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EXPERTISE AND COMPLEX ORGANIZATIONS

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INTRODUCTION

SOCIAL organization in the broad sense includes everything from constitutional states and international organizations to complex organizations and the family. But social organization is always also the organization of a distribution of knowledge; and every division of labor is a division of epistemic labor. We can think of an organization as a set of roles in which the different incumbents have access to different kinds of knowledge and different skills, share different bits of knowledge with others, and need to acquire knowledge from others. But the converse is also true: every distribution of knowledge is always also socially organized. Basic facts govern this. People have to be paid or cared for. Decisions need to be made. Authority needs to be exercised. Rules need to be followed and enforced. The knowledge of others needs to be judged, its trustworthiness established, and it must be relied on. And perhaps most important: knowledge is never independent of others, whose teachings, tools, and products are necessary to becoming knowledgeable. All socially organized systems, then, are knowledge systems.

"Expert" systems are knowledge systems whose participants have or claim the social status of expert. Like organizations, knowledge systems are both divisions of labor and distributions of knowledge, with the added feature that experts do not merely define their status as experts within the organized structures in which they participate; they also play an active role in defining their status collectively outside the organization and in enforcing, defending, and developing it, for example, through professional organizations.

We can think of such systems of expert-driven decision-making, abstractly, on analogy with the biases of fast-thinking heuristics as discussed in the experimental literature on the psychology of rational choice (Turner 2014a). Individual experts come to their expertise through thinking that itself depends on such things as heuristics for

assessing data, social cognition for the assessment of others, and through heuristics governing selectivity, among other things. These heuristics have biases. They are shortcuts. Organized decision-making works in an analogous way: it is also the product of systems, which themselves have biases and therefore typical patterns of error, and which are designed to deal with and correct for the biases of participants. One can think of these systems as made up of participants, each with their own heuristic biases, which are aggregated through a process that is more or less rule based. Biases are both produced and corrected for by the elements of the system itself—such as the scheme for the selecting participants; the reward structure; the evaluation structure; the particular powers; resources; and the roles and responsibilities of the advice-giving bodies at each stage of the process (Turner 2014d).

We can put such systems in the category of knowledge aggregation, and regard expert systems and expert-involved organizations as cases of knowledge aggregation. Traditionally, social epistemologists have modeled processes of aggregating knowledge on minimally social models, such as averaging guesses about the number of beans in a bottle at the county fair, which is a method of canceling individual biases (Solomon 2006, 34–35; see also Miller 2013). Economists, similarly, use the market as a model for aggregating opinions and extend the model to knowledge generally. This is a start on the problem of aggregation but a potentially misleading one. We tend to think of science as a self-correcting enterprise, like the market, but it, too, is organized, has biases, and needs to incentivize and organize the means of self-correction. These means have their own biases. Complex organizations also incentivize and implement self-correction, and create structures to do so. This, too, is a source of bias, potentially an important one.

"Bias" is of course a problematic concept. Daniel Kahneman (2001) compared the individual heuristics that people unconsciously use in making fast-thinking decisions to formal decision theory. This is a somewhat arbitrary choice as a standard, and not a useful one in this context. Kahneman treats bias as a problem in decision theory. The decisions in question are the kind that can be solved by formal decision theory: they are what Herbert Simon (1973) calls "well-structured problems." But expertise is called upon, indeed is especially called upon, in the face of problems that are ill-structured, for which there are no optimal solutions, differing perspectives, or conflicting considerations or interests. And decision-making in these situations is typically organized in terms of processes of aggregation in which experts have designated and limited roles. Applying the concept of bias to such situations requires something different from a simple comparison to decision theory.

Nevertheless, thinking about expert knowledge systems as means of collectivizing knowledge designed to correct for individual biases and that have their own biases is a start in the problem of understanding the relationship between organization and knowledge. In what follows I will generally proceed from this starting point, and then return to it at the end. I will discuss the background to the problem, the theoretical and disciplinary traditions that have informed it, and then turn to a case: the International Monetary Fund's processes in the 2008 and Greek financial crises. In both cases, the IMF's expert knowledge system failed. But the response reveals some of the complexities

of the problem of designing an expert knowledge system, and is a concrete example of the thinking that goes into the ongoing reflection on and reorganization of such systems, a process that is a characteristic feature of these systems.

Expert Failure and the Problem of Organizational Design

Science is sometimes thought to be a self-correcting system: replication and the fact that other scientists must rely on the previous and related research results to perform their own experiments is thought to provide error detection. Sometimes, this works. But as the statistician John Iaonnidis (2005) has shown with respect to medical research, the idea that the system is self-correcting may be an illusion: "Simulations show that for most study designs and settings, it is more likely for a research claim to be false than true. Moreover, for many current scientific fields, claimed research findings may often be simply accurate measures of the prevailing bias" (40). Researchers searching for a particular drug effect, for example, may find it and report it, but they will not report failures to find it, or they will abandon research strategies that fail to find it. And this bias is a result of facts about the social organization of research—namely, the institutional reasons that cause people to look for confirming results, or, as Iaonnidis explains, where there is "financial and other interest and prejudice; and when more teams are involved in a scientific field in chase of statistical significance" (2005, 40).

We can see, sometimes in advance, that particular institutional arrangements, such as highly competitive grant systems, which rely on peer review, are likely to produce a great deal of conformism and far less high-risk innovative thinking. This was a fear of the physicists who produced the A-bomb. They used the risk-reducing device of setting up rival teams, with rival approaches, notably on the 600,000-person Manhattan Project and throughout the postwar period. Lockheed pioneered the use of "skunk works," innovation-oriented units created outside the normal organizational structure, to generate alternative technologies, which, at IBM, produced the personal computer (PC). And there are ongoing efforts in science to create institutional structures to correct for issues that become problematized. In recent years, for example, there have been organizations that publicize misconduct, such as Retraction Watch, and a large structure of research misconduct mechanisms was created over the last generation. Most recently, there have been such innovations as the online postpublication commentary forum on PubMed (Marcus 2013) and funding for replication studies (Iorn 2013).

