbents saw the ozone layer needed protection, they provided it. With respect to climate change, the argument continues, the situation was again the reverse: workable alternatives to dirty technology were located on a horizon so distant that they were much more readily imagined than observed.

This account is right in its characterization of the background of the climate change debate, but wrong about the background of Montreal. The science of the ozone layer was far from mature in the late 1980s, when the Protocol was agreed and went into effect. Some of the key, ozone-destroying reactions in the Antarctic stratosphere—especially those involving direct exposure to the summer sun—were well understood because they had first been identified in the 1970s; others, occurring at the edges of frigid, stratospheric clouds in dead winter and in the early Antarctic spring, were not. Because of these gaps in understanding estimates of the contribution of human activity to thinning of the ozone layer, and of the threat this degradation posed to terrestrial life, varied. Nor does the supposed technological optimism of participants in the Montreal discussions bear much scrutiny. Expert estimates at the time were that with best efforts working substitutes could be found for 50% of the products then endangering the ozone layer—roughly the same kind of inconclusive, mumbling out loud that would later reappear in early discussions of the green transition. (That same mumbling still happens today, with much of the debate about climate policy focused on sectors often called “hard to abate”—that is, places where the technological solutions are unknown today.) As we show in the book, in the case of Montreal, it was not the confident expectation of quick and painless solutions that led to a successful problem-solving regime, but rather the formation of a sector-based, experimentalist regime involving actors with hands-on knowledge of problems, that made the problems manageable. None of this is to deny that decarbonizing the economy is a vastly more complex undertaking than protecting the ozone layer. But that difference notwithstanding the thinning of the ozone layer and climate change pose similar challenges of collaborative exploration under uncertainty, and it seems time to learn the true lessons of the Montreal success.

**FB:** It sounds like the “logic of inquiry,” a pragmatic perspective on search as in John Dewey's perspective.

**CFS:** Yes, this is a very clean example of John Dewey's understanding that problem solving originates in the discovery by a heterogenous group of people of a common obstacle that

frustrates their understanding and thwarts achievement of their goals. In Dewey's exceedingly spare account, recognition of the shared problem leads to the formation of a public committed to solving it via experimentalist methods. (Note that, as Dewey would have expected, the formation of a public and the open-ended problem solving which it encourages also created scope in Montreal, and many other cases discussed in the book, for collaboration between laypersons, with expert knowledge of the effects of current arrangements and possible alternatives on their lives, and technical experts in products and production processes, thus creating some initial possibilities for deliberative, democratic engagement in a transition that may at times seem entirely dominated by technical reason, or at least the pretense of it.)

**FB:** You single out three dimensions of experimentalist governance: organizational structure, form of deliberation and set of incentives. As for the third, you point to the key role played by penalty defaults. Would you please explain what they are and why they are so important?

**CFS:** Let me go back one step and say that an important undertaking of the book is to think of how to design incentives to induce self-interested actors to pursue public-regarding ends under uncertainty. This reconsideration is important because the normal incentive structures, formed under stable conditions and tested by time, assume a world in which actors compare the costs of complying with the law and the benefits of violating it. If the cost of a fine for violation, discounted by the probability of detection, exceeds the gains from violation, the actor complies. But such calculations are no guide to action in sectoral green transitions. In these cases the purpose of regulation—and other forms of industrial policy—is not the maintenance but rather the transformation of an existing system by setting targets that yield sustainability gains in the short and medium term and accelerate transition to a low- or zero-carbon set up thereafter. The regulator's problem is that she does not know what targets are feasible (or will soon be) and demanding enough to stimulate continuing inquiry and progress, nor will even the most capable firms in the industry have confident answers to such demanding questions; and in any case many of the capable firms will prefer inaction to the risks of pioneering innovation.

