
Economics, COVID-19, and the Entangled Political Economy of Public Health

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Without doubt, coronavirus disease 2019 (COVID-19) presents problems of public health. To most people, public-health problems, especially of a pandemic intensity, call for public action. Indeed, public-health concerns and national defense have long served as paradigmatic illustrations of public goods where market resolutions to those problems are absent and where governmental action is required. Theories of public goods, however, are largely caricatures of a situation that create the illusion that the theory provides adequate knowledge for dealing with the problem. To the contrary, public-goods theories provide no such knowledge and are incapable of providing such knowledge. Most fundamentally, such theories presume that theorists have in front of them the knowledge that is necessary to overcome the alleged problem. This common presumption is wrong. To assert this wrongfulness is not, however, to deny the significance of the claims on behalf of public goods. Rather, it is to point out that ordinary political processes are incapable of assembling the dispersed knowledge that would be necessary to overcome the problem along the lines that public-goods theories stipulate.

All relevant knowledge is dispersed throughout a society, and it must be assembled if a public-goods problem is to be overcome. This assembly can take place, as Ronald Coase (1974) illustrated for lighthouses and as Rosolino Candela and Vincent Geloso

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(2018) have extended to lightships. At this point, we come to a significant fork in the theoretical road, which we can describe as an allocative and institutional split, remembering that Nathan Rosenberg (1960) explained that Adam Smith theorized while looking down the institutional and not the allocative branch. Down the allocative branch, a theorist asserts the existence of a public-goods problem and the inability of market transactions to resolve the problem and follows those assertions with a claim that some political official can somehow accomplish what market transactions could not accomplish, but without ever explaining how this could happen. Down the institutional branch, by contrast, it is recognized that any assertion that a public-goods problem exists is simultaneously to recognize that potential gains from trade exist from developing organizations or transactions that will internalize those gains, which James Buchanan (1968) recognized in his effort to reorient the theory of public goods away from allocative questions toward institutional questions.

Resolution of the problems associated with COVID-19 clearly presents public-health types of problems. The resolution of those problems, however, requires not choosing the one best expert but rather assembling knowledge that no one person or office possesses. This knowledge can be assembled only through interactions among numerous participants whose specialized knowledge bears upon a solution. The problems COVID-19 presents are far too complex to lie within the competence of any single office or official. Those problems are systemic in nature. Systemic problems require systemic solutions, along the lines that Coase (1974) and Candela and Geloso (2018) examined and as Buchanan (1968) explained was the only coherent path along which progress in the treatment of public-goods problems can be found. With respect to COVID-19 and the assembly of knowledge, the central systemic or institutional issues concern the relationship between scientific inquiry and systems of political economy. According to insights developed by Michael Polanyi (1951, 1962) and elaborated by Gordon Tullock (1966), the Republic of Science operates most effectively when scientists compete with one another for precedence in discovery in the absence of some political authority that directs those efforts. Under present circumstances, however, the Republic of Science falls within the purview of a system of entangled political economy (Wagner 2007, 2016; Novak 2018). The politics and the science of public health are entangled in our present age, and the imperatives contained within that entanglement induce changes in the pattern of scientific inquiry due to the attractive pull on scientific attention that political officials can exert. This entanglement does not mean that COVID-19 will not be vanquished. After all, publicly supported lighthouses did help prevent ships from crashing on rocks, although even more crashes might have been prevented under market-generated lighthouses—a counterfactual possibility we can never witness. Rather, it means that other values that people could have enjoyed will be dissipated through the impairment to the Republic of Science that entanglement can bring about and that this impairment will exert lasting effects on the quality of social life.

COVID-19 and the Assembly of Technical Knowledge

In a still cited essay published nearly seventy-five years ago, Leonard Read (1946) explained that no person on earth can truly describe the entirety of the actions that people scattered throughout the world and across the centuries would have to take for a simple pencil to materialize in a store today. Although pencils are now being replaced by electronics, Read's point remains valid: pencils are the product of a complex system of human interaction and not the product of one person's plan. That system of interaction is replete with individual plans, for an economy is an ecology of plans (Wagner 2012a), but no person or office is capable of planning the operation of that entire system. The ability to use pencils or anything else for that matter is a product of the social system within which people live. This situation creates opportunities for inserting modest improvements into a social system while also incurring the possibility of degrading the system's operation along the lines explained in the examination of retrogressive regime drift (Wagner 2006).