Institutional design and redesign is thus an ongoing organizational phenomenon. Every one of these arrangements can go wrong, for the simple and nontheoretical reason that the circumstances under which they operate can change, or they can be misjudged from the outset, so that the protections against error that worked in the past no longer work, or because of intrinsic weaknesses, such as the concentration of decision-making

that the Manhattan Project physicists thought would come from putting nuclear power under a National Laboratory system.

There are two traditions in the science and technology studies (STS) literature, one that focuses on problems of design, and another, focused on the problem of expert failure. Steve Fuller, in *Social Epistemology*, asked how science could be optimally organized (Fuller [1988] 2002; Turner 2018). Two widely used texts written by Harry Collins and Trevor Pinch, *The Golem* ([1993] 2012) and *The Golem at Large* (1998), dealt with controversies in science and technology that reflected long-term muddles and errors. A "golem" is a large, powerful, but bumbling and therefore dangerous creature of Jewish folklore. Collins and Pinch's golem was science as a community; their emphasis was on the bumbling or error-prone character of science and technology, but the controversies typically had an organizational aspect. Apart from this STS work on science, a literature developed in economics on expertise that dealt with many of the same issues but in different theoretical terms. The economics and STS literatures were brought together by Roger Koppl (2018) in *Expert Failure* (see also Turner 2019b).

Koppl's (2018) basic commitment is to the idea that market-like structures are the best means of correcting expert error, "that there is a market for expert opinions whose structure determines the reliability of experts and the power of non-experts" (37). The key facts about market structure have to do with freedom of entry and barriers to entry. As Koppl (2019) notes, this connects to the sociological tradition in a particular way: the concept of "professions" is about barriers to entry (82). Professionalization is a barrier to entry. It reduces the incentive to challenge rivals (Koppl 2018, 205). And professions tend to ally with and employ state power to restrict rivalry, producing homogenization of expert opinion (206). This produces epistemic risk. And Koppl (2018), notes that many other institutional arrangements, such as what he calls the "entangled state," exemplified by the enclosed intelligence community, limit the kind of redundancy that is needed. The barriers to entry are high, and despite conflicting interests, rival opinion tends to be suppressed to achieve policy consensus (224).

Professions typically operate in markets, which they seek to control. My concern, however, is with nonmarket structures: organizations with authority relations and a division of labor that is also a division of epistemic labor or knowledge. Koppl (2018) makes a key argument that bears on such organizations, as well as on markets. Real markets need competition, but, he argues, that is not enough: without what he calls "rivalry" or "synecological redundancy" competition may be a poor safeguard against error (89). The terms require some explanation. By "synecological" he means characterized by an epistemic division of labor—the example he gives is from a famous essay by Leonard Read (1958) showing that no one knows how to make a pencil; it requires the knowledge of different parts of the process held by different people. Correcting for possible error involves redundancy, for example, someone looking at a decision again, which can be as routine as having a supervisor give approval after looking over paperwork. By synecological redundancy, he means something more than this kind of correction, which he calls "simple redundancy," which involves the same evidence being looked at again, but genuinely diverse "evidence channels" with different structural elements (Koppl 2018, 185).

Protecting Expertise

The sheer variety of arrangements for addressing the problem of organizing expertise at the societal and civilizational level is astonishing. All social orders involve institutional arrangements that define a relation between the distribution of knowledge and the distribution of such things as authority. In the case of experts or those claiming expert knowledge, this is typically a two-way relationship, in which the possessors (or claimants) of knowledge create methods of self-protection, and collective identities such as professions allow a degree of discretion that is beyond the control of outsiders and authorities. We can understand this relationship between expertise and protection from a nonorganizational, purely market-based perspective. The classical professions, such as law and medicine, used their collective identity to define good practice in such a way that conforming with it shielded the individual practitioner from liability or control. Many aspects of this model of protection carry over to the role of experts in complex organizations, but it fails to capture the issues that arise between authority and expertise. The point of the market analogy is to describe an ideal situation in which there is no authority. In organizations, the expert has superiors with whom conflict may occur.

There is, however, a way to conceptualize the expert-authority relation that explains the role of protection in organized bodies. The relevant concept is discretion. A professional judgment is a discretionary judgment, within the limits of what counts as "professional." States and authority structures organized as offices also have discretionary powers—that is, powers to make decisions that are not overseen or corrected except in special circumstances. Courts are simple examples of this. Although there are courts of appeal, "systems of redundancy" in Koppl's terms, they limit themselves to errors, look at a different stream of evidence presented in the appealing lawyers' briefs, and grant the subordinate courts a degree of discretion in interpreting the law (Kelsen 2005, 348–356). Administrative law, where it is subject to judicial review, is similarly "deferred to," meaning that if the administrative rules promulgated by a regulator are not egregious violations of the authorizing law, they are valid, thus allowing administrator discretion. The same concept of discretion applies to complex organizations (Sandhu and Kulik 2019). Discretion implies protection: a discretionary act is protected from review by higher authorities and, indeed, any authority. But it is itself an exercise of authority. For an expert in an organization, this may have legal implications. At the same time, the person exercising this authority must be protected. In the case of the state, the administrator is not personally liable for official acts. This is the cornerstone of having officeholder status.