A general, working solution to this problem, documented in the book in the California Air Resources Board's program to reduce vehicular emissions, is to credibly threaten imposition of demanding (but arguably feasible) regulatory requirements, phased in over a period of years, and to accompany the threat by an offer to regularly consider with key stakeholders whether to tighten or relax the standards in view of the accumulating evidence of what's actually feasible. Absent the prospect of discussion convened by the regulator the prudent strategy for the capable actor is inaction—stonewalling requests for information. So long as the capable firm's peers don't break ranks, the regulator is kept in the dark and no firm has to place risky and revealing bets on its favored technologies. But once discussion with the regulator is in view the capable actors face a prisoner's dilemma, and each hastens to confer with the regulator, and eventually its peers, in the hopes that its preferences will influence the standards under construction before opposing ideas catch on, the conspiracy of silence gives way to a competition in collaboration.

But, to return to your question: The possibility of this virtuous circle depends on the existence of a credible threat to impose an outcome on the parties manifestly less acceptable than one they could have arrived at in collaboration with the regulator and each other—what we call penalty defaults. A private law analogy would be a family-court judge's offer to a divorcing couple of a choice between a court-concocted separation of assets, based in law but so far from the reality of the two households as to be deeply disruptive to each (the penalty default)

or instead, to avoid this outcome, the sharing by the parties of the information needed for a settlement workable for all. The aim, as in the assessment of new regulatory standards, is to make it risky for the parties to cling to the status quo, and to obligate them to consider cooperative investigation of novel possibilities. The book details the surprisingly many ways de facto penalty defaults are established by law, civil society campaigns, or private actors responding both to public pressure and the prospect of regulation or legislation.

**FB:** Very interesting. This presupposes a neutral State, without particularistic interests towards some sectors or some producers, doesn't it?

**CFS:** I wouldn't say a neutral State but rather a State which is committed to advance in a certain direction, typically at the margin or outside the umbrella of orthodoxy that legitimates routine decision making. In the case of *Fixing the Climate* (Sabel & Victor, 2022) the goal is the green transition. The State is (or should be) neutral with respect to the precise technologies that will vector the transition—will green hydrogen be a battery or a fuel? Will it usually be used near where it is produced or will it be shipped afar?—and even surprisingly neutral, at least so far, about the kinds of industrial policies that will be used to support the transition. But, as the massive response to the IRA subsidies shows, the very general direction of development is no longer up for grabs, even if doubts very rightly persist that the transition is proceeding rapidly enough.

**FB:** This reminds me a little bit of the old idea that Peter Evans illustrated with the concept of “embedded autonomy.” The State knows where the frontier of the innovation is and so it's very close to societal challenges and collective needs, but at the same time it's not captured by vested interests in that sense.

**CFS:** Yes, embedded autonomy in that sense is the goal. But I would say that Peter Evans found embedded autonomy in his Brazilian cases. He didn't explain how it could be generated where it didn't already exist. The discussion of the incentive structure of experimentalism in the face of uncertainty aims to show how embedded autonomy can be the outcome of a deliberative process, with a penalty default in the background, rather than a precondition—an endowment, available or not—of problem solving.

**FB:** Let me just go back to penalty defaults very quickly. Wouldn't they be working only if the so-called exit costs were quite high? I mean, if there were no alternatives to keep the old technology in other markets, in other countries or whatever. Isn't this very demanding? Isn't this a very demanding condition?

**CFS:** Well, I guess the answer is both yes and no. In some cases there are alternative markets and the costs of exiting or ignoring transition agreements are low. For example, if you cannot sell palm oil in the markets of the EU and North America, you can sell to the basically unregulated market of rural China or rural India. But it is not at all clear this is a stable solution. These markets are not fast-growing; there are clear limits to their expansion, and they may be shrinking. But above all they are poor markets. They have low margins, they work with “recycled” technology, often with equipment banned from use in advanced markets; and for this and many other regulatory reasons their products can be sold only to similar countries. There is, in short, an incipient global informal economy, where low-quality, environmentally dirty goods are produced by cast-off machines using dirty processes, and then sold to low-wage workers also in the informal economy. Will the existence of this low-equilibrium, global secondary market (which is beginning to take root in economically vulnerable areas in the advanced countries



too) be the bane of a green transition (as well as a social, political and economic tragedy in the making in itself)?