Subduing COVID-19 obviously calls upon the development and assembly of technical knowledge necessary to kill the virus. This assembly will involve many scientists distributed across several fields of expertise. Conquering COVID-19 or any other problem of public health, moreover, cannot be done simply by listing the types of expertise required. Sure, knowledge in such fields as biochemistry, molecular biology, virology, and statistics will be required, but there are many specific forms such knowledge takes. Only scientists will understand the many nuances entailed in assembling packages of research that will end up generating the viral equivalent of a pencil. Nonscientists will be unable to assemble such a network of capacities in any but a highly formal manner. Any such listing would be generic, but conquest of COVID-19 will entail more than the generic knowledge to which well-educated amateurs have access. It will entail specific knowledge inside those generic categories, which emerges only through the scientific process itself.

The assembly of effective scientific teams must come from the participating scientists. Typically, different teams could be assembled. For instance, in *The Sociology of Philosophies* (1998) Randall Collins sketches a realistic treatment as distinct from an idealistic treatment of the organization of scientific inquiry. Collins describes scientists as competing for scarce attention space. That space is scarce because more work is published in possibly relevant areas than any scientist can follow while also pursuing his or her own research. Thus, choices are necessary of who and what lines of work to follow, and this necessity leads to the clusters of similar orientations that we commonly denote as schools of thought. In this respect, Bruno Latour (2005) explained that social configurations are continually in the process of being assembled and disassembled within the context of the actor-network theory he set forth.

What holds for Latour's sociological theory in general pertains as well to those precincts within a society that are actuated through an interest in conquering COVID-19. At the most general level, conquest of COVID-19, like any invention or innovation,

is a process that entails combining some set of elements or ingredients from among a larger set of possible elements and ingredients. We thus live inside a world of high combinatorial complexity. To illustrate this situation, suppose an effective treatment requires the assembly of ten ingredients from among fifty possibilities. It might turn out that an assembly of some of those possibilities works fairly well, another set works modestly well, and yet another set works not at all. To add further complexity to the situation, some of those combinations will have severely harmful side effects for a few people, whereas other combinations will have less-severe side effects for many people.

Even at this point, we are already facing a difficult problem of making a choice among options. Selecting ten ingredients from among fifty possible ingredients means that more than ten billion combinations must be examined to make a truly rational comparison among the options. To keep the numbers in the illustration small, suppose that testing and evaluation require only one hour per option. Even with this exceedingly speedy process, it would take some ten billion hours to explore all the options. Working at a pace of ten hours per day, one billion working days would be required. A laboratory with one hundred scientists would require ten million years before it could offer a truly rational solution to the problem.

Obviously, science cannot operate this way in a world of combinatorial complexity. Undecidability is ubiquitous, as Gregory Chaitin, Newton da Costa, and Francisco Doria (2012) explain in their riff on Kurt Gödel's incompleteness theorems. Yet life goes forward, so decisions must be taken without answers of the type typically presented in the textbooks on decision theory. A combinatorial space will never be explored fully but will unavoidably be only sampled. This incompleteness leads us to inquire into who will decide about the sampling and on what basis such decisions will be made. In this respect, there are two general possibilities, and they point to two different models of scientific inquiry. One is the model of the idealized Republic of Science that Polanyi (1951, 1962) sets forth, as enhanced and extended by Tullock (1966). The other injects concepts from theories of entangled political economy into the process of scientific inquiry (Wagner 2012b). The Republic of Science treats scientific exploration as a form of marketlike interaction in that research teams are put together through consensus among participants. With entanglement, scientific exploration becomes subject to some measure of triadic as distinct from dyadic exchange (Podemska-Mikluch and Wagner 2013) to denote that political influences shape the organization of inquiry in directions favored by dominant political coalitions.