The case of the expert is analogous. But the discretion of the bureaucrat is a creation of law. The expert may be recognized in law, but the claim of expert status—and the nature of the protection—have different origins. Weber gave the classic account of the need for protection in relation to the assertion of special knowledge when he spoke about the "disenchantment of the world," discussing the transition from magic, where the magician could be held personally responsible for the failure of the magical acts, to the priest,

who performed the rituals by the book, so to speak, which transferred responsibility from the person of the priest to the doctrine and to the collective body of the church that authorized the doctrine and the powers of the priest (Turner 2015; Weber [1921–1922] 1968, 400–401). Experts generally invoke some version of this kind of collective authorization: they speak *as* an economist, or *for* physics, and submit themselves to the criteria for this collectively sanctioned identity.

"Professionalization" is merely the most familiar strategy for obtaining authority and protection. In its classic Western forms in medicine and the law, professionalization was characterized by oath-taking, secrecy, membership rituals, and self-denying ordinances that served to define and limit responsibility. These limits determined what counted as "professional opinion"—that is, speaking as representative of the profession as distinct from speaking *in propria persona*. But, as we have noted, the model of professionalization is potentially misleading: lawyers and physicians are, in the traditional sense, *independent* professionals competing in a market, though the term has come to apply to and be claimed for people who are employees. The point of claiming the status of "professional" is similar: to assert a zone of authority or professional discretion that provides protection, an assertion backed, in some sense, by epistemic and ethical standards that are specific to the profession and in some fashion enforced collectively, but also protected by professional solidarity in the face of attacks by outsiders. This necessarily creates a zone of potential conflict with the authority of the organization itself.

As we will see, there is a common organizational remedy for issues that arise in connection with discretion. It takes the form of committees or structures that review discretionary decisions, normally not with the intent of replacing them, but with the aim of protecting against the consequences of errors in those decisions. These involve synecological redundancy. An important discussion of collective bodies that serve as correctors is found in *Securities against Misrule: Juries, Assemblies, Elections* by Jon Elster (2013; see also Austen-Smith 2015). Elster makes the point that the function of these bodies is not to produce optimal outcomes, which would require an almost magical amount of expertise, but to produce and understand institutional designs as means of reducing the risks of partiality, passion, self-interest, and so on (12). But they are subject to a regress problem (Turner 2019a). The issue, as becomes clear in Koppl's exposition of the concept, is this: one does not escape from the problem of granting discretion to experts. One simply adds another body that needs to be granted its own discretionary power. This may be the power to veto an expert decision; or the power of decision-making may be vested in the secondary, reviewing body, so that the first body's or person's actions—for example, in the form of an expert recommendation—are "advisory." Or there may be another division of labor, such as the one between fact-finding and law-finding, in which each body is given a different task.

The IMF and the Crises of 2008 and Greek Debt Crisis of 2010: A Case Study

These arrangements are the product of conscious efforts at organization, and expert systems are constantly subject to reflection and suggestions based on the failures of the past

and changes in current circumstances. The case I discuss here is a relatively simple and much discussed one, which happens to have been the subject of two formal inquiries into the problem of expert failure and its organizational causes. It involves International Monetary Fund, which is a body of granting nations that supplies emergency funds on conditions of reform, conditions decided on through a process of aggregation of expert opinion involving bodies—organizational units—with synecological redundancy. The expert failures were two: the failure to anticipate the 2008 financial crisis, and the errors in the decisions made, with the IMF's participation, in responding to the Greek debt crisis.

The two events were interlinked, and the organizational issues revealed in the published reports of the evaluation committees extended to both cases. Those reports are particularly valuable in that the committees had an unusual, though not unfettered, level of access to the organization and its participants. The study of expert failures depends, in large part, on reports of this kind. Researchers usually cannot get access to key players or confidential information. The major technical failures of recent years, such as the BSE (Bovine spongiform encephalopathy) epidemic, the Columbia Shuttle disaster, and the Fukashima nuclear power plant disaster led to reports that relied on enhanced access. These reports need to be read critically, but they are useful as data, and are themselves part of the process of organizational design and redesign.

In the period leading up to 2008, there was a considerable amount of asset inflation in the world economic system, fueled in part by low interest rates. A prominent, and economically hefty factor in this inflation was in the US housing market. Housing prices were rapidly increasing, and buying was made possible by mortgages that treated the increasing market value of houses as real. Banks were not holding the mortgages as assets, but selling them on the market to brokers who then packaged them into large bundles and sold the bundles as assets: they were thus "securitized." These securities could be borrowed against to buy more assets, and the holdings insured against losses by other instruments, called *credit default swaps*. These, too, could be bought and sold, and they were sold by banks, to one another and to the market. This was an "insurance" market. The buyer paid the seller in exchange for a guarantee that the seller of the swap would pay out if the product, a loan, defaulted. This was thought to be a low-risk deal, and easy money for the bank, because the likelihood of default was assumed to be low. These instruments were sold internationally and allowed for leveraging—that is, borrowing on the basis of assets to buy more assets. But much of this market was backed by a single insurer, AIG. This market created the conditions for a banking crisis. But the larger market was for "repo" or repurchase agreements between banks and banks and hedge funds, which allowed for significant leveraging. These agreements worked like this: a bank would purchase and immediately resell an asset, with a promise to repurchase it in the future, which could be a soon as the next day or as long as three months away, with a haircut, for example, a price difference of 2 percent. They could use the proceeds of the sale for a new purchase. This meant that for the 2 percent, they had the money to invest in some other asset. This was fine, as long as these agreements could be rolled over repeatedly. If they could not, the bank or fund would have to pay up immediately. This market involved vast amounts of money and included only very big players.