I see two important reasons to think not. First, any country that wants to grow rapidly and acquire new capabilities will not want to be condemned to serving stagnant informal or secondary sector markets. On the contrary, such ambitious countries will want to use technologies and meet the standards that allow its exports entry into the advanced markets. China is a leading example. At the time of the Montreal Protocol, the Chinese were divided about whether to adopt the new standards or not. Recent investments in factories to make the substances which were to be banned counted against joining. The decisive argument in favor was that China could not export refrigerators to advanced countries unless it adhered to the protocol.

The second consideration counts against the idea that the advanced countries can afford to abandon the global informal economy to its fate. For the first time in a long while, maybe the first time ever, the advanced countries truly need the developing countries to participate in meeting a common challenge and will continue to need them as far as the eye can see. If the United States, the EU and Japan clean up all their emissions and nobody else does, the planet will still warm—a lot. So we are bound together by a unique objective constraint, and the evidence is accumulating that we are, however slowly, realizing the gravity of the situation and demonstrating to ourselves that we have the capacity to address it. At any event what we are seeing today is not the usual relation between the center and the periphery, where the former needs low-cost inputs and the latter accepts that because it has nothing else to offer or withhold.

**FB:** In your book, there is little space for finance and financial capital. We know that, to protect capital investment and return on capital, global players have been cheating and hiding information on climate change for years. The case of “Exxon: The road not taken” is the most compelling one. Why should they be supporting the experimentalist governance solution? Let me put it straight: I see little place for evil and domination strategies in your proposal. How does experimentalist governance deal with evil and domination?

**CFS:** Let me pass on the question of the relation between experimentalism and evil, except to remark that in discussions of social and political organization, the treatment of evil has become the department of political theory, with other commentators assuming actors stripped of virtues like courage or altruism and vices like the lust for power or delight in devilry, and therefore prisoners of their self-interest or ideological heritage.

But of course, domination can, and often does emerge from the operation of such faceless motives. The discussion of penalty defaults after all, presumes a world in which the champions of the dirty economy still command the economic and political resources to defend their positions against green challengers. But theirs is a wobbly hegemony. Their answer to the menace of climate change is to temporize, even as the magnitude of the threat becomes more and more palpable; the tide of technological development is turning against them, as it becomes clear that there are feasible alternatives to dirty technologies. Experimentalism exploits the chinks in their hegemony—the disorientation of orthodoxy, and the growing confidence that we can indeed build a low-carbon future—by indicating, as we just saw, how regulatory strategies can make it in the self-interest of capable firms to join the search for green solutions, and how these solutions can in turn help crystallize alliances that push for further change in the same direction. In this context, experimentalism is a strategy for the incremental, but cumulatively comprehensive transition from a dirty to a clean economy, and the changes in governance this will entail.

Even Exxon can't hide from these incentives. In the last two years we have seen three mem-

bers of their Board replaced—for lack of seriousness about climate change. Exxon is now a backer of green transition technologies—at least those that align with their skills, such as carbon capture and storage and also hydrogen. Penalty defaults can influence even the mightiest and create incentives, even for them, to break ranks with the status quo.

**FB:** Let me close with a question trying to bridge *Fixing the Climate* (Sabel & Victor, 2022) with the proposal of Bruno Latour. In *Down to Earth: Politics in the New Climatic Regime*, Latour (2018) says that it is urgent to shift sideways and to define politics as what leads toward the Earth and not toward the global or the national. Belonging to a territory is the phenomenon most in need of rethinking and careful redescription; learning new ways to inhabit the Earth is our biggest challenge. Bringing us down to earth is the task of politics today. Is there any connection between experimentalist governance and a new way to thinking about our belonging to the “terrestrial”? *Fixing the Climate* would otherwise appear to be detached from the daily life of ordinary people, it deals with regulation, firms, élites, experts.