The Assembly of Knowledge within a Republic of Science

The generation of technical knowledge is an activity that takes place within the precincts of what Polanyi (1962) called the Republic of Science. The pure form of that republic operates in consensual fashion through interactions among interested scientists. All those interactions are dyadic even though they can bring together large scientific teams.

In this respect, Richard Epstein (1995) explains that the simple private-law rules of property and contract are sufficient for putting together enormously complex transactions and organizations. For instance, a few people could combine their capital to form a firm and operate it by consensus. As the number of participants increases, consensus may sometimes give way to squabbling, leading in turn to the development of more elaborate organizational and contractual arrangements. All the same, those more complex arrangements will still reflect consensus among the participants, and the private-law principles through which that consensus is reflected will still be apparent. In no way does increased complexity call for replacement of private with public ordering and its political and bureaucratic imposition of triadic interactions, where some programs are favored over others.

The Republic of Science is governed by interaction among scientists engaged in processes of offering conjectures about causal processes and in efforts to refute conjectures while knowing that reality is exceedingly complex. Because scientists are understandably partial to their experimental results, it is important for members of the community of scientists to undertake efforts at refutation of each other's work as part of the process of increasing our knowledge. The Republic of Science operates largely outside of public view. Within the Republic of Science, discussion among scientists is the typical mode through which science develops. To be sure, discussion may sometimes fail to achieve agreement among the participants. Under such circumstances, old teams will fragment, and new teams will form. All the same, the Republic of Science reflects the methodology of scientific research programs (Lakatos 1970, 1976, 1978). All research programs have an analytical structure that resembles the Solar System. Each program has a hard core of propositions or beliefs that are held in common and that provide a platform on which thought is erected. The core itself is not subject to examination, for it is what enables thought to proceed; without a platform that constitutes an analytical point of departure, there can be no thought. Economics has a variety of hard cores. One hard core holds that observations pertain to states of equilibrium. Within that hard core, one set of programs holds that those states are Pareto efficient, making it impossible to increase the well-being of one person without making at least one other person worse off. Another set of research programs holds that equilibrium states are Pareto inefficient, which creates space, in potential if not in actuality, for governmental action to make some people better off without making other people worse off. Still other research programs deny that observations pertain to states of equilibrium and assert instead the primacy of evolutionary change or emergent dynamics over the comparative statics of equilibrium theories (Devereaux and Wagner 2020).

The Republic of Science operates through competition among research programs. At any one instant, some research programs will be dominant with respect to attracting the attention and participation of scientists, and other programs will be less popular. Over some duration of time, however, ebb and flow occur in the relative positions of research programs, just as there are ebb and flow in the sizes of industrial firms over the years. A small research program can be small and yet be growing because it attracts

participation from other scientists. A large research program, moreover, can be declining because it fails to attract new participants, even though a snapshot might show it to be a major program still. In other words, the Republic of Science within the Polanyi–Tullock framework mirrors the ideal image of a freely competitive economy.

In *Intelligence and Democratic Action* (1960), Frank Knight makes a crucial distinction between discussion and debate. The Republic of Science operates through discussion. Debate there may be, but it is debate inside a research program. That debate is centered on different hypotheses regarding the advance of the research program the participants support, but the participants recognize that they face an uncertain reality that invariably will lead to differences of opinion that nonetheless can be reconciled through discussion among the participants. Discussion is the mode of discourse within the dyadic scheme of political economy that characterizes the Republic of Science. Perhaps the key point about discussion is that there is no audience to which the discussants play. The discussants are their own audience.

Debate is an entirely different social process. It follows the mode of triadic political economy where a group seeks to form a dominant coalition by creating a set of winners who will gain through making impositions on a set of losers, but it is meaningless without an audience. Indeed, it's difficult to recognize debate without there being an audience who will stand in judgment of the outcome. Whereas the Republic of Science operates through dyadic transactions and discussion, science within an entangled system of political economy acquires elements of triadic interactions and requires debate as part of the process by which winning coalitions are assembled.