The crisis began in earnest when the Wall Street investment bank Lehman Brothers was forced into bankruptcy. Lehman had invested heavily in the mortgage and subprime, or risky, mortgage market and effectively become a real estate hedge fund. When the housing bubble began to burst, the underlying real estate assets lost value, and the mortgages no longer generated the necessary income. The market reacted to this, and the mortgage packages became unsalable. Half of its balance sheet was in repo. When it became clear that the firm was in trouble, Lehman was unable to raise the money it needed to keep this game going. The market also sold off shares in AIG. None of the entities committed to mortgage-backed equities could raise funds, which raised the threat of multiple bankruptcies and the collapse of the repo market. The threat extended to the rest of the banking sector, and banks now began to fear loaning money to one another, creating more threats of bank failures. In the United States, the crisis led to massive government intervention—a bailout—to save the financial sector. Aid was extended to European banks as well. Europe was vulnerable because it had invested heavily in these securitized mortgages and had become a largely unregulated market for US assets. The buyers included groups that did not want to be identified to US regulators. These were therefore particularly unstable markets.

What went wrong? Many failures have been identified. The standard econometric model that was used to predict the macroeconomy treated financial markets as separate from the "real" economy, so the model did not predict changes in the real economy, and for the most part the model was right—employment and manufacturing revived quickly. The relevant regulators ignored the collapse in the housing market, which began in 2006, because it was believed that it was separate from other markets. The issue of moral hazard, particularly the fear of setting a precedent of bailing out banks that had profited from reckless and legally dubious mortgage lending, prevented regulators from saving Lehman from bankruptcy. European banking institutions, such as the European Central Bank, were forbidden by their own rules to intervene: unlike the Federal Reserve, the bank had price stability as its only mandated goal.

One of the main assets used in repo agreements was government debt. In 2010, Europe was suffering from multiple problems in the financial system, one of which was related to Greek debt. Although the amounts were not large, and the debt had been inherited from past Greek governments, debt service was a large part of the national budget. The threat of default as a result of the economic slump in tourism and Greece's traditional exports undermined the position of some major European banks, which held Greek public debt, and also forced the Greek government to pay extraordinary rates to sell its own debt. If Greece was shut out of the bond market, the Greek state could not function. The banks, which in Europe played a much larger role in the financial system, already had balance sheets in a weakened condition. On paper, they could afford to write off the debt, but their bond holdings, together with private debt, which had risen, would potentially cause them problems in the highly leveraged repo market. If they could not access these markets, they would collapse.

The story of the Greek debt crisis is complicated, as is the role of the IMF in it. The solutions were simple: the Greek government needed cash; the debt needed to be "restructured," with losses for the debt holders; and someone needed to pay the bill. This would not happen for complex reasons, the most important of which was the desire not to set a precedent that would apply to the much larger economies of Italy and Spain, which faced similar problems, and the desire to protect the banks from losses. This led to a strategy that was labeled "extend and pretend," in which the Greek government received help in exchange for promises that could be fulfilled only through a major reduction in their own economy, which entailing significant suffering and burdens stretching into the distant future. The promises, together with significant deleveraging by the banks, enabled the banks to survive and minimized the losses of the governments that were compelled to lend to Greece. The Greek economy was to be, for a time, governed by a "Troika" of international financial bodies, including the IMF, which invested significant funds into the rescue project. There were national interests, and national experts, involved with all of the members of the Troika, making this an especially complex case of organized expertise, and also one in which political interests and expertise were combined in a complex way, which is precisely what the structures of expert systems are designed both to protect against and to accommodate.

The IMF had not been a welcome participant. It was seen as "American" (the other institutions were purely European), appropriate for the Third World only, and its experts were skeptical of the strategies the Europeans were using to delay facing up to the issues with Greece and imposing the kinds of rescue solutions the IMF itself had repeatedly imposed. Rescue was opposed by the Germans, with the support of the Finns. In the end, a muddled compromise was worked out that had the effect of saving the German and French banks with money loaned to the Greeks to enable them to avoid defaulting on their sovereign debt. The IMF goal of creating a stabilized and reformed Greece with healthy future growth prospects was not achieved.

There was an important role for expertise in this situation. The decisions being made had to be justified in terms of economic models. The IMF supplied these models, and they were, notoriously, both false and tailored to support the political and financial agenda of the German government.[1] They also represented a betrayal of the other countries that contributed to the IMF itself. But the episode shows the importance of expert power: without the models, the "solution" to the Greek debt crisis would not have been implemented. There are, of course, many facets to this situation, which have been inconclusively discussed and are still live issues. My concern here is the response of the IMF, which treated the problem, at least in part, as one of organizational design and used the language of the field of organizational design in the reports it commissioned to examine the failures. These reports provide a limited, but nevertheless very useful window into both the organization of expertise within the IMF and the larger problem of the organization of expertise in complex organizations generally.

The Reports: Four Issues

The reports on the failures at the IMF assume a great deal about the operations of the IMF that is not explained. The work of the organization was divided into units that dealt with specific countries, and with specific loans. The governance of the organization itself was by committee, and membership was drawn from the donor nations. This was itself a form of expert rule, namely, stakeholder governance. The stakeholders had, or represented, "skin in the game." But they also represented nations with their own, often very considerable, expert resources and relevant information. The internal structure of the IMF involved a hierarchical order in which reports were submitted up the hierarchy in such a way that the ultimate consumers of the reports, the representatives of the stakeholder nations and the governance of the IMF, would accept them.

What went wrong, from the point of view of the IMF reports? In both crises, the IMF had made errors—in the first, by failing to anticipate the problems, and in the second, by agreeing to a bad strategy. The failure to anticipate was blamed, in a now infamous statement in the 2011 Independent Evaluation Office (IEO) of the International Monetary Fund report, on "group-think, intellectual capture, a general mindset that a major financial crisis in large advanced economies was unlikely, and incomplete analytical approaches" (IEO 2011, vii, 1, 17; 2016, 48). These items have an organizational basis. The report cites several: "Weak internal governance, lack of incentives to work across units and raise contrarian views, and a review process that did not 'connect the dots' or ensure follow-up also played an important role, while political constraints may also have had some impact" (IEO 2011, 2).