**CFS:** Yes, I think there’s a very direct connection between what Latour calls “the terrestrial” and the link that experimentalism establishes to place. Latour conceives of the local as an aspect of nostalgia, a retreat to familiar attachments, because they can be presented as unquestionable, and their unquestionability can be marshaled to support conservative rejection of the idea of any change. The global, as Latour has it, is synonymous with modernity’s abstract idea of progress, in its worst, most deracinated form. The terrestrial then becomes a residual category, a place or possibility for deepening our engagement with immediate surroundings without being paralyzed by nostalgia or bewitched by lifeless, astral abstractions. You said our book is concerned with things far-away from the daily life of ordinary people. That’s largely true of the chapters that deal with innovation at the technical frontier—the development of e-vehicles, or new types of energy storage devices for power networks. In these cases innovations will work largely as expected without regard to the particularities of place. But another central theme of the book is “innovation in context.” In these cases, in contrast, general innovation has to be contextualized to the idiosyncrasies of place if it is to work effectively; this contextualization can lead to reinvention of the innovations, and it typically draws local people, as experts in their home range, into the process of reconceptualization. The leading example in the book of this kind of process is a case study of changes in the control of agricultural pollution runoff in the Irish dairy industry, beginning with the discovery that standard limit values for concentrations of nitrates and phosphorus in fields are of little value (because the effect of the pollutants depends more on the accidental slope of the field, composition of the subsoil or the features of the underlying geology than on the limit values) and ending in the elaboration of a system of governance in which farmers, assisted by extension agents and soil and other kinds of experts, develop field by field plans for controlling runoff, and agree measures for treating larger sources of rural pollution. The crucial point here is that the local groups are neither reviving traditional practices nor applying or propagating incontestable, universal knowledge. Rather the local farmers, drawing on their traditions, their experience, and their understanding of agronomy, collaborate with a diverse group of experts to figure out what works on their farms, and then use this deepened understanding to revise general rules. In attaching themselves more knowingly, more deeply, to their local world the actors are escaping both the telluric undertow of brute tradition and the bewitchment of astral abstraction. A shortcoming of Latour’s otherwise interesting book is that it doesn’t actually say much about what people are doing when they “terrestrialize” themselves. I don’t presume to know his thinking, but perhaps he might agree that experimentalism offers a way of “institutionalizing the terrestrial.”



**FB:** Thanks again, it was a great interview. Would you tell us what is your next big project?

**CFS:** I'm up in the air, not least because the situation is indeed very open, and it's difficult to know which of the many promising initiatives will bear fruit, or at least reward study. One possibility would be to return to the study of the EU, which is often written off or reviled as an outgrowth of turn-of-the-century neoliberalism. In fact, the EU has done quite well in responding to a series of crises (cumulatively, the polycrisis), expanding the scope of union action, but not concentrating power in the European Commission, or the European Council. Perhaps the EU is not simply avoiding disaster by inspired improvisation, but has rather hit on a means of experimentalist learning from and amidst crisis, using parallel searches by actors with hands-on knowledge of problems to find solutions beyond the reach of centralized authorities, and incumbent firms, provoking reconsideration of political alliances and governance arrangements along the way?

## References

- Latour, B. (2018). *Down to Earth: Politics in the New Climatic Regime* (C. Porter, Trans.). Cambridge: Polity. (Original work published 2017)
- Sabel, C.F., & Victor, D.G. (2022). *Fixing the Climate: Strategies for an Uncertain World*. Princeton, NJ: Princeton University Press.

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Charles F. Sabel is Professor of Law and Social Science at Columbia Law School (USA). Previously, he was Ford International Professor of Social Science at Massachusetts Institute of Technology (USA). Sabel is a leading figure in political economy and social theory. He studied the crisis of mass production and its implications (*The Second Industrial Divide: Possibilities for Prosperity*, 1984, with M.J. Piore). His more recent work focuses on democratic experimentalism (e.g., *Learning from Difference: The New Architecture of Experimentalist Governance in the EU*, 2008, with J. Zeitlin). His current projects focus on global problems such as trade and climate change.