The Assembly of Knowledge within an Entangled System of Political Economy

The Republic of Science conception of the social organization of science is an idealization of an open system of emergent interaction within which science acquires its operating properties. As an idealization, the Polanyi–Tullock vision (elaborated in Caldwell 2008) offers both explanation of the ways of reality and a normative vision. As an idealization and not a miniaturization of reality, the model can also depart from reality. The departure of reality from what the idealization envisions, moreover, can be of greater or lesser significance depending on the degree of entanglement between science and politics. To assert the presence of entanglement says nothing about its intensity. Entanglement is a network-based concept wherein the nodes associated with science have connections with the nodes associated with politics. At this analytical level, entanglement is a purely formal concept. The actual work done by entanglement, however, is a substantive matter. The connections between scientific and political activity may exert little influence over scientific inquiry, or they may exert a great deal of influence; moreover, that influence can be relatively uniform throughout the domain of connection, or it might be dense within some areas and sparse in other areas. Political

actors might be small players and so exert little independent influence, or they might be big players and exert significant influence over the course of science, along the lines that Roger Koppl (2002) explains, and, as Koppl (2018) also explores, the necessity of expertise for scientific inquiry can be warped through political co-optation. The connections surrounding COVID-19 are, moreover, but one among myriad possible areas of connection.

There are many regions of scientific inquiry about which there exists little if any general public interest. In these regions, it is surely reasonable to presume that the Polanyi–Tullock model is descriptively accurate. COVID-19, however, is not one of those areas because it has significant implications for how we conduct our lives. In this respect, COVID-19 is in a similar position to economics in touching on matters of general public interest, as Peter Boettke (2012) explains. For instance, whether systems of market organization have inherently stable properties or are inherently fragile without government support to offset that fragility is a key question that economists seek to address. Global warming is another such domain where science bleeds into politics. So, for that matter, are matters of civil unrest where scientific matters concerning whether that unrest is one of the unavoidable features of a system of free enterprise or is something that can be reasonably attributed to the operation of coalitional politics. We can agree that the Polanyi–Tullock model is an idealization that holds more fully within some precincts of societal life than within others. This agreement, however, leaves unexamined those precincts where science and politics are significantly entangled. COVID-19 is one of those precincts.

The competition for power is built into our democratic system, and the operational features of that competition can be neither denied nor suppressed. Its presence and the resulting operating features, however, are worth efforts to understand their nature if we are to withstand the worst effects of the entanglement of science and politics. When scientific discussion within the Republic of Science connects with topics of political controversy and contestation, discussion commonly transmutes into debate. This transmutation is a form of clash between what are effectively two distinct cultures. The culture of the Republic of Science is a culture of inquiry, wherein discussion is the primary mode of interaction through which inquiry proceeds. The culture of a democratic competition for power, by contrast, is a culture of debate before audiences of nonexperts, where success resides ultimately in the casting of votes in ballot boxes and not in finding an answer to some scientific question. Discussion does not give way totally to debate; rather, public attention and perception are shaped by the ebb and flow of political controversy and not by the intricacies of discussion within the Republic of Science. In consequence, the polarities around which political controversy almost invariably rotates come to dominate within the public eye the complexities and subtleties that characterize the Republic of Science.

The combinatorial character of many choices means that truly rational action is often impossible because only a subset of options will be examined before a choice is made. It is tempting to claim that the resulting truncated choice is nonetheless made

from among the most promising options. Within the Republic of Science, this seems to be a reasonable even though not guaranteed possibility because no one can know the results of an inquiry before the inquiry is completed. Within an entangled system of political economy, the imperatives of political competition will unavoidably intrude from two directions into the Republic of Science: politics will intrude into science, but science will also intrude into politics. To what extent this intrusion occurs will surely depend on the value that it makes possible. Topics of high public interest will surely be more susceptible to political intrusion than topics of small or nonexistent public interest. That intrusion, however, can also stem from significant commercial interests seeking to gain competitive advantage. In some cases, the intrusion of politics into the Republic of Science can exert large effects on the balance sheets of commercial enterprises. In the presence of entanglement between politics and commerce, the options explored will be narrowed. How much they will be narrowed and to what effect will be an emergent property of the entangled system of political economy.