Silos

"Weak internal governance, lack of incentives to work across units and raise contrarian views, and a review process that did not 'connect the dots' " are all "organizational" issues: they involve what the report calls "silos." The units reported up a chain of command, involving organizational features that produce consistent and rapid results through classical organizational forms of a strict division of labor, clear hierarchy, and career paths tied to these forms. They are, however, features that make it difficult to "speak truth to power." But it was also understood that the hierarchical structure involved intermediation between the lower-level analysts and the ultimate recipients of the reports. This carried its own tension: between the need to be effective by producing results that would be implemented and concern about the consequences of presenting unvarnished truths that might have been unacceptable to stakeholders. Ironically, the same consideration, of producing an acceptable report, is evident in the IEO reports themselves, which do not name names or even identify the countries involved in interfering with the experts. There were other organizational obstacles to challenging the hierarchy mentioned in the

reports. Among the issues within the IMF itself were career paths involving high turnover and short-term assignments that made newly appointed staff uncomfortable about challenging existing policy or the national experts of subject countries.

The 2016 report mentions but does not pursue an organizational feature that may have produced the phenomenon of silos: delegation (IEO 2016, 41). Because tasks were delegated to units, and in effect to specific unit leaders, there was little communication between units. There was no process that would have connected the results of different units to one another. These units were what were described as "silos." "Silos" is a concept from organizational design consulting and analysis (Bach 2016; Tett 2015), and is usually employed for organizations with a product.

Ever since the publication of Bruno Latour and Steve Woolgar's *Laboratory Life* (1979), we have been used to thinking of science as also having products—in this case, research papers. What was the product in the IMF, and how was it produced? The IMF is a treaty organization, with specific limited goals. It is concerned with national public-debt crises and resolving them in ways that assure that they will not recur, through "structural" reforms in the economy usually known as "austerity." The role of the IMF is to act as a superbanker, with all that entails: creating and assessing the equivalent of a business plan for the ailing country that will satisfy stakeholders, that is, the treaty signatories who govern the IMF and provide the money, and monitoring the state's compliance with the terms of the loan, for example, by seeing that money that might have been provided for a particular infrastructure is actually spent on infrastructure, and not dissipated in bribes. All of this required expertise. But it was expertise used to produce a product.

The product, in the terms of *Laboratory Life*, was reports, documents of various kinds that form a kind of pyramid reaching to the reports that are made to the governing body of stakeholders. It is important to note, and this will be discussed shortly, that the stakeholders were expert stakeholders, and that the governing body itself, apart from the IMF apparatus, was a particular, and common, form of expert organization. The audience for any given report was the person at the next level up in the administrative hierarchy. The hierarchy resolved problems of aggregation—that is, the integration of multiple kinds of information and sources, a topic we will return to in the conclusion. But the endpoint of the IMF process was not a journal article, but the reporting to the stakeholders, who were both technically sophisticated and had their own sources of information, such as their diplomats in the countries in question, and many other sources. And they knew more about their own banks and financial stakes in the process than the IMF did.

The most important technical product was the reporting justifying the loan, which depended on an econometric analysis of the loan's effects given particular assumptions about such things as the reduction of state expenditures and the raising of taxes, as well as the proposed "structural" reforms, for example, to labor markets and contracts. The point of the exercise was to show that the loan would eventually be (usually partially) repaid as a result of the measures, and that the economy would be stabilized and enabled to grow. As a practical matter, growth was the necessary condition for any reasonable prospect for repayment, and also for the government's meeting a reasonable part of its

obligations in addition to debt, such as pension obligations and other welfare measures. Only when a quantitative case could be made that the reforms would actually work would a rescue be approved. The goals did not include protecting the investments of private speculators in the country's debt.

As we know from science studies, the process by which the "products" are generated is messy and filled with arbitrary decisions, uncertainty, and matters that get excluded from the pristine presentation of the documents themselves. This is also true of econometric analysis. There are many choices of assumptions, the implications of which are obscured in the final presentation. Quite modest changes in assumptions can produce radically different outcomes in the final presentation. Nor are the models made from scratch. They are based on conventional modeling assumptions about the economy as a whole that may not be true. In the case of the 2008 crisis, which was a product of miscalculations by the Federal Reserve Board, not the IMF, in there were two such errors. The first was that real estate markets were functionally independent from the rest of the economy and were self-regulating in ways that would not affect the rest of the economy—namely, the output of goods and services and wages. In short, it was assumed that a real estate crash would only affect the real estate market. The second was that financial markets were also self-regulating and independent, in more or less the same way. This assumption was based on the experience of past financial crises whose effects on the "real" economy were short-lived, and it was built into the basic models of the economy used by macroeconomists and by the Fed itself. These models were revised as a result of the 2008 crisis.[2] So was the mandate of the IMF, which was expanded "in 2012 to include all macroeconomic and financial sector issues that bear on global stability" (International Monetary Fund 2018).

Modeling, however, does not occur in a vacuum. The modelers are supposed to be expert in another sense: they are supposed to have contextual knowledge and wisdom about the models' appropriateness and applicability. So, the reports are modeling exercises, but only in part. They need to reflect a larger understanding of how economies work and at least some understanding of the particular circumstances in the countries in question, on which they are supposed to become "expert," and to have knowledge that is not shared generally and may include tacit knowledge acquired by interacting with the bankers and bureaucrats of the country itself. The threat of political interference was fully realized in the second crisis, when staff needed to negotiate with the Euro Group, one of the partners in the Greek rescue, and the European Central Bank.