In the early days of COVID-19, much interest in political presentation was placed on masks, ventilators, and social distancing. Those presentations played upon matters that seemed intuitively sensible to the audience, as all political presentations must. This situation is reminiscent of Bruce Yandle's (1983) distinction between Baptists who are the audience for political sermons and bootleggers who fill the commercial interstices the Baptists talk about. With respect to politics and COVID-19, masks, ventilators, and social distancing seem intuitively to illustrate that political officials are acting to promote public beneficence. Out of sight, however, are many potential questions regarding the commercial channels activated by the political intrusion into science. Ventilators and masks do not just appear suddenly. They must be produced, priced, and distributed, a process that occurs through commercial channels of different types. Balance sheets can be affected differently depending on the channels that emerge through this particular entangled process. What results is a process of rationalization where the banner of rationality is attached to the option that is chosen for reasons pertaining to political advantage.

Speaking of political advantage, Robert Higgs (1987) explains luminously how politicians and their supporters are able to parlay the appearance of crisis into an expansion in the reach of political power that after the crisis never reverts to precrisis levels. COVID-19 is the latest instance that began in early 2020 with politicians and public-health officials provoking public fears and imposing restrictions on people as being necessary to alleviate those fears. The World Health Organization started the snowball rolling by claiming an incredible lethality for COVID-19 of about 3 percent, which is about one hundred times the lethality of the seasonal flu against which many people receive inoculations each fall. This image created the climate of fear that presented fertile territory for regulating and restricting the population to promote officials' public-health mandates. There were differences among politicians and their affiliated parties over the particular programs they advocated regarding how thoroughly they sought to close or otherwise restrict economic activity as well as over how quickly they subsequently

moved to allow human interaction to return to their former paths once again. We may be sure that in the aftermath of this COVID-19 experience, there has been further erosion of the once grand tradition that governments operate under limited and enumerated powers (Epstein 2014). To be sure, that grand tradition has been under attack for a century or so throughout the West, as Erwin Dekker (2016) explains masterfully, its opponents striving for a polity with plenary power.

Although the original claims of COVID-19's lethality were wrong, those claims understandably elicited concern within the population. In earlier times, political participants might have followed the ancient wisdom of looking before leaping. But these times are in many ways different. Electronic communication spreads more rapidly than printed communication. Although this faster spread should hasten the acquisition of scientific truth, it will also hasten the diffusion of rumor and falsehood and thereby leave a population more susceptible to a form of communicable disease known as mass hysteria. Perhaps no modern thinker has explored the contrast between rational action and rationalization of actions chosen outside the framework of rational action than Vilfredo Pareto (1935) in his distinction between logical and nonlogical action (as explored in Patrick and Wagner 2015 and in Candela and Wagner 2016).

It is a category mistake of monumental proportions to treat political action as indistinguishable from private action. Pareto explained that within ordinary market environments, people are like scientists within the Republic of Science. They explore options, choose among those options based on that exploration, and bear the value consequences of their choices. Private action generally conforms to the template of discussion in trying to discern consequences of different courses of action. By contrast, political action follows the template of debate, where political officials are playing before an audience to discern how different courses of action might be greeted by what those officials regard as their relevant publics. Where logical action starts with a problem and seeks a solution, nonlogical action starts with a solution (maintain power) and seeks to find a justification compelling to a sufficient number of the electorate.

Public discourse is mostly superficial in that political officials are not trying to answer a question. They already know what they want, which is to keep sufficient public support on their side. Their task is to hold power against electoral challenge in a political situation where the electorate consists mostly of nonexperts who look for intuitively appealing answers without being bothered by scientific intricacies. Political controversy will revolve around such visible matters as whether schools or restaurants should be closed and whether massed gatherings of people should be restricted or prohibited, but without delving into analytical and statistical details regarding patterns of severity. The salience of those questions will surely depend on the perceived lethality of COVID-19. It is often noted in this respect that the damage done to someone by a libelous or slanderous statement cannot be offset by a simple apology because that first impression is not easily erased. It is surely the same with claims about the lethality of COVID-19. There is now in play a form of left–right or red–blue spectrum that takes different approaches based on the World Health Organization's original lethality claim.