These reports were "legitimating" in a sense: they formally legitimated the proposed actions to the stakeholders, and indirectly legitimated them to the citizens of the affected country, and also indirectly legitimated them to the citizens of the donor countries. But the process by which these reports were developed was opaque, and intentionally so. Knowledge of the potential actions of the IMF would have value for bond speculators, and had to be secret, as with much banking information generally. Moreover, this secrecy seems to have extended to the internal processes of the IMF technical team and its units, and to the IMF's dealings with its European partners, so that many documents were produced, kept secret, and were not even available to the evaluation team. While

banking information was, depending on the country, available to the public, the degree of resolution was not great—one could not tell the exact holdings of a bank, and it is probable that much of the banking information on which the evaluations might have relied was available to national authorities, especially in the large economies, but was inaccessible to the IMF staff.

Intellectual Capture

The second issue cited by the review panel was "intellectual capture" (IEO 2011, 17). This is an interesting but curious charge. The complaint was that the IMF experts were insufficiently independent intellectually from the experts on the staffs of the major central banks. In retrospect this was certainly true, in the sense that had they been less dependent and respectful of the IMF governing body's national central banks, they might have gone against their expert advice and been correct in their alternative analysis. But here again, one sees design features that normally worked well but led to error in the face of a crisis. Nevertheless, in this case again, we find a bug that is also a feature of the situation of the experts. The experts need legitimacy, and part of the legitimacy of experts comes precisely from agreement with other experts. The most relevant experts in the case of country restructuring plans, the main work of the IMF, were going to be the staffers of the central banks of the country in question. They would be the people with the most experience with, access to, and understanding of the data.

The term *intellectual capture* does not have a well-defined meaning. It derives from George Stigler's concept of regulatory capture, which implies the capture of the regulators by the intellectual outlook and values of the regulated (1971; see also Library of Economics and Liberty). But it has also been used to describe Alan Greenspan's adherence to Ayn Randian ideology and central bankers' dependence on Chicago School economics orthodoxies (Mirowski 2013, 77).

What each of these usages implies is a lack of independence of thought by the experts. But here we come to a feature, rather than a bug, of expertise. The origins of expert consensus might be held to be in the coming together of independent minds. But the thing that makes expertise "expert" is its representational character, that is to say, when the expert speaks as an expert, she does so by representing the consensus of experts, rather than *in propria persona*. An expert who speaks against the consensus risks losing the status of expert. And this is grounded in a basic feature of expertise itself: the legitimacy of expertise is closely associated with the legitimation provided by other experts who validate the expertise, the credentials if not the specific views, of the expert in question. So "intellectual capture" in the sense of the mutual dependence of experts on one another for legitimacy is a feature, not a bug, of expertise, and an organization that promotes opinions that fall outside of the range of what other experts treat as genuine expertise risks reputational loss or the loss of expert legitimacy.

Intellectual capture by other experts, experts who are situated in mission-oriented institutions such as national treasuries, finance ministries, or central banks is another matter, but it shares some of the same features. It is rational to defer, at least to some extent, to local expert knowledge; and in the case of the IMF, which must negotiate with local experts, it is essential to be speaking in mutually intelligible ways about the issues, to have some agreement on models, and so forth. So here again, we have a tension that is intrinsic to the organizational role of the IMF expert economist, analogous to what used to be known as "role-conflict," in which the expert is an intermediary between bodies of experts. "Capture" is not simply a risk but also, to some extent, a condition of functioning in the role of intermediary between experts.

GROUPTHINK

As noted, a defining feature of IMF policymaking was the need to "agree" on a policy acceptable to the board's members, often within a short, crisis-dominated, time frame. This in itself forces making decisions in a way that is different from science. Policy, and even the expert advice preceding policy, requires ignoring uncertainties as a condition of action. And this implies some sort of negotiation of the uncertainties to be ignored. The IMF staff was by its nature intellectually dependent: policy staffers are not academics, and are a step lower in the professional hierarchy than academics. They are not expected to be, and normally are not, original thinkers, and they are not, as noted, subject to the slow, not to say endless, process of correction in the professional literature of economics. Their correctors are the parties to the negotiation of policy and recommendations.

The report makes a point of noting that the culture of the IMF and its hierarchical internal structure served to suppress independent thinking and disagreement. It made a point of noting that there were incentives for agreement, but strong, even career ending, disincentives for "contrarian" opinions. The incentives for agreement are not discussed in detail, but they are familiar from all organizational settings: "to get along, go along" is a winning strategy. But there is a cognitive incentive that is even more powerful: to go along with the group on which one is already intellectually dependent in multifarious ways is a form of self-protection for experts. What saves an expert from paying a price for error is the fact that others made the same mistake. It is striking that Oppenheimer, after the success of the Manhattan Project, was motivated by concerns similar to those in the reports—that groupthink would lead to bad decisions—and did what he could to recreate the atmosphere of prewar physics in the changed circumstance of secrecy and the need for vast investments in ideas to test them or make them viable. The main fruit of this effort was the H-bomb, which Oppenheimer himself had believed to be a physical impossibility, but which he allowed a group to work on (Turner 2014c, 287–291). One might ask whether there are analogous solutions in the case of a policy-oriented organization like the IMF. Could one have a "skunk works" that would operate outside the formal system and come up with new ideas that the formal system would have strangled

at birth? What would the effect of incentivizing contrarian views be? And what would this look like? As will become clear in a later section, this would not work. Prolonging the discussion led, as it would normally lead, to policy paralysis.

The IMF, however, had a built-in corrective to groupthink. It was not an independent organization, but rather one governed by a board representing stakeholders with their own very considerable body of expertise. This was the organizational form of the synecological redundancy that was built into the system. The lack of independence is a design feature: the IMF is a stakeholder scheme. Put differently, the IMF process involved expertise *and* checks on expertise. The reports themselves were in some very limited sense, as we will see, pure research, but the corrective mechanisms for the research were not academic; they were the responsibility of the stakeholders. The system was thus a hybrid. The IMF has no skin in the game, so to speak, nor do its experts. They are, like banks, intermediaries. But the central banks and the treasury departments of the contributing nations do have skin in the game, even if the actual participants do only indirectly as part of their institutional responsibilities. So, there is a strong check built into the governance system, which constrains both decision-making and research; research is constrained because there is no point in producing research as a base for the policy that will be rejected.