Although COVID-19 will eventually be conquered, the public reaction to some grossly erroneous data will have nudged us closer to a state where governments have plenary power.

From Theory to Context through Politics

Darrell Huff's book *How to Lie with Statistics* (1954) is an amusing tale, but it is also a serious examination of how the intuitive appeal of superficial presentation can exert strong influence over public perceptions. Public discourse regarding COVID-19 is replete with statistics, and the general presumption is surely that those statistics are meaningfully objective. Those statistics are used as talking points in political duels for attention where politicians compete for public support by claiming competence for themselves and attributing incompetence to their opponents. In this manner, electoral competition is asking citizens to adjudicate indirectly upon scientific matters through selecting among the political officials who insert their influence into the Republic of Science. Within a democratic polity, this process is doubtless inevitable, but it can be concerning all the same.

A problem that is generally ignored and yet of potentially great significance is that those data are not observable facts. For instance, we can note that the elevation of Mt. Everest is more than twice as high as that of Mt. Whitney. Statistics on the death rate from COVID-19 similarly assert that COVID-19 is about twice as lethal in New Jersey as it is in Louisiana, a claim that on the surface seems equally objective and factual as the claim about mountain elevations. To the contrary, though, claims about the lethality of COVID-19 are products of a data-generating process that could have created different images had that process been organized differently. Data on deaths are compiled from the death certificates that attending physicians file. Although there is no good reason to think that physicians intentionally report deaths inaccurately, it is also necessary to recognize that physicians are often beleaguered in their work and, moreover, that judgments about causes of death can be difficult and costly to make. When death certificates are checked through subsequent autopsy, the causes of death are often found to have been misclassified (McGivern et al. 2017), with estimates of misclassification ranging between 10 and 53 percent. A study of autopsies to check the accuracy of death certificates found that lung cancer was systematically exaggerated as a cause of death and that many of the deaths attributed to lung cancer were shown by autopsy to have been metastases from other sites in the body (Kendrey et al. 1995).

Another problem regarding statistics and COVID-19 is the presentation of those statistics as aggregates over some territory, typically nation or state. One of the notable things about those statistics is the absence of any effort to place them in categories: an infection is an infection, and a death is a death. Yet many people who have tested positive for COVID-19 experience only coldlike or flulike

symptoms. Tropical storms are graded according to the strength of their winds. COVID-19 is graded without regard to potential lethality, even if scientific evidence recognizes that COVID-19's lethality is much higher among elderly populations with respiratory and heart conditions than it is among the bulk of the population. By reporting aggregate data, the perceived lethality of COVID-19 is surely perceived as being significantly higher for most people than it really is. In an environment where politicians and public-health officials are continually competing for scarce attention space, the treatment of exposure to COVID-19 as differing in severity depending on patterns of interpersonal contact may be a truthful statement about COVID-19, but the presence of such perceptions within the general population will surely reduce to some extent the ability of politicians and health officials to compete for scarce attention space.

An entangled system of political economy will inject to some degree the imperatives of political competition into the pattern of scientific research along those margins where data can serve as instruments of political competition. Such entanglement between science and politics is probably unavoidable, though it can be mitigated in principle within a federal system of political organization. A truly federal system can accommodate variation in the political imperatives that get inserted into the Republic of Science along the lines that Michael Polanyi (1951) and Vincent Ostrom (1987) explore regarding the general superiority of polycentric over monocentric political organization. To be sure, the American system has since its founding morphed to such a degree that what was initially a bottom-to-top constitution has been turned upside down, according to Michael Greve (2012). Although it's easy to assert the generally beneficial quality of an unencumbered Republic of Science, any such assertion about beneficence must also wrestle with the current reality of an upside-down constitution.

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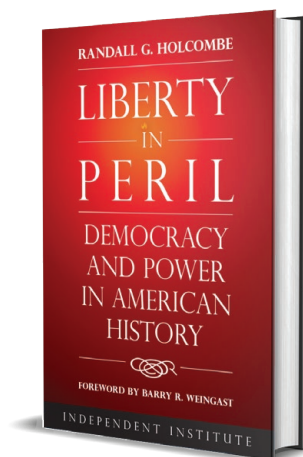
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