As the evaluation reports make clear, this reality influenced the research process throughout. Moreover, the reports cite the information asymmetry there was between the IMF and the member nation experts. The member nations had data that was not shared with the IMF, a fact the IMF experts would not ignore and had to assume motivated the member nation experts. In normal circumstances, these asymmetries were typical stakeholder correctives to the IMF system of expertise, which was necessarily limited and thus error prone. In exceptional circumstances, the corrective mechanisms failed, but they failed because the member nation experts had been wrong. We have, in short, a system with particular features designed to avoid error, which happened to have failed in this instance.

With this, we come to a fundamental tension, for which there is no organizational solution that does not itself create problems. The specifics of this case are worth considering. If, as I have suggested, the stakeholder model serves as a substitute for open contestation and a corrective to organizational inertia and groupthink, why did the stakeholders fail to correct the errors here? In fact, they made the situation worse. As the IEO evaluation of the IMF response to the Greek crisis indicates, secrecy—so intense that the IEO itself was unable to get many documents, including many that had been prepared and circulated outside channels—played a large role. This was in part understandable: key national players did not want their interests exposed, and information that could be valuable to markets needed to be suppressed. But the effect was to empower the "Euro partners," who blocked what was widely understood and accepted within the IMF as the best solution, "an upfront debt restructuring" (IEO 2016, 150). The means of blocking was the reopening of debate itself.

The tension between the need for analysis and the need for decisions and decisive action was an internal problem within the IMF. Internal debates took too long and thus did not work to produce a conclusion that could be agreed on in time to respond to the crisis.

Debate paralyzed policy (IEO 2016, 28). At the same time, discussion and normal review were curtailed on other matters (48–49) to meet the need for rapid decision-making. Quantitative analysis of spillovers, the effects of decisions on other economic agents, which had become a key motivator in light of the Lehman experience, was not done. The IMF could have operated, as the reports suggest, in a way that allowed for greater dissent and less control of subordinates' opinions. This might have prepared them better for the two crises they faced and performed badly in relation to. But conclusions needed to be arrived at—policies and analyses needed to be completed.

In a policy context, where there is a need for short-term decision-making, and is governed by stakeholder interests and opinions, the question would be whether there are means of improving expert advice without impairing the policy-formation process, which involves negotiation, dealing with member nations, and being credible to outside academic opinion. There are reasons to be skeptical about this possibility. The existence of contrarian opinions, in this case, worked to the advantage of one side of the controversy, because paralysis, which controversy produced, prevented changes in policy direction even in the face of massive evidence that the policy was a failure. The result of open debate was that "an increasingly unworkable policy was maintained for too long" (IEO 2016, 29). The Schmittian dictum that sometimes a bad decision is better than no decision is apropos here.

Political Constraints

The final criticism involved political constraints, though this topic ran through the analysis. Senior staff were quoted as complaining that area departments were unduly captured by the countries they worked on, and that analytical work was driven by the need to justify proposals and "get along well" with the countries' authorities—a combination of intellectual capture and politics. This is another aspect of the stakeholder problem: without the need for agreement with the countries being aided, not only would the correctives provided by local knowledge be limited, but the risk of error and of appearing arrogant and dictatorial would be increased. Getting the right balance between stakeholder opinions and local opinions is an ongoing problem faced by the IMF experts. But replacing this process with a God's eye view without stakeholder correction has its own risks of error.

Overt political constraints had a role in the Greek crisis, indeed dominated it, though the report said that their presence did not figure into the errors made in relation to the 2008 crisis. The report's comments on the Greek crisis are nevertheless interesting. Exempting the United States, which did not interfere, it noted that certain unnamed large countries had been aggressive in demanding that reports be toned down, to the extent that "concluding meetings were just negotiations on the language" of the reports (IEO 2011, 20). It was believed that smaller and emerging countries were more likely to be given hard-hitting reports, while the large countries were able to demand that staff be replaced, and the administration would side with the countries rather than the staff

in these situations, leading to self-censorship. In this setting, as noted, groupthink was a protective measure. It protected the various individual participants in the process from being assigned personal responsibility for the outputs. If they could be identified, the donor governments would be in a position to identify them personally, and demand that they be gotten rid of.

The Stakeholders Response

The authorities in the major countries had their own diagnostic complaints, which are curiously at odds with the report. Their complaints provide us with a window into the hidden purposes of the organizational structures themselves. The major countries, apparently with the exception of the United States, which was not at odds with the IMF during the crises, complained about the overall IMF governance: a lack of clarity about the roles of the top administrators, their deputies, and the board and a lack of a clear accountability framework. What is the meaning of these complaints, and what do they tell us about the interests being protected by the organizational structures they are complaining about? And what did the complaining countries have in mind as an alternative? In the first place, the complaints are a sign of the extraordinary pressure that the IMF is under to satisfy the donors. The donors demand more power in the form of "accountability," by which they mean the personal accountability of specific persons in the IMF structure whom they can take action against.[3]

This would suggest a turn to an even stronger version of the command-and-control, strict division-of-labor, style of management that the rest of the report indicts for the failure to "connect the dots" (IEO 2011, 21) that were pointing to the financial crisis of 2008. The complaints by the donor nations, the stakeholders, underscore that protective institutional structures are there for a reason: these suggestions would have made the IMF even less responsive to the crisis, but more responsive to the governments in question. Indeed, the very vagueness of roles that the governments complain of is a way of protecting the IMF staff from the political pressure governments can produce by failing to cooperate or making overt demands, or by promoting their pet priorities. This, and the examples from the report that follow, illustrate a basic feature of the organizational design of expertise. The features that are criticized, and that "failed" during the crises, have a purpose under normal circumstances, and that serve this purpose under normal circumstances, but that under the unexpected and unanticipated circumstances of the crises worked against the organization (IEO 2011, 8, 11, 18, 26, 42).

Are There General Lessons Here?

Discussions of the details of cases easily fall into the category of "this is interesting, but what does it show in general?" In what follows, I will bring out some of the general issues

and return to the issues I addressed in the introduction to the case. There is the general problem of knowledge and social organization discussed earlier. The "solutions" to this "problem" present us with a dazzling array of forms. Consensus, even the limited kind of agreement necessary to produce a policy decision through the aggregation of expert knowledge, requires procedures. And as suggested earlier, these are procedures in which the contributions of biased individuals are aggregated in ways that themselves have biases. The point of the procedures, to be sure, is in part to avoid the effects of self-interest, coercion, partiality, and other sources of bias. But the effects of these correctives are inevitably limited and produce their own biases. The corrective procedures, the synecologically redundant bodies, for example, also have biases.

In the case of the Greek crisis, this is one of the major causes of failure. The stakeholders, in their role as IMF corrective and in their different stakeholder roles in the Troika negotiations, including the IMF, ultimately decided on the terms for relief of Greek debt, and each was in a position to correct the biases of their contributing bodies and was staffed by or supported by experts. Their role was both to enact and legitimate an expert solution, not merely to protect their interests—though this is also an important epistemic feature of the stakeholder expertise, since knowing one's interests is also a matter of expert knowledge. The epistemic value of having stakeholders is that they can, and in a successful stakeholder committee should, cancel one another's biases, at least to a significant extent. But the legitimating role of such committees makes them a tempting target for the exercise of power, and in this case, power mattered. It is also important, with respect to the issue of canceling biases, that the committee members are chosen to be diverse in a way that does cancel biases. In this case, the selection of participants actually produced a bias toward an unworkable solution preferred by parties whose stake was overrepresented at the later stages of the process, particularly at the stage of final negotiations.[4]

Why are the biases of decision procedures so difficult to eliminate? The problem is intrinsic to the notion of bias itself. The gap between individual knowledge or opinion and the final product of organized decision-making is large. The difference between "truth" as seen by individuals, who are limited, and policy decisions is also large. Policy decisions typically involve imperfect alternatives which have differential effects on interests or persons. They are decisions made in the face of ill-structured problems with suboptimal solutions, which are more suboptimal from the point of view of particular sets of knowledge or interests than others. There is no God's eye truth to resolve these conflicts. There are only socially organized procedures. We can validate these procedures only partially, by reference to past decisions that are regarded as successful. Of course, these judgments of success refer to "normal" past results. And "success" is relative to interests. If we ignore the possibility of a God's eye view as a nonstarter, we are left with partial views, with different perspectives, knowledge, risk assessments, uncertainties, and interests. From any of these partial points of view, a given procedure of aggregation will appear to be "biased." It will favor some perspective, though not necessarily the expected one.

What we also know from classical science studies is that there are epistemic interests—a desire for one's position to win—that operate within the institutions of science themselves and are indistinguishable from the desire for truth. The decision procedures of science constrain outcomes in ways that introduce their own biases, whose effects are difficult to correct or detect—and whose epistemic effects can only be detected using the biased methods of the scientific community itself. The Matthew effect is one of the most obvious of these. The institutional practices of science may "work," in a pragmatic sense, to produce results accepted by outsiders as "expert" in normal circumstances, but fail in abnormal ones, for example, when undetected biases conjoin (see Turner 2019b).

Social epistemologists sometimes talk about well-ordered epistemic systems, social communities of scientists, or appropriate institutional systems (Winsberg 2018, 213–226). Is this notion helpful here? Perhaps in a small way. Our knowledge of whether a given present system is a well-ordered one is retrospective and is based on a "normal" past. In the case of the 2008 crisis, the problem was that the situation was not "normal." The epistemic system failed in the face of novel and unexpected circumstances. In the case of the IMF and doubtless for other structures, there was little organizational learning from past errors that had resulted from these biases. Organizational and intellectual forms are thus very entrenched. These issues clearly generalize. But constructing lessons is likely to be difficult. Nevertheless, it is instructive that the issues with the IMF in the face of the Greek debt crisis were known in advance, even if they were not dealt with, which suggests that some sort of reform of expert institutions, despite the limits on our predictive powers, would be valuable and in a limited sense possible.

Nevertheless, the idea of creating well-ordered systems, that is to say, designing systems that will work well, is itself a problematic idea. We can look to the past and its normal circumstances to identify flawed systems based on actual errors and biases that those systems produced. But we have no way of saying that these "normally" successful designs of the past, or our present institutions, are optimal. That would require knowledge of what could have been achieved with alternative designs. But we have knowledge, at best, only of what has been achieved with present and past systems. Thus the "well," in well-ordered, is merely an expression of satisfaction with a current or expected epistemic outcome, an outcome which might have been better with a different and unknown system. It is thus itself an expression of bias, not a standard by which to judge bias.

Notes

1. The long story of the disputes over the models, which almost led to a revolt against the president of the IMF, is described by Yanis Varoufakis (2017, 414–440) in his memoir of the events.
2. The combination of errors in a complex, closely linked system of expert analysis is a typical cause of catastrophic expert error (Turner 2014d).

3. The problem of assigning responsibility for expert opinion in settings involving the aggregation of expert knowledge is a significant issue on its own (Turner 2014b, 2014c).
4. For a discussion of another failure of the stakeholder model, in the case of the Hamburg cholera epidemic, see Turner (2014c, 129–136).